

# Neobanking adoption – An integrated UTAUT-3, perceived risk and recommendation model

Neobanking  
adoption study

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## Abstract

**Purpose** – The authors aim to study a conceptual model based on behavioural theories (UTAUT-3 model) to evaluate the adoption, usage and recommendation for neobanking services in India.

**Design/methodology/approach** – The authors propose this model based on the UTAUT-3 integrated with perceived risk constructs. Hypotheses were developed to determine the relationships and empirically validated using the PLSs-SEM method. Using the survey method, 680 Delhi NCR respondents participated in the survey.

**Findings** – Empirical results suggested that behavioural intention (BI) to usage, adoption and recommendation affects neobanking adoption positively. The research observed that performance expectancy (PE), effort expectancy (EE), perceived privacy risk (PYR) and perceived performance risk (PPR) are the essential constructs influencing the adoption of neobanking services.

**Research limitations/implications** – Limited by geographic and Covid-19 constraints, a cross-sectional study was conducted. It highlights the BI of neobanking users tested using the UTAUT-3 model during the Covid-19 period.

**Originality/value** – The study's outcome offers valuable insights into Indian Neobanking services that researchers have not studied earlier. These insights will help bank managers, risk professionals, IT Developers, regulators, financial intermediaries and Fintech companies planning to invest or develop similar neobanking services. Additionally, this research provides significant insight into how perceived risk determinants may impact adoption independently for the neobanking service.

**Keywords** UTAUT-3, Perceived risk, PLS-SEM, Neobanking adoption, Behavioural intention to use

**Paper type** Research paper

## 1. Introduction

About 400 regulated neobanks have emerged in the recent decade, “Neobanks” is an umbrella term used for digital-only banks, virtual banks and challenger banks (Bhattacharjee *et al.*, 2022). Customers' increasing need for ease in banking is anticipated to be a significant factor in neobanking growth (Grandviewresearch, 2022), which is expected to grow from 53.4% CAGR to its 2021 valuation of USD 47.39 billion in 2022–2030 worldwide. The neobanking market in India is projected to grow at a 50.5% CAGR during the next three years, reaching USD 11.65 billion by FY 2025 (Kapoor and Bfsi, 2022). With an uptake in smartphones and the Internet, demand for neobank platforms will fuel its growth. Some researchers believe neobanks would not dramatically impact (YieldReport, 2020).

RBI reported bank frauds of 604 billion Indian rupees in the fiscal year 2022 (Statista, 2022); using new digital-only platforms brings its own risk, and users have apprehensions about losing money to fraudulent activities or while transacting, thereby compromising their



privacy and confidential details (Martins *et al.*, 2014). In 2021, 54% of individuals in India, or 540 million people worldwide, have bank accounts but have not been used for digital payments (World Bank Group, 2022). Most users do not trust their financial institutions because of the multiple risks associated with online banking (Osumuyiwa, 2013). Studies identified perceived risk as an essential factor influencing online banking adoption (Gerrard and Barton Cunningham, 2003). In a recent study (Kantar, 2019), only 19% of banking customers trusted their neobanks, compared to 47% of conventional banking customers. Lack of trust, misunderstandings about taxation, and lack of practical knowledge of digital options are some of the behavioural reasons why fewer people are not using online modes for financial transactions despite their widespread availability (IFMR, 2017).

India has the most significant percentage of bank customers (51%) who visit their branches (Avaya Reports Fourth Quarter and Fiscal 2017 Financial Results, n.d.) as they feel online transactions are risky. During the lockdown, it was a common practice for people to isolate themselves from their social circles, as visiting physical branches was difficult and dangerous while keeping a distance of at least a metre (DQIBureau, 2020). Governor of the Reserve Bank of India (RBI) Shaktikanta Das urged citizens to switch to electronic banking to reduce the hazards of using cash during the current pandemic (Research and Bfsi, 2022). Therefore, it is essential for banking intermediaries to reduce risks, especially those associated with information security, to gain trust in banking services (Yaghoubi and Bahmani, 2010). Being a digital-only bank, like neobank, also creates a user-wide dilemma. Customers used neobanking applications for 40% of their interactions while primarily using traditional banking services (Kantar, 2019). As in the past, it was foreseen that digital systems would face performance issues and create systemic risks around usage (Cunningham *et al.*, 2017), which was seen recently in the case of *HDFC Bank*.

After thorough research on the challenges and benefits of neobank adoption for developing nations and expanding markets like India, understanding the multiple aspects driving adoption from the customer's perspective is still vital. NitiAayog and RBI spent a lot of money developing and deploying digital banking systems for its inhabitants during the demonetisation and Covid-19 period. Still, the effectiveness of these systems depends on their widespread usage and acceptance by the public. This study fills this gap by delving into the early days of Neobank adoption (Table 1). Resulting in the formulation of the research question:

*RQ.* Identify the overall adoption situation of Neobanks in India (during Covid-19) and its future implications on Indian banking consumers.

To answer the above question, we proposed a conceptual model based on the UTAUT-3 study integrated with perceived risk (Figure 1) to assess usage, adoption and recommendation of the Neobank services. *Perceived risk* (PR) and customers' intentions to adopt were further studied as previous research identified perceived risk as an essential factor influencing online banking adoption (Gerrard and Barton Cunningham, 2003).

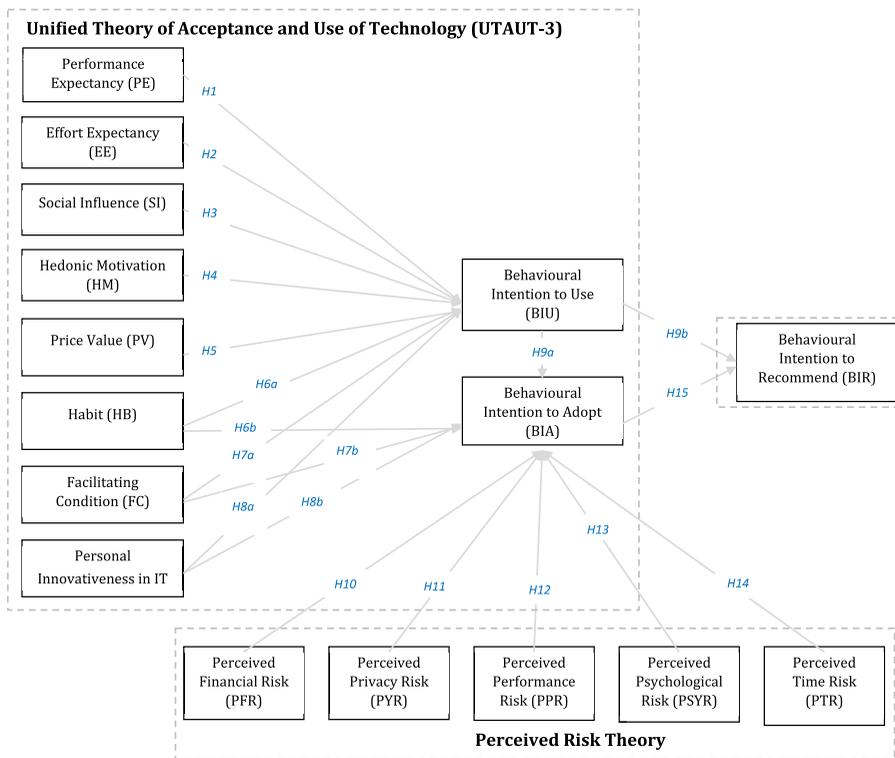
## 2. Literature review

Technology adoption has been widely explored and studied since the 1980s. Researchers examined the behavioural impact and intention of adopting new technologies as they evolve. Neobanks are an entirely new technology based on a 100% mobile platform. We studied the UTAUT model, which is widely researched and helpful in predicting consumer behaviour and intention towards new technologies. Several studies are specific to the adoption of *Internet banking* (Yousafzai, 2012), *Mobile banking* (Souiden *et al.*, 2020), *Online banking* (Szopiński, 2016), *e-banking* (Abukhzam and Lee, 2010), *digital banking* (Ananda *et al.*, 2020) are attempted by researchers. However, no study has been attempted on Neobanks, specifically Indian Neobanks.

Sr. No.	Neobanks in India	Account service	Founding year
1	Mahila Money	Business Account	2021
2	Zikzuk	Business Account	2020
3	Akudo	Business Account	2020
4	Fi Money	Personal Savings Account	2019
5	Jupiter	Personal Savings Account	2019
6	FamPay	Personal Savings Account for Teenagers	2019
7	Finin	Personal Savings Account	2019
8	Niyo	Personal Savings Account	2016
9	Chqbook	Business Account	2016
10	Freo	Personal Savings Account	2015
11	Instantpay	Business Account	2013
12	RazorpayX	Business Account	2013

Source(s): Author

**Table 1.**  
Neobanks in India



Source(s): Author

**Figure 1.**  
Neobanking adoption conceptual model

Technology adoption has been widely studied in banking using a single model like *UTAUT* (Dwivedi *et al.*, 2017), *UTAUT-2* (Palau-Saumell *et al.*, 2019), *TAM* (Marakarkandy *et al.*, 2017), and also been studied with a combination of *TAM and TPB* model (Lee, 2009). Researchers in their study widely accept UTAUT and its different versions.

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After thoroughly reviewing UTAUT models (Venkatesh *et al.*, 2003), introduced the contemporary model with constructs like PE, EE, SI and FC. While identifying the limitation of the UTAUT model, the UTAUT-2 model (Venkatesh and Xu, 2012) was developed by adding hedonic motivation (HM), PV and habit (HA) as additional constructs making it into seven constructs. This model (UTAUT-2) can clarify 50% of the variance (Venkatesh and Xu, 2012) when using new technology. Venkatesh and Xu (2012) also explained UTAUT-2, which emphasised the technology adoption depicted in the earlier UTAUT-1 model but needed a better consideration for the consumers' needs, specifically for "HM," "HB," and "PV." (Tamilmani *et al.*, 2019) asserted that UTAUT-2 is a general theory of individual adoption and technology usage.

Multiple studies have also been researched on behavioural intention (BI) and adoption in banking services in India. Studies like *Internet banking* (Kesharwani and Singh Bisht, 2012), *Mobile banking* (Samartha *et al.*, 2022) have been widely studied using the UTAUT-2 model. Previous studies used *UTAUT and UTAUT-2 models* (Alalwan *et al.*, 2017) to help assess user intentions in *e-healthcare* (Ben Arfi and Hikkerova, 2019), *mobile banking* (Pham *et al.*, 2020), *online shopping behaviour* (Matsuoka, 2018), *self-service technology*, and *restaurant industry* (Jeon *et al.*, 2011). UTAUT-2 has been utilised in predicting consumers' buying behaviour in a variety of contexts, including *advanced driver assistance systems* (Jun *et al.*, 2019), *IPv6 Adoption* (Alghatrifi and Khalid, 2019), *Mobile-LMS* (Ikhsan *et al.*, 2021), and *Travel Mobile Application* (Indrawati and Amalia, 2019). The UTAUT-2 model remains a subject of IS-related studies, and new frameworks have been developed by extending the UTAUT-2 model to other theories.

### 2.1 UTAUT-3 model

Farooq (2017) introduced the UTAUT-3 model to expand the UTAUT-2 studies, encompassing "Personal Innovativeness" as an additional construct in the UTAUT-2 model. UTAUT-3 framework with eight determinants – "PE," "EE," "SI," "FC," "HM," "PV," "HB," and "PI", encompassing "Personal Innovativeness" as an additional construct was added. Studies examined UTAUT-3, which predicted customers' actual usage and adoption rate by 66%, higher than that in an earlier study (Farooq *et al.*, 2017) in the context of a learning management system. UTAUT-3 is now widely studied in multiple domains like *higher education* (Gunasinghe *et al.*, 2019) and *Augmented Reality* (Paiva *et al.*, 2022). However, no studies have been published in the UTAUT-3 banking context, especially neobanks. Recent studies on technology adoption have found that other technology acceptance models, including TAM, IDT, and UTAUT, have lower explanatory values (17–53%) (Dwivedi *et al.*, 2017). Hence, the UTAUT-3 model was preferred in this study. Finally, this study will contribute to the technology adoption field for banking studies by researching the UTAUT-3 model further.

### 2.2 Perceived risk (PR) theory

The perceived risk theory highlights multiple customer risks, potentially affecting users' BI adoption and products and service usage. Perceived risk has widely been studied along with UTAUT in the following research *e-Healthcare* (Ben Arfi *et al.*, 2021), *Internet banking adoption* (Martins *et al.*, 2014), *cashless payment system* (Namahoot and Jantasri, 2022), *E-banking* (Mer and Viridi, 2021), *restaurant industry* (Jeon *et al.*, 2020), *Mobile Payment* (Al-Saedi and Al-Emran, 2021), and *M-Banking* (Abu-Taieh *et al.*, 2022), but none in the context of neo banking in India as per our detail literature search. Studies have identified model predictive power to increase when constructs like perceived risk and UTAUT are studied together (Martins *et al.*, 2014). PR also significantly influenced BIs using cashless payment (Namahoot and Jantasri, 2022). It has also been identified that PR has no significant effect

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towards BI (Ben Arfi *et al.*, 2021). Previous research has also considered trust, security and ease of use in banking adoption (Zhao *et al.*, 2009), including multiple risk construct (Martins *et al.*, 2014).

Moreover, research has yet to be conducted on how perceived risk affects consumer preferences for BI, adoption, and recommendations for neobanking service users. This study conceptualises and explores the multidimensional perceived risk level and extends the UTAUT-3 model.

As part of this study, the research objectives are:

- (1) To develop a theoretical model integrating BI to use, adopt and recommend neobanking services.
- (2) To empirically measure the influence of risk variables such as PFR, PYR, PPR, PSYR, and PTR on BI to Adopt and justify the theoretical model.

This research proposes a conceptual and theoretical model (Figure 1) on BI to use, adopt and recommend integrated with perceived risk theory for neobanks in India. This research considers the UTAUT-3 model since it provides more context than previous models to highlight BI and IT adoption. Lack of digital skills and online fraud increased perceived risk. Hence, perceived risk theory is integrated into the theoretical model (Figure 1) with UTAUT-3.

### 3. Hypotheses development

*Performance expectancy (PE)* is the certainty that the target technology drives progress towards a job-related act (Venkatesh and Xu, 2012). PE is essential for BIU (Martins *et al.*, 2014). PE is also utilised when users believe that neobanking services will help them achieve job-related tasks more efficiently. Therefore, the hypothesis is as follows:

H1. PE influences individual BI to use (BIU) for neobanking services.

*Effort expectancy (EE)* as a user interface for technology is hassle-free (Venkatesh and Xu, 2012). EE describes individual consumer beliefs that neobanking services are user-friendly. EE is an essential factor for BIU, as studied in *Mobile banking* (Farah *et al.*, 2018). The hypothesis stated is as follows:

H2. EE influences individual BI to use (BIU) neobanking services.

*Social influence (SI)* refers to the external pressure created by a society where technology is used. SI is an external force for an individual consumer using neobanking services. This affects their perception of neobanking. SI is essential for BIU in Internet banking (Shih and Fang, 2004). The hypothesis is as follows.

H3. SI on individual consumer BI to use (BIU) neo banking services.

*Hedonic motivation (HM)* is derived from joy or satisfaction in applying a specific technology because HM directly influences adoption (Poong *et al.*, 2016). It refers to pleasure or happiness in neobanking service usage, resulting in adopting neobanking services. The hypothesis is as follows:

H4. HM influences individual behaviour and intention to use (BIU) neobanking services.

*Price value (PV)* is essential in forecasting user buying behaviour and influencing companies' competitive advantage (Tseng and Hung, 2013). Furthermore, the PV of users' cognitive impairment is affected by the apparent benefits and drawbacks of using apps (Venkatesh and Xu, 2012). Therefore, the hypothesis is as follows:

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H5. PV influences individual BI to use (BIU) neobanking services.

*Habit (HB)* is an unconscious or automatic individual behaviour reflected in past knowledge (Venkatesh and Xu, 2012). However, more than knowledge of this is required. HB thus produces cognitive adherence to actions and obstructs modification (Murray and Häubl, 2007). Therefore, the hypotheses are as follows:

H6a. HB influences individual consumer BI to use (BIU) neobanking services.

H6b. HB influences individual consumer BI to adopt (BIA) neobanking service

*Facilitating conditions (FC)* allow the usage belief that infrastructure and support are always available for assistance when using targeted technologies (Venkatesh and Xu, 2012). However, like HBs, FC affects the intentions of both users. Consequently, the hypotheses are as follows:

H7a. FC influences individual consumer BI to use (BIU) neobanking services.

H7b. FC influences individual consumer BI to adopt (BIA) neobanking services.

*Personal innovativeness (PI)* is related to the personality traits of a user's propensity to embrace modern technologies (Farooq et al., 2017). Furthermore, a recent study noted that individual users with PI pursue technological advancements (Farooq et al., 2017). Therefore, the hypotheses are as follows.

H8a. PI influences consumer BI to use (BIU) neobanking services.

H8b. PI influences consumer BI to adopt (BIA) neobanking services.

*Relationship between BI to use (BIU) choice to adopt (BIA)*. BIU indicates a specific technology's behavioural adoption, eagerness, and usage (Davis, 1989). Consequently, the hypothesis is as follows:

H9a. BIU influences individual BI to adopt (BIA) neobanking services.

*Perceived financial risk (PFR)* implies future financial outlays for the initial purchasing price and the commodity's eventual maintenance expenses (Grewal, 1994). The history of the new service review extends this feature to include the possibility of risk-related financial loss. Featherman and Pavlou (2003) refer to consumers' view of the monetary damage incurred by its usage as perceived financial risk. Therefore, the hypothesis is as follows:

H10. PFR influences individual consumer BI to adopt (BIA) neobanking services.

*Perceived privacy risk (PYR)* is a user's privacy vulnerability perceived as a privacy risk. Possible user privacy infringement occurs when personal data are intentionally preserved, released, distributed, or sold without the consumer's permission or consent or when hackers intercept the information. Therefore, the hypothesis is as follows.

H11. PYR influences BI to adopt (BIA) neobanking services.

*Performance risk (PPR)* Grewal et al. (1994) defined PPR as a weakness that entails the risk of failure of a single component, not delivering as planned and marketed, and inability to provide anticipated advantages and the necessary service. Therefore, the hypothesis is as follows.

H12. PPR influences individual BI to adopt (BIA) neobanking services.

*Perceived psychological risk (PSYR)* refers to customers' awareness of the probability that a producer's performance range can harm their self-perception or peace of mind (Ping et al., 2003); potential loss of self-esteem due to anger over not meeting a buying goal (ego loss). Therefore, the hypothesis is as follows:

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H13. PSYR influences individual BI to adopt neobanking services (BIA).

*Perceived time risk (PTR)* exists for any time loss due to neobanking. PTR states that consumers may save time making an incorrect purchase choice by transacting or reviewing services to replace them if they do not meet or exceed the requirements. This may result in inconvenience for users. Therefore, the hypothesis is as follows.

H14. PTR influences individual BI to adopt (BIA) neobanking services.

*Relationship between BI to adopt (BIA), intention to use (BIU) and intention to recommend (BIR)*, it has been proven that people who embrace technology can support others (Lee *et al.*, 2021). Therefore, we theorise a causal link between the consumer's purpose of suggesting a neobanking service and users' recommendations of a neobanking service to others. The hypotheses are as follows:

H15. BIA influences individual intention to recommend (BIR) neobanking services.

H9b. BIU influences individual BI to recommend (BIR) neobanking services.

## 4. Methodology

### 4.1 Measures

A thorough assessment of the UTAUT-3 model (Cody-Allen and Kishore, 2006) and BI literature on banking studies were conducted, and survey instruments were prepared. The survey items were used as per Table 2.

### 4.2 Research instrument design

Research instruments are used mainly in the context of digital banks, as neobanks are of similar business. The research instrument items from earlier studies on technology adoption were updated for online, Internet and mobile banking due to the need for more literature on neobanks. The pilot study was administered to 40 respondents (Saunders, M., 2015). The items in the survey were measured with a 7-point Likert scale. Two academic experts validated the survey items for the instrument's validity and reliability to maintain consistency in understanding terminology, form sentences, and text relevance. Final changes were made by obtaining the requisite feedback from pre-tests. The data set from the pre-test was left out of the analysis done on all of the data.

### 4.3 Sampling and data collection

Data was collected using a structured questionnaire administered to respondents through an online web format. The "thumb rule" (Gefen and Straub, 2003) was applied to determine the necessary number of survey data points. When determining the required size of the sample, the components of the construct represented in the research model were multiplied by ten. Therefore, 410 respondents were needed as the sample size for this study. Target respondents were selected around Delhi NCR, India, a centre for social and cultural technology firms and the most significant global metropolitan agglomeration (Statista, 2021). Customers who used any digital banking (Neobanks) during the last six months were the target respondents chosen for this study utilising the convenience sampling approach in Delhi NCR and its outskirts.

### 4.4 Non-response bias

The study used a survey method, and non-response bias was evaluated (Senior *et al.*, 2002) for the generalisation of this study. Response bias happens when the people who engage in a survey

consistently differ from those who were offered the opportunity to participate but denied it (Menachemi *et al.*, 2010). Consequently, the researcher did what needed to be done to guarantee that the lack of response in the study would not be an issue. A wave analysis was carried out, and the collected data were divided into two sets (early vs late respondents). The early-wave and late-wave responses were compared to test for non-response bias (Rosenthal, 1984). The results

Variable name	Variable items	Sources
PE	Neobanking helps people to execute tasks more efficiently Neobanking service would enhance my productivity My efficiency will be enhanced by using the neobanking app	Venkatesh <i>et al.</i> (2003)
EE	The neobanking app will be easy to use For me, various aspects are easy to understand in the neobanking operation	
SI	People who affect my actions say I can use neobanking services My close friends are recommending that I use the services of neobanking The social media site encourages me to use the products of neobanking	Ajzen (1991), Thompson <i>et al.</i> (1991)
PV	Neobanking services offers a good value on my financial transactions The simplicity that neobanking's service provides justifies its price worth	Venkatesh <i>et al.</i> (2003)
HM	Neobanking services is interesting to me Neobanking is an enjoyable service Neobanking provides joyful service	Venkatesh and Xu (2012)
HB	I am used to using services from neobanking Use of neobanking service is a habit for me	
FC	To use neobanking digitally, I have the required knowledge available Neobanking services is accessible on Mobile/Laptop/Desktop/iPad If any system problems exist, technical help from the neobanking is available for assistance	
PI	I was searching for ways to play with the facilities of neobanking Usually, I'm the first of my colleagues to try new banking facilities I like playing with emerging innovations in the neobanking	Agarwal and Prasad (1998); Venkatesh and Xu (2012)
BIA	Over the next 12 months, I will use neobanking facilities more regularly For the next 12 months, I have a good view of using neobanking facilities I expect to use neobanking facilities more often for the next 12 months	Venkatesh <i>et al.</i> (2003), Davis (1989)
BIU	I shall use neobanking services in future or continue to use them I plan to use/continue in future if I have the opportunity I may use neobanking services in the future or continue to use them	Davis (1989), Im <i>et al.</i> (2011)

**Table 2.**  
Neobanking adoption  
summary of items

(continued)

Variable name	Variable items	Sources
PFR	A reckless activity at neobanking company could lead to a financial loss	Featherman and Pavlou (2003)
PYR	It could be financially risky to use neobanking services Privacy details on the neobanking website/app may be misused, shared or sold illegally Privacy by using neobanking facilities may be revealed or accessed	
PPR	The website/app framework for neobanking may be insecure or blocked The efficiency of the neobanking service may not meet the advertised standard	
PSYR	Using neobanking facilities will create undue stress, e.g., worries over in-service process failures Unwanted anxiety and confusion may be caused by a breakdown in the neobanking website/software application	
PTR	Time loss could be caused by neobanking service delivery volatility and low speed In neobanking services, more time is required to correct transaction errors online	
BIR	I would encourage my friends to subscribe to the neo banking service when it is available If I have a good experience with neo banking services, I will encourage friends to apply to the service If I have a good experience with neobanking facilities, I will consider posting to social media	Davis (1989), Im <i>et al.</i> (2011)

Source(s): Author

Table 2.

of the *t*-test analysis showed that there were no statistically significant differences between the early wave (370) and late wave (310) groups ( $p = 0.49$ ), which suggests that this study is not flawed by non-response bias. Finally, 680 responses were deemed suitable for this study.

#### 4.5 Common method bias

The total covariance of the single element was 28.84%, less than 50%, indicating that the overall structural bias is not a potential concern (Rahi and Abd. Ghani, 2018). Harman's single factor was tested to determine nonresponse bias, as indicated (Podsakoff *et al.*, 2009). Therefore, no significant traditional process bias existed in the data collection. Table 1 presents the detailed demographic statistics related to the survey participants' traits.

#### 4.6 PLS-SEM

To evaluate and test the assumptions, partial least squares structural equation modelling (PLS-SEM) (Sarstedt *et al.*, 2014) was utilised to analyse and test the assumptions. Because of its versatility, PLS has emerged as a popular alternative to covariance-based structural equation modelling in recent years (CB-SEM). PLS-SEM is a prediction-oriented variance-based approach focussing on endogenous target constructs and maximising their explained variance (Hair *et al.*, 2012). This method is well suited to dealing with complex models containing both reflective and formative constructs (when the construct causes the measurement of the indicator variables), and it has fewer limitations placed inferences about

what can be inferred about those constructs (Hair *et al.*, 2014). This methodology can also accept data that do not follow the normal distribution, which is common in behavioural investigations (Chin, 1998). It does this by employing the bootstrapping method to empirically assess the standard error of its parameter estimations (Henseler *et al.*, 2016).

## 5. Results

### 5.1 Demographic and descriptive results

Respondent's demographic results are presented in Table 3.

### 5.2 Measurement model

Calculating measurement attributes in the final model involved using the multi-item reflective structures in the hypothesised framework. The factor loadings of the indicator were more significant than 0.5. (Hair *et al.*, 2006). The Cronbach's alpha for each construct was more

Demographics	Characteristics	Frequency	Per cent (%)
<b>Gender</b>	Female	321	47.2%
	Male	359	52.8%
<b>Age</b>	18–25	243	35.7%
	26–35	248	36.5%
	36–45	45	6.6%
	46–55	77	11.3%
	56 years and above	67	9.9%
<b>Education</b>	Bachelor's Degree	365	53.7%
	Master's Degree	185	27.2%
	Postgraduate	70	10.3%
	High School	54	7.9%
	PhD	6	0.9%
<b>Occupation</b>	Student (College/University)	212	31.2%
	Executive/Manager	108	15.9%
	Professional	102	15.0%
	Computer Technical Engineering	59	8.7%
	Academic/Teacher	55	8.1%
	Self-employed/Own company	46	6.8%
	Clerical/Administrative	35	5.1%
	Homemaker	34	5.0%
	Unemployed, looking for work	16	2.4%
<b>Income</b>	Retired	13	1.9%
	50,000 to 75,000	324	47.6%
	75,000 to one lac	135	19.9%
	Less than 50,000	128	18.8%
<b>Experience</b>	Greater than one Lac	93	13.7%
	More than two years	455	66.9%
	Up to one year	182	26.8%
<b>Online financial users</b>	1–2 years	43	6.3%
	Daily	276	40.6%
	Once a month	205	30.1%
	Once in two months	94	13.8%
	Weekly	64	9.4%
	Never	41	6.0%

**Table 3.**  
Demographic and  
Descriptive statistics

**Source(s):** Author

significant than 0.7, establishing the measure’s dependability. This indicates that all the research constructs used have good internal consistency (Nunnally, 1978).

The composite reliability (CR) and outer item loadings were examined to assess the reflective measuring items. All of the items’ outer loadings are above the minimum threshold value of 0.6, and Table 4 CR values all each construct demonstrates their high internal consistency and reliability levels. The average variance extracted (AVE) was calculated to determine whether the convergent hypothesis was correct. The fact that the AVE values are higher than the required minimum threshold value of 0.5 provides evidence that all of the constructs have convergent validity (Hair et al., 2006).

It was determined whether or not the research constructs had discriminant validity by applying the criterion developed by Fornell and Larcker (1981). To demonstrate the discriminant validity, the construct inter-correlations with AVE were compared, as shown in Table 5. Given that the shared variance values were lower than the matching AVE, discriminant validity was determined (Fornell and Larcker, 1981). The discriminant validity of the constructs is demonstrated by the fact that Table 4 has off-diagonal values. These values reveal the correlation that exists between the latent constructs. Thus, it is confirmed that the research constructs have discriminant validity.

### 5.3 Structural model

This is a PLS model that focusses on variance. The Smart-PLS-3.3.3 enables all numerical measurements of the structural model. We tested both hypothesised relationships for the direction of the path coefficient value. The 5000-iteration bootstrapping technique pushes analytical *t*-values to show the statistical importance of the route coefficient values. This study follows the necessary guidelines because empirical *t*-values must be higher than the critical *t*-values suggested (Hair et al., 2012). The model shown in Table 6 was further reduced to demonstrate these results.

## 6. Discussion

**Objective 1 (UTAUT-3 model for Neobanking Adoption)** – This study is the first to report an empirical analysis of the Neobanking adoption study in India and globally. As part of this study, a theoretical model is empirically tested using the PLS-SEM method.

Constructs	EE	FC	HB	HM	BIA	BIR	BIU	PFR	PPR	PYR	PSYR	PE	PI	PV	SI	PTR
EE	0.83															
FC	0.49	0.80														
HB	-0.08	-0.17	0.78													
HM	0.45	0.69	-0.10	0.82												
BIA	0.45	0.81	-0.24	0.71	0.82											
BIR	0.41	0.63	0.03	0.58	0.77	0.77										
BIU	0.61	0.78	-0.17	0.72	0.76	0.78	0.81									
PFR	0.37	0.67	0.12	0.45	0.51	0.36	0.52	0.85								
PPR	0.34	0.68	-0.09	0.52	0.68	0.46	0.58	0.46	0.81							
PYR	0.30	0.51	-0.02	0.43	0.49	0.36	0.42	0.29	0.23	0.91						
PSYR	0.09	0.33	0.29	0.28	0.36	0.22	0.27	0.10	0.60	0.20	0.79					
PE	0.37	0.72	0.03	0.63	0.61	0.58	0.62	0.44	0.71	0.34	0.31	0.72				
PI	0.07	0.29	0.30	0.23	0.35	0.16	0.29	0.05	0.22	0.31	0.33	0.17	0.82			
PV	0.26	0.35	0.12	0.33	0.46	0.42	0.37	0.26	0.29	0.26	0.20	0.32	0.08	0.87		
SI	0.64	0.88	-0.18	0.70	0.76	0.63	0.82	0.56	0.62	0.48	0.22	0.71	0.30	0.36	0.75	
PTR	0.44	0.63	-0.22	0.62	0.65	0.61	0.76	0.33	0.50	0.44	0.24	0.56	0.25	0.30	0.67	0.79

Source(s): Author

Table 4.  
Discriminant validity

Construct	Item	Outer loading	AVE	CR	Cronbach's alpha
PE	PE1	0.77	0.52	0.76	0.76
	PE2	0.77			
	PE3	0.61			
EE	EE1	0.97	0.69	0.87	0.87
	EE2	0.74			
	EE3	0.76			
SI	SI1	0.8	0.56	0.79	0.79
	SI2	0.74			
	SI3	0.71			
PV	PV1	0.73	0.76	0.86	0.84
	PV2	0.99			
HM	HM1	0.84	0.66	0.80	0.80
	HM2	0.78			
	HM3	0.72			
HB	HB1	0.81	0.61	0.82	0.82
	HB2	0.82			
FC	FC1	0.82	0.64	0.84	0.84
	FC2	0.73			
	FC3	0.84			
PI	PI1	0.86	0.68	0.86	0.86
	PI2	0.7			
	PI3	0.9			
BIA	BIA1	0.87	0.67	0.86	0.85
	BIA2	0.7			
	BIA3	0.87			
BIR	BIR1	0.74	0.60	0.82	0.82
	BIR2	0.71			
	BIR3	0.87			
BIU	BIU1	0.78	0.65	0.85	0.85
	BIU2	0.76			
	BIU3	0.87			
PFR	PFR1	0.84	0.72	0.84	0.84
	PFR2	0.86			
PYR	PYR1	0.94	0.82	0.90	0.90
	PYR2	0.87			
PPR	PPR1	0.88	0.65	0.79	0.78
	PPR2	0.73			
PSYR	PSYR1	0.85	0.63	0.77	0.77
	PSYR2	0.74			
PTR	PTR1	0.85	0.62	0.76	0.76
	PTR2	0.71			

**Table 5.**  
Construct validity

**Source(s):** Author

Fifteen constructs were hypothesised and tested, found to be significant in this study to influence the intention to use (BIU), adopt (BIA), and recommend (BIR). Compared to models such as TAM, TPB, and IDT, the UTAUT-3 is a superior predictive model for research on adopting new technologies. The direct hypothesis relationship was evaluated for all the critical determinants with the UTAUT-3 model. All values were significant, positive, and statistically relevant. There is a highly positive correlation between BIA and BIU variables, which supports our hypothesis. Our model explains 74.8% of the BI to use and 76.4% neo banking adoption, which is higher than the previous banking studies (Zhou *et al.*, 2010). Hence, our proposed conceptual models will contribute value to the existing research

Hypothesis	Path	Path coefficient	Standard error	t statistics
<i>H1</i>	PE-BI to use neobanking services	0.086	0.031	2.715
<i>H2</i>	EE-BI to use neobanking services	0.213	0.043	5.004
<i>H3</i>	SlS-BI to use neobanking services	0.171	0.052	3.341
<i>H4</i>	HM-BI to use neobanking services	0.205	0.033	6.155
<i>H5</i>	PV-BI to use neobanking services	0.077	0.028	2.768
<i>H6a</i>	HB-BI to use neo-banking services	-0.087	0.027	2.768
<i>H6b</i>	HB-BI to adopt neobanking services	-0.165	0.027	6.096
<i>H7a</i>	FC-BI to use neobanking services	0.223	0.051	4.442
<i>H7b</i>	FC-BI to adopt neobanking services	0.221	0.048	4.682
<i>H8a</i>	PI-BI to use neobanking services	0.100	0.029	3.399
<i>H8b</i>	PI-BI to adopt neobanking services	0.138	0.031	4.444
<i>H9a</i>	BIU-BI to adopt neobanking services	0.209	0.044	9.250
<i>H9b</i>	BIU-BI to recommend neobanking	0.407	0.048	4.331
<i>H10</i>	PFR-BI to adopt neobanking services	0.105	0.031	3.431
<i>H11</i>	PYR-BI to adopt neobanking services	0.112	0.030	3.774
<i>H12</i>	PPR-BI to adopt neobanking services	0.181	0.036	5.038
<i>H13</i>	PSYR-BI to adopt neobanking services	0.064	0.029	2.125
<i>H14</i>	PTR-BI to adopt neobanking services	0.084	0.036	2.344
<i>H15</i>	BIAs-BI to recommend neobank services	0.383	0.047	8.179

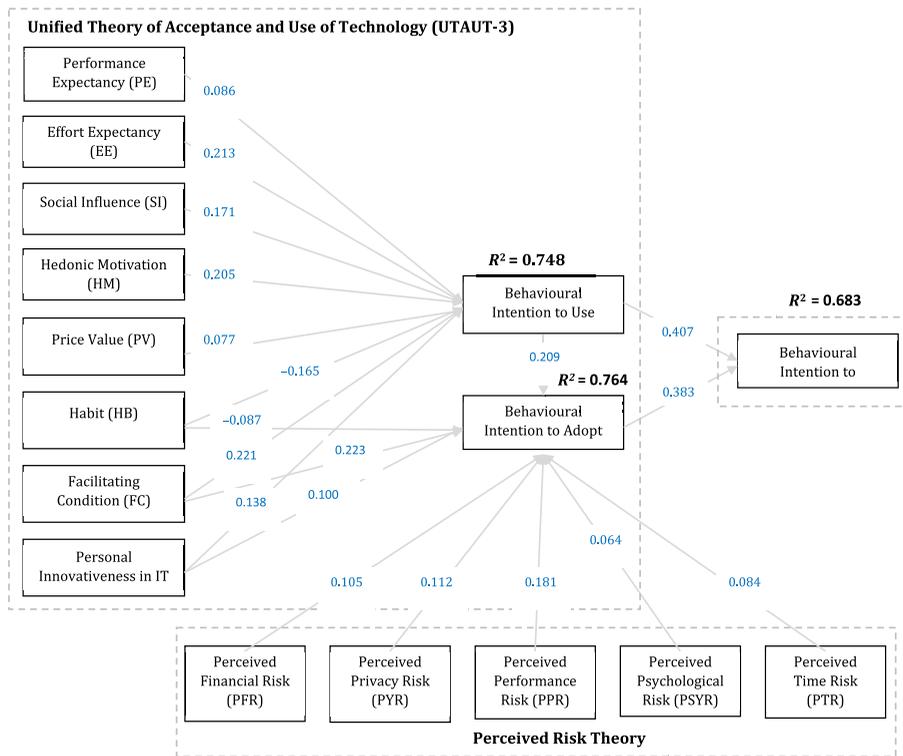
Source(s): Hair *et al.* (2012), Author

**Table 6.**  
Hypothesis testing

literature. This also signifies the neobank managers/developers to focus more on banking risk while advertising and creating awareness campaigns, highlighting the ease of use and convenience of using neobanks.

**Objective 2 (Relationship of perceived risk determinants)** – This study also incorporated perceived risk as a determinant into the UTAUT-3 model to consider consumers' behavioural intent towards neobanking services. Figure 2 above shows that the perceived risk determinant significantly influences users' adoption of neobanking. The hypothesised positive correlation between perceived risk determinants and BIA shows that the results are statistically significant ( $p < 0.01$ ). Results reflect that performance risk is highly significant, with privacy risk as a focus. Banking practitioners must focus more on the app/website performance while keeping privacy issues in place. Neobanking adoption faced significant obstacles, from a lack of high-speed Internet connectivity, limited consumer digital literacy, and irregular electrical supply. Banking users' biggest worries were privacy and confidentiality issues, which hindered adoption. This study shows that adoption is significant when risk interacts with BI towards neobanking, as per the earlier banking studies (Thakur and Srivastava, 2014).

As part of SMART-PLS, blindfolding was used to evaluate the  $R^2$  and  $Q^2$  values according to the guidelines (Sarstedt *et al.*, 2017). The blindfolding process was completed for the required  $Q^2$  values of 0.454, 0.471, and 0.369 for the BIU, BIA, and BIR. The  $Q^2$  and  $R^2$  values indicate that the proposed theoretical model has solid predictive validity and significant explanatory power. As shown in Figure 2, 74.8 % of the BIU variation ( $R^2 = 0.748$ ) on neobanking was clarified by all eight UTAUT-3 constructs with personal innovativeness (PI). BIU uses FC, HB, PI, PPR, PFR, PSYR, PTR, and PYR to clarify 76.4% of the variance ( $R^2 = 0.764$ ) in BI in customer acceptance of neobanking programs and intention to use with adoption replicates 68.3% of the variance ( $R^2 = 0.683$ ). The analysis had an essential  $R^2$  value of 0.683 to clarify acceptance, consumer activity, and neobanking suggestions. According to these parameters, the results were close to the recognised measures in banking (Phadnis *et al.*, 2015). Thus, the overall  $R^2$  value represents the suggested model, accounting for 68.3% of the total variance.



**Figure 2.**  
Structural model  
findings

Source(s): Author

## 7. Conclusion

This study builds on the limited research on the UTAUT-3 model. The current theoretical study contributed to UTAUT-3 (Farooq *et al.*, 2017) and perceived risk, contributing significantly by attempting to fill several research gaps. This study is distinctive since it looks at how Neobanks can be adopted and used throughout the Covid-19 phase. *Firstly*, our study adds to lacking literature on neobanking services. The contribution will help researchers create further literature on neobanking services and adds to this literature which needs to be improved significantly from the perspective of neobank adoption study, both in India and globally. *Second*, UTAUT-3 is a well-acknowledged, empirically examined and effective research model that forecasts technology's BI (Venkatesh and Xu, 2012). This model is popular because it is more reliable and straightforward than other adoption models (Gunasinghe *et al.*, 2019). In this study, the UTAUT-3 model explained  $R^2$  value of 74.8% for usage intention and 76.4% for neobanking adoption. This work contributes to the existing body of knowledge by demonstrating the generality, applicability, and reliability of the UTAUT 3 model to neobanking services.

## 8. Managerial implications and future research directions

*Firstly*, this study identifies PE, EE and FC as significant construct for neobanking adoption. This implies that managers should create more intuitive and less taxing interfaces. Customers with a lower level of technical knowledge will be encouraged to use the platform.

Prospective buyers will be able to improve their proficiency. Marketing campaigns, micro-support websites, 24/7 contact centres, and service centres staffed by trained professionals are all ways service providers should be able to meet the needs of neobanking consumers. *Secondly*, perceived risk is also identified as an essential construct in this adoption study and can be mitigated by implementing risk management measures to maximise Internet opportunities. Marketing departments must collaborate with public relations teams to develop consumer insights and inform customers about financial technology platforms by focussing on risk-related concerns. Banks should offer digital banking courses and seminars for customers to boost bank's credibility. Neobanks should promote clarification workshops to educate users on how to use their platform and outline the primary advantages of banking.

While reviewing this research, we identified shortcomings that should be researched in future studies. Consumers in Delhi NCR and its surroundings were surveyed for this study. Due to the study's geographic and Covid-19 restrictions, care must be taken when generalising its findings to other nations and cultural settings. Future research should evaluate several demographics, such as millennials and older generations, as most UTAUT studies include younger consumers (Martins *et al.*, 2014) to obtain better perspectives. Studies should undertake rural consumers using neobanking services to examine how these services affect consumer behaviour based on website attributes, software design, protection, and social media usage constructs.

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