

Factors Influencing Acceptance of Fin-tech Service Amongst Banking Customers: An Empirical Analysis with an Extended TAM Model

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E58, G21, I24, O21, G20

Abstract: The upward thrust of financial technology has spurred huge studies into integrating information technology within the economic quarter. While efforts focused on effective implementation strategies, scant interest became paid to the pivotal factors using financial technology carrier popularity and acceptance. This Research Paper introduces a better TAM Model, encompassing consumer INN-innovativeness, G authorities guide, BI logo photograph, and PR - perceived threat, all influencing Trust accepted as true. The middle objective is to scrutinize client acceptance of financial technology offerings. We performed a survey amongst lively clients of Commercial Banks, garnering 387 valid responses. Employing an SEM, we analysed information to discover relationships between variables and proposed hypotheses. Results unveiled that consumer trust considerably influences financial technology acceptance attitudes. Surprisingly, PEU and PR showed no substantial influence on patron attitudes. Our look enriches financial technology acceptance literature by way of delving into the determinants of purchaser attitudes, integrating considerations inside TAM.

1. Introduction

Digital technologies, such as blockchain, extensive data, and intelligent financial guidance, are increasingly being utilized in the realm of fintech finance. Global investments in fintech have experienced a remarkable surge from \$12.2 billion in 2010 to a staggering \$153.1 billion in 2016, signifying an astounding twelve-fold growth worldwide during this period. The quantity of fintech projects has also seen a significant rise, with the number increasing from approximately 800 between April 2015 and December 2000. In 2016 alone, fintech investment reached an impressive \$23.2 billion, demonstrating an annual growth rate of 21.5% (Gabor and Brooks, 2020). While conventional banks typically serve purposes like

deposits, payments, loans, and so on, certain fintech vibrations provide distinct user experiences that enable profit calculations or purchases.

Fintech integration in banking aims at enhancing user experience and performance. Current research primarily scrutinizes fintech strategies and risks from suppliers' viewpoints. For instance, Zavolokina *et al.* examined Indonesian bank-fintech "peer-to-peer" models (2016), while Chang *et al.* explored competition between Indonesian banks and fintech entities. Understanding fintech's impact on consumer behaviour is vital as millennials predominantly embrace fintech, unlike older generations favouring traditional banks. Analysing factors influencing consumers' fintech acceptance boosts service quality and fortifies bank-consumer relationships. This comprehensive approach broadens insights into fintech acceptance, as per Priem and Swink (2012). Despite limited current finances, millennials' increasing financial literacy positions them as crucial players in banking. This study centres on exploring relationships among bank users' acceptance behaviours via the According to the Model of New era of technology adopting a model of devis, 1989 targeting for an investigation and discussion of these factors. Furthermore, the paper delivers an additional noteworthy contribution, to be further elaborated.

2. Review of Literature

2.1. Fintech

Researchers from all over the world have extensively studied the association between advancements in technology and the development of new economic strategies. The concept of "economic depth" introduced by McKinnon and Shaw in 1973 has had a significant impact on the rapid growth of the science and technology sector. Fintech, which involves the use of cutting-edge technology to expand financial services, takes advantage of emerging IT, cloud computing and the (IoT) Nakashima, (2018). classify Finance+Tech. as a specialized field that utilizes state-of-the-art technology to expand the value of services and operational efficiency, particularly in the banking industry (Gai *et al.*, 2018).

Studies focusing on fintech's security and privacy concerns emphasize issues such as the centrality of data, vulnerability of tools, usability, and service models (Davis, 1985). Arner *et al.* stress the distinction among fintech and conventional monetary facilities, emphasizing its role in expanding conventional businesses over the submission of advanced tools such as big data, cloud computing, and mobile technology. In a research paper, financial technology is defined as a modern category of monetary facilities that makes practice of advanced tools mobile technology, IoT etc.

2.2. Hypotheses and Research Model

This Model (TAM), which emerged in 1986, surpassed the restrictions of the (TRA) by incorporating theories of expectancy and self-efficacy into the field of behavioural science. TAM primarily focuses on individual behaviour concerning the acquisition of technological knowledge. Venkatesh, V., and Bala, H. (2008) assert that TAM emphasizes the importance of PU and EU are crucial elements that influence the acceptance of technology. This model has gained widespread popularity in ICT research due to its effectiveness in explaining consumer willingness to embrace ICT. In the realm of fintech, TAM has become increasingly favoured for its ability to stimulate financial innovation through the

utilization of innovative ICT tools (Bagchi *et al.*, 2023). However, the application of TAM in fintech varies significantly, as it addresses unique challenges such as privacy, security, and industry-specific characteristics that are distinct from traditional ICT applications in online platforms and mobile payments (Ryu, 2018).

2.2a. Perceived Usefulness (PU)

In the TAM Model by Devis (1989), perceived usefulness plays a vital part in adopting information techniques, indicating a customer's accession to the technology's ability to enhance efficiency (Venkatesh, and Bala, 2008). In this study, it represents the users' inclination to embrace Fintech services based on the perceived positive impacts (Ng and Kwok, 2017). Multiple extensive empirical studies conducted in the past decade consistently demonstrate the positive influence it has on users' intentions (Saxena *et al.*, 2017; Featherman and Pavlou, 2003; Hong and Zhu, 2006). For instance, research on Chinese banking by Chang *et al.* highlighted Fintech's impressive capabilities in deep data analysis and user knowledge mapping. Similarly, Carlin *et al.* established a connection between millennials' acceptance of Fintech and life expectancy and financial knowledge acquisition (Chau and Ngai, 2013). Therefore, the assumption suggests:

H1: The (PU) is positively affecting users' attitudes (ATT) towards their acceptance of facilities

2.2b. PEU – 'Perceived Ease of Use'

The apparent simplicity of utilization, a component of the TAM, measures the equal effort required to comprehend a novel technology (Venkatesh and Bala, 2008). This examination pertains to the comfort and exertion experienced by consumers when utilizing Fintech services. Fintech endeavours to revolutionize banking by providing customized solutions and superior experiences. The ease of utilization emerges as a crucial factor that drives user acceptance (Abbad, 2013; Autoran and Tezcan, 2012). Scholars in the field of banking research have confirmed its connection to the acceptance of new technologies (Szopiński, 2016; Riquelme and Rios, 2010). Riquelme *et al.* emphasized its impact on users' inclination towards intricate financial systems on mobile devices. Fintech services that are user-friendly and convenient promote acceptance. Taylor *et al.*'s comparative analysis revealed that user-friendliness has a positive influence on PU in resource centre contexts (Zhao *et al.*, 2010).

H2: The (PEU) is positively affecting users' attitudes (ATT) towards their acceptance of facilities

H3: The (PEU) is positively affecting users' (PU) acceptance of facilities

2.2c. ATT – 'Attitude'

The way a person thinks and feels about something is what attitude represents, and their willingness to take a specific action is what behaviour intention measures Gupta, A., and Arora, N. (2017). When it comes to studies on the (TAM), having a favourable mindset towards technological innovation is crucial for wanting to accept it Shaikh, A. A., and Karjaluoto, H. (2015). The traditional TAM has proven It can be a reasonable and encouraging association among customer behaviour and acceptance intentions to use facilities. which has been extensively validated in research-intensive the banking industry

Hsu, C. et. al. (2011)., Aboelmaged, M. G., and Gebba, T. R. (2013). and Mcknight, D. H., and et. al. (2001). As a result, according to the theory.

H4: Users' (ATT) is affecting (INT) toward the acceptance of facilities

2.2d. Trust (TRU)

In the topic of acceptance study, trust is extremely important, just like the (PU) and (PEU) that attract users. In the realm of Fintech, trust becomes even more important due to the involvement of intricate data, necessitating an exploration of its impact on user attitudes and willingness to adopt. Trust has been researched in sociology, management, and organisational behaviour as a transdisciplinary concept. (Lewis and Weigert, 1985). It represents users' overall perception of the utility of an object. The research by Kesharwani *et al.* revealed the behavioural influence and formative nature of users' trust, which is shaped by their inherent traits (Malaquias and Hwang, 2016). Other studies affirm that higher levels of trust in service providers are correlated with increased user willingness and promotion of behaviour (Koksal, 2016). The indirect impacts of trust on Fintech acceptance support its relevance. (Hanafi *et al.*, 2014). Building on these insights, we propose the following assumption:

H5: Customer's trust (TRU) is Positively affecting (ATT) towards the acceptance of facilities

2.2e. BI – 'Brand Image'

The reputation of service providers greatly influences the provision of dependable services, assisting individuals in successfully achieving their objectives (Park, E., Kim, H., and Ohm, J. Y., 2015). Sang *et al.* discovered that peer-perceived brand insight plays a crucial part in the acceptance of government administration information systems (GAIS) (Sang *et al.*, 2010). In the field of Fintech, brand perception significantly influences how users perceive quality, value, and satisfaction (Saleem *et al.*, 2014). To adopt Fintech, having a positive perception of a brand is essential in establishing trust within an organization (Srivastava *et al.*, 2010). Samuel *et al.* suggested a solid brand perception decreases PR associated with sensitive data in Fintech services, thereby fostering user trust (Semuel and Lianto, 2014). Building on these insights, we propose the following assumption:

H6: Brand image (BI) is positively affecting customer's attitudes (ATT) to acceptance of facilities.

H7: Brand image (BI) is positively affecting customer's trust (TRU) in acceptance of facilities.

2.2f. PR – 'Perceived Risk'

It can be associated with an absence of confidence, significantly hindering the acceptance of technology (Siamagka *et al.*, 2015). In this context, it encompasses concerns related to finances and confidentiality that are inherent in the selection of financial technology facilities. Financial uncertainty relates to the potential loss of property due to fluctuating rates or other factors, while privacy uncertainty pertains to the disclosure of personal and transactional data in online financial usage. Khedmatgozar *et al.* emphasized the crucial role of risk perception in the acceptance of e-facilities (Sikdar *et al.*, 2015). Bansal *et al.* highlighted users' profound concern regarding the misuse of personal data, anticipating severe consequences within Fintech services (Khedmatgozar and Shahnazi, 2018). The reliance of

Fintech on technologies such as data and the IoT inherently poses risks during service provision (Bansal *et al.*, 2010). As banks increasingly offer technologically enabled financial services that require user data, trust in these services diminishes (Zhou *et al.*, 2010). Kim *et al.* revealed the adverse effect of apparent uncertainty on trust. Building on these insights, we propose the following assumption:

H8: (PR) negatively affecting users' (ATT) toward the acceptance of facilities

H9: (PR) negatively affecting users' (TRU) acceptance of facilities

2.2g. GS - Government Support

The significant role of government support greatly accelerates the acceptance of Fintech. Through its credibility, it builds trust by supporting the use of modern technology in the banking sector and investing in communication facilities. Kiwanuka *et al.* have established that government backing has a beneficial inspiration for accession to technology and the intention to practise it continually. Chong *et al.* (2010) have also confirmed the importance of government support in fostering trust in e-banking by incorporating relevant factors into the TAM model. we propose the following assumption:

H10: GS is affecting users' (ATT) concerning the acceptance of facilities

H11: GS is affecting users' (TRU) in the acceptance of facilities

2.2h. UI – ‘User Innovativeness’

In the research, the concept of user creativity is Clarified as the individuals are inclined towards embracing novel products, technologies, or services. Elevated levels of user creativity signify a greater eagerness to embrace innovation, tolerate uncertainty, and exhibit favourable intentions towards utilizing the innovation. This indicates a decreased perception of risks and a heightened receptiveness to technological advancements. Adeiza *et al.* argued that innovation is an inherent human attribute that reflects users' curiosity in new areas of interest (Marakarkandy *et al.*, 2017). Furthermore, Kim *et al.* discovered in their investigation of user behaviour towards mobile payment acceptance that individual creativity plays a significant and positive role in users' inclinations to adopt mobile services, a finding supported by empirical research conducted by Leicht *et al.*(2018). Consequently, we propose the following assumption:

H12: (UI) is affecting users' (ATT) concerning the acceptance of facilities

H13: (UI) is affecting users' (TRU) acceptance of facilities.

The framework presented in the present article relies on previous studies, as seen in Figure 1. The study approach has been modified to reflect the unique context of Fintech services. The arrows in the graphic represent the relationships between the contributing elements, with the “+” and “-” marks representing positive and negative effects, respectively.

3. Research Methodology

3.1. Data Collection

The goal of the research was to have a look at the major factors that determine customer acceptance of financial technology products and services and their intent to use them. Customers from Commercial

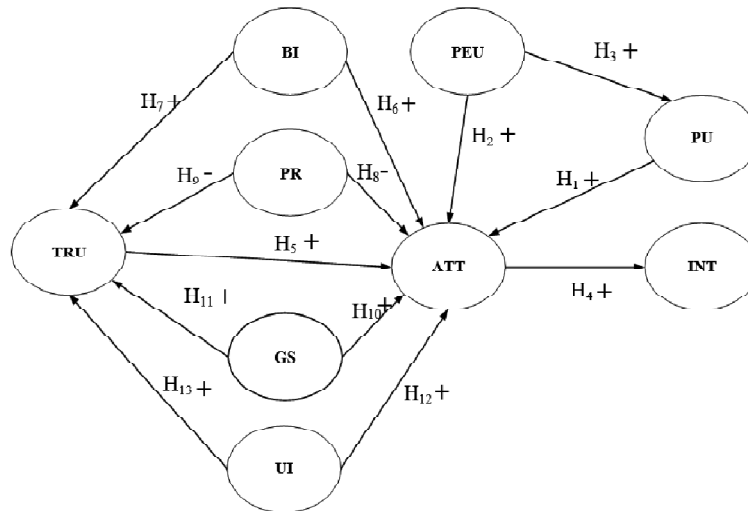


Figure 1: Research Model

Bank who used online banking, mobile banking, and other financial technology products and services regularly took part in the study. To collect data, bank employees distributed a questionnaire to randomly selected individuals using a Google Form. Participants were given information on Fintech services before the poll., including their purpose, associated risks, and other relevant details. These services, which include electronic banking, loans, and insurance, were characterized as new financial services that use modern technologies such as massive data and smartphone technology.

The questionnaire consisted of 31 items and covered demographic information as well as the assessment of financial technology facilities using a Likert scale. Out of the 587 responses received, 387 effective replies were analyzed, resulting in an appropriate reaction rate of 65.93%. Statistical analysis using Smart PLS 3.0 revealed certain demographic patterns, with most of the respondents (56.07%) falling in the 26 to 35 age range, indicating early acceptance of technology. A significant proportion (68.73%) of participants were frequent users, highlighting the current high rate of Fintech acceptance. Understanding the elements that determine their acceptance is critical for effective Financial technology integration in financial institutions.

3.2. Scale Development

This research integrated insights from both local and global scholars, adapting to match the specific features of financial technology facilities studied. (refer to Table 2). Constructs such as PU were derived from Lockett *et al.* and Huh *et al.*, while PEU drew from the research of Cheng *et al.* and Wang *et al.* TRU is influenced by the research of Chong *et al.* and Sanchez *et al.*, and BI is based on the research of Ha *et al.* and Ruparelia *et al.* Additionally, ‘PR’, ‘GS’, ‘UI’, ‘ATT’, and ‘INT’ have been research by Marakarkandy *et al.*, Grabner-Kr *et al.*, Zhang *et al.*, and Patel *et al.*

Table 1: Sample Characteristics

<i>Variables</i>		<i>Responses</i>	<i>%</i>
Sexual orientation	Male.	182	47.03%
	Female.	205	52.97%
Age	18–25	52	13.44%
	26–35	217	56.07%
	36–45	61	15.76%
	46–55	52	13.44%
	e”56	5	1.29%
Employ status	School child	11	2.84%
	Public Servant	47	12.14%
	B-School Employees.	64	16.54%
	Workers.	200	51.68%
	Businessman	21	5.43%
Education	Other.	44	11.37%
	SSC	35	9.04%
	HSC	79	20.41%
	UG	223	57.36%
Income	PG	51	13.18%
	below 2000	51	13.18%
	2k to 6k	210	54.26%
	6k to 10k	75	19.38%
Fintech service usage	Above 10k	51	13.18%
	Not Used	8	2.07%
	Irregularly	67	17.31%
	Frequently	266	68.73%
	Everyday Usage	46	11.89%

The survey contained different variables representing outside factors that influence the participants’ perspectives, each having 2-6 dimensions variables. Respondents evaluated each dimension of a variable using a Likert scale, indicating their true opinions ranging from “strongly disagree” to “strongly agree.” For data analysis and processing, the study applied (SEM), a statistical technique that explores relationships between variables through methods like multiple regression, path analysis, and confirmatory factor analysis. The ‘Partial Least Squares’ (PLS) parameter estimation method was chosen as it is appropriate for investigation research and model testing, not requiring a robust theoretical foundation for validation and explanation. Ruparelia, N., White, L., and Hughes, K. (2010) highlight the use of Smart PLS 3.0 for parameter estimation in this study.

Table 2: Measurement Instruments

<i>Latent Variables</i>	<i>Sources</i>
'Perceived Usefulness' (PU)	Lockett <i>et al.</i> and Huh <i>et al.</i>
'Perceived Ease of Use' (PEU)	Cheng <i>et al.</i> and Wang <i>et al.</i>
'Trust' (TRU)	Chong <i>et al.</i> and Sanchez <i>et al.</i>
'Brand Image' (BI)	Ha <i>et al.</i> and Ruparelia <i>et al.</i>
'Perceived Risk' (PR)	Marakarkandy <i>et al.</i> and Grabner <i>et al.</i> , Abdul, S. B., and Soundararajan, V. (2022).
'Government Support' (GS)	Marakarkandy <i>et al.</i>
'User Innovativeness' (UI)	Zhang <i>et al.</i>
'Attitude' (ATT)	Grabner <i>et al.</i> , Panda, P., Maharana, A. K., and Iqbal, S. A. (2021)
Intention (INT)	Marakarkandy <i>et al.</i> and Patel <i>et al.</i>

4. Results

4.1. Cogency and Trustworthiness

The model's internal constancy trustworthiness, convergent validity, and discriminant validity were all evaluated using confirmatory factor analysis. Internal constancy trustworthiness refers to the degree of constancy or stability in measurement outcomes, which represents the dependability of the questionnaire questions. Composite reliability (CR) and Cronbach's alpha were employed to analyse the internal consistency of the data in this investigation. The sample's CR should be larger than 0.7, and 'Cronbach's alpha' should be better than 0.8, according to Fornell and Larcker's criteria. Faullant and Grabner-Kräuter (2008).

Table 3: Presents the Constructs, AVE, CR and Cronbach's Alpha

<i>Variables / Constructs</i>	<i>AVE</i>	<i>CR</i>	<i>α</i>
PU	0.680	0.894	0.84
PEU	0.755	0.902	0.837
BI	0.812	0.928	0.884
PR	0.767	0.908	0.851
GS	0.713	0.882	0.799
UI	0.844	0.915	0.815
TRU	0.827	0.905	0.793
ATT	0.83	0.936	0.897
INT	0.737	0.894	0.822

The statistical accuracy of the Proposed framework, incorporating both convergent and discriminant validity, is determined by how well it matches the survey data. Convergent validity evaluates correlations between indicators for a variable using the extracted average variance. (AVE) Patel and Patel (2018) composite reliability (CR) Poolthong and Mandhachitara (2009). and observable variable loadings Fornell and Larcker (1981). AVE values over 0.5 and observable variable loadings over 0.7 signify robust convergent validity, as seen in Table 3, affirming this study’s constructs.

Discriminant validity ensures variables are distinct and not overly correlated. It’s validated when the AVE exceeds the squared inter-scale correlation. Table 4 confirms favourable discriminant validity, with all AVE values surpassing the squared inter-scale correlation for every variable.

Table 4: Discriminant Validity of Variables

<i>Variables</i>	<i>PU</i>	<i>PEU</i>	<i>BI</i>	<i>PR</i>	<i>GS</i>	<i>UI</i>	<i>TRU</i>	<i>ATT</i>	<i>INT</i>
PU	0.821	-	-	-	-	-	-	-	-
PEU	0.738	0.871	-	-	-	-	-	-	-
BI	0.422	0.423	0.898	-	-	-	-	-	-
PR	-0.208	-0.166	-0.247	0.878	-	-	-	-	-
GS	0.501	0.51	0.499	-0.182	0.841	-	-	-	-
UI	0.291	0.357	0.407	-0.134	0.504	0.921	-	-	-
TRU	0.45	0.492	0.538	-0.367	0.564	0.488	0.906	-	-
ATT	0.58	0.582	0.566	-0.219	0.707	0.619	0.604	0.913	-
INT	0.515	0.549	0.579	-0.232	0.588	0.554	0.569	0.795	0.855

4.2. Hypotheses Testing

Following the completion of the reliability and validity assessments, the study moved on to an experiential examination of the financial technology facilities acceptance model. The structural equation model (SEM) was used to examine the sample statistical data, which is a statistical approach that uses A matrix containing the covariance for each variable and is a helpful instrument for analysing data with multiple variables. PLS 3.0 was used to check the hypotheses stated in this article, which gave standardised path coefficients (̢) and t-values.

The statistical significance of the variables was determined using t-values. If the t-value reaches 1.96 at a confidence level of p 0.05, the value of the coefficient can be regarded as meaningful. A t-value greater than 2.58 suggests relevance at a p 0.01 level of confidence, whilst a t-value greater than 3.1 indicates significance at a p 0.001 level of confidence. The results of the testing of the hypotheses are shown in Figure 2.

The graph above depicts the results that show significant impacts on ATT for PU (̢ = 0.176, t = 3.339). Similarly, BI (̢ = 0.135, t = 2.852), TRU (̢ = 0.103, t = 2.122), GS (̢ = 0.318, t = 5.584), and UI (̢ = 0.273, t = 6.322) are also considerably influenced. Given that their respective t-values surpass 1.96, these data confirm hypotheses one, six, five and ten. Furthermore, TRU serves as a go-between for the interactions amongst BI, GS, and UI.

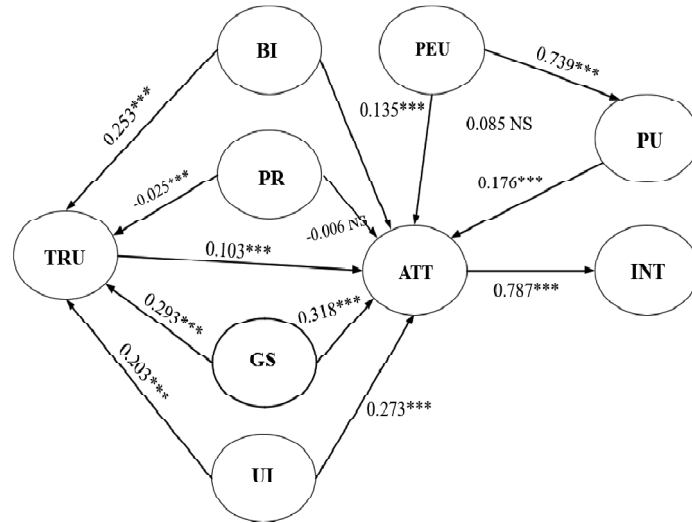


Figure 2: Results of the Proposed Research Model

BI ($= 0.253, t = 4.925$), PR ($= -0.025, t = 6.251$), GS ($= 0.293, t = 5.625$), and UI ($= 0.203, t = 4.669$) also obligated substantial effects on trust. The t-test exceeds 1.96 once more, verifying hypotheses H7, H9, H11, and H13.

Furthermore, PEU has a substantial impact on PU ($= 0.739, t = 18.397$), supporting H3. ATT has a substantial effect on (INT= $0.787, t = 25.410$) with a t-value greater than 1.96, corroborating H4. However, (PEU= $0.085, t = 1.306$) and (PR = $-0.006, t = 0.204$) had no substantial impacts on ATT since their t-values were > 1.96 . As a result, two and eight are not supported.

5. Results Discussion and Conclusions

The Present research investigates the acceptance of financial technology facilities by bank customers, focusing on the factors that determine acceptance behaviour and its impact on the relationship between users and banks. The position of ‘Perceived Usefulness’ (PU), ‘Trust’, and ‘User Interface’ (UI) in the desire to utilize Fintech services is underlined, confirming the findings of Sikdar *et al.* In contrast to Marakarkandy *et al.*’s study, the development of General Satisfaction (GS) as a major predictive factor is found. Furthermore, this study supports the findings of Kesharwani *et al.*, since there are no significant relationships between ‘perceived ease of use’ (PEU), ‘perceived risk’ (PR), and the impact of services. The study’s findings highlight many critical factors.

To begin, brand image, government aid, and user innovation all have a significant impact on Fintech acceptability, both through direct and indirect means through the influence of confidence. These variables have a significant impact on service uptake. Second, perceived risk undermines trust, which alters customers’ perceptions towards Fintech services. Addressing perceived risk is critical for increasing trust and user engagement. Third, perceived simplicity of use does not affect Fintech uptake.

6. Limitations of the Study

The core purpose of this research work is to improve the TAM Model by including the idea of trust in Fintech services to simplify and predict the acceptance of these facilities by banking customers. An additional complete and nuanced opinion on the drivers of developmental purpose is offered by incorporating trust as a factor. This study's empirical investigation confirms the proposed paradigm. However, significant limitations in the influencing factors investigated in our study must be acknowledged. Psychological variables, such as social effects, have received less attention. Furthermore, a thorough risk assessment should consider several aspects, such as monetary menaces, confidentiality threats, and virtual safety fears. We may gather knowledge by performing a complete and effective evaluation that includes these factors.

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