

A Study on the Consumer Risk Perceptions for FinTech Platforms in India

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Abstract Financial technology has seen significant growth in providing financial services. This growth, however, is not immune from the emerging risks that can cause a hurdle for FinTech adoption. This study explores the influence of consumer risk perceptions on FinTech platforms with the help of data collected from 200 individuals. For this research, only payment services and trading platforms were included, while crypto and blockchain could have also been meaningful parts to explore in this study. The study developed and tested the hypothesis based on eight independent variables against the risk and benefit perceptions of FinTech platforms using regression. The results indicate that the "Security and Privacy Risk" & "Functional and Regulatory Risk" together explained a significant amount of variance in risk-benefit perceptions of FinTech. Thus, it can be concluded that FinTech companies must divert their efforts to reduce consumer perceptions of safety and functional risks to better appeal to them. Further, the differences between the FinTech platforms were assessed using Tukey's HSD test performed to one-way ANOVA. The results for this test stated that the "Functional and Regulatory Risk" proved GPay to be preferred over PayTM and Other platforms. An independent factor t-test was also conducted, which concluded that the male gender is more sensitive to the "Security and Privacy Risk". Other than providing new directions for future research in the developing FinTech domain, the findings of this research may be crucial to FinTech companies, policy makers, and banks for B2B

purposes.

Keywords FinTech, Perceived Risk, Finance, Technology, Regression, Tukey's HSD

1. Introduction

Financial technology, or FinTech, represents a revolutionary integration of finance with technology. It encompasses a diverse array of digital innovations that revolutionize the way financial services are delivered and experienced, making them more accessible than ever before. The acceptance of FinTech, especially in India, has surged past the COVID-19 pandemic through the introduction of UPI services.

India has the highest FinTech adoption rate globally of 87% [1] which is significantly higher than the Global average rate of 64% [2]. Indian FinTech industry's market size is \$50 Bn in 2021 and is estimated at \$150 Bn by 2025 [2], [3]. From just 1 million transactions in 2016, UPI has since crossed the landmark 10 billion transactions. [4] linked the boom in FinTech acceptance to the recent COVID-19 pandemic, as it hid users' fears towards new technology, and they were more willing to accept it, especially in developing countries like India, where UPI was introduced and is now widely accepted across the country. This revolution also indicated that customers are

more influenced by the benefits rather than their possible risks, but FinTech service providers should be mindful of the consumer perceived risk associated with their services.

But as FinTech platforms keep growing, so do worries about how consumers perceive risk and how that affects their use of these services. This paper aims to discover how the consumers' attitude and beliefs regarding the risks affect their decision-making while engaging with FinTech services. The present research conducted an extensive literature review to explore consumer risk perceptions further. This paper prioritizes the perceived risks of Indian consumers who interact with FinTech platforms on a day-to-day basis. It does not consider corporate or business perspectives but rather focuses on consumption and feedback. Inherently, consumer risk perceptions play an important role in the adoption of FinTech platforms, and understanding this is important for both academics and the industry. Despite the risks, the phenomenal growth of the FinTech industry indicates underlying benefits that outweigh them. This study employed a quantitative approach to assessing the factors impacting consumer perception of this risk-benefit paradigm.

This study caters to various stakeholders, such as FinTech companies, policymakers, and consumers. Insights from this study can help FinTech platforms gauge the apprehensions consumers would face while using or contemplating the use of FinTech platforms. In addition to this, policymakers could enforce additional regulatory frameworks that would help consumers reduce their concerns about utilizing these platforms.

Further, this article helps in gaining a higher understanding of consumer behavior, perceived risks, and the benefits of financial technology. By understanding the influence of consumer risk perception, managers can develop targeted strategies to address consumer concerns and, therefore, enhance trust. Additionally, this can address the development of FinTech products by implementing stronger security measures and privacy safeguards.

This study has been organized as follows. The literature review explains the past research conducted regarding this topic. Then, the hypothesis is developed based on the literature review, and three suitable variables have been identified. Further, the quantitative analyses are shown and concluded with the findings, implications and limitations.

2. Literature Review

Financial Technology (FinTech) may be a relatively new buzzword, but it has deep roots in the banking and financial sectors. Much of the research in this field refers to innovative financial services that use technology to create disruptive new trends in services or rewrite financial services to make them more valuable, reasonable, and secure [5]. Gomber et al. [6] state that FinTech involves the transformation of financial services to meet consumer needs directly, performing as an intermediary. Jangir et al.

[5] argued that FinTech is seen as a driving force for innovation and modernization in the finance sector rather than a disruptive force, providing innovation, extended financial inclusion and enhanced customer experience. Some other views describe FinTech as not only limited to financial services, such as providing financing and creating new business models, but also performing business operations, providing services, and delivering products as an alternative to traditional financial institutions [7]. In general, FinTech can be considered as a technology to provide a better user experience and improve competitiveness in finance. Services such as online payments, fund transfers, loan applications, purchasing of insurance policies, and even investing in stock and commodity markets were previously only possible through financial institutions but can now be accessed anywhere through the internet and FinTech. Additionally, FinTech has immense potential to solve various sustainability issues, with the critical challenge lying in the development of an effective FinTech adoption model, which would lead to a mass migration of consumers from traditional financial services [8].

Previous studies have described the perceived risk as the belief of the user of the negative consequences of using FinTech and defined it as an individual's perceived potential, uncertain, adverse outcomes when adopting an internet wealth management platform [9], [10]. In another research conducted in India, Indian users grappled with a range of "perceived risks", which included issues such as technological concerns with confidential data, security concerns and responsiveness concerns [11]. For example, a financial transaction could be interrupted due to a technological glitch or human error. Further, the perceived risks of FinTech platforms can be classified as operational risks, financial risks, security risks and several others [12].

Past research has also evaluated the impact of "perceived value" and "perceived risk" on the adoption of FinTech platforms [9]. To improve FinTech acceptance, stakeholders needed to emphasize the need for tactics that increased "perceived value" while reducing "perceived risks" to improve user experience. At the same time, it is also observed that the importance of reducing customers' perceived risks, as the financial risk of FinTech platforms is much higher than other platforms. The uncertainty and unreliability associated with e-commerce and FinTech platforms are reported to prevent potential customers from utilizing their benefits. However, consumer trust plays an important role in increasing the credibility of FinTech platforms, and therefore, companies must work on it to ensure that customer relationship and trust are maintained [4], [13].

Perceived risk negatively impacts the actual usage of FinTech and forms a significant factor in influencing FinTech acceptability [14]. It has also been discovered that a user who is accustomed to the risks mentioned above and is unbothered by it, may disregard the risk element in using any form of financial service online [5]. However, the same

user may be dissatisfied if a potential risk arises in a future course of action, for example, trying a new FinTech platform or service. This finding was also seen when PayTM faced a restriction on financial services from RBI due to non-compliance with policies, and it lost existing customers, leading to a possible reduction in annual earnings of around 60 million USD and not getting new merchants on their platform [15].

Additionally, access to financial services in rural and remote areas is limited due to underdeveloped infrastructure and inadequate awareness about the services. Customers in rural areas also have a more cautious attitude towards adopting new technologies as they have very limited funds [16]. This analysis was deemed important as the rural market forms a substantial part of the entire Indian market that uses financial services. Many FinTech platforms, such as GPay and PayTM have made it relatively inexpensive and more accessible for anyone to utilize their services. PayTM even offers broker services for affordable brokerage costs through PayTM Money.

Abdul-Rahim et al. [8] portrayed results that revealed perceived risk as insignificant, probably due to the higher confidence they observed in users that stricter regulations would ensure financial institutions are to be held accountable for any transactional errors or fraudulent payments. Notwithstanding the risks, the benefits provided by FinTech platforms outweigh the drawbacks they bring, as the users are less influenced by the data security, privacy, and flexibility of traditional financial institutions [17]. The research also acknowledges the dynamic and ever-evolving nature of FinTech services, due to which users' perceptions of the potential risks may change in the future as the technology becomes more secure and advanced in cybersecurity and data protection [17]. On the other hand, the emerging risks play a challenging role for FinTech companies as their benefits do not merely outweigh them. Notably, all perceived risks increased with the increase in FinTech adoption over the years, which showed that FinTech adoption perceived risks negatively influenced FinTech adoption [18].

On the basis of the literature review, the present study identified eight factors that can impact the user perception of the FinTech platform. This paper aims to understand the influence of risk-benefit expectations on the perception of FinTech platforms in India. These factors consider the possibilities of data leaks, security breaches through third-party individuals and personal data being maliciously used by the platforms themselves. It involves how willing users are to provide their valuable information knowing the risks involved. Moreover, financial information is more valuable as it incorporates users' savings, income, and wealth and must be treated by the platform with the utmost care [19].

Further, the performance and reliability of the FinTech platform are crucial as there is a risk involved in this as the possibility of breakdowns of web-based financial sites such as online banking, disconnection recurrence restraining financial access. The chances of server downtime and

transaction failures also negatively impact the risk involved while using FinTech. Furthermore, there are discussions about regulatory risks, considering FinTech is a relatively new technology [8]. FinTech should have stricter regulations to ensure safety and minimize risks, and must have laws and policies in place to protect the users such as the ones in place from the Securities and Exchange Board of India (SEBI) protecting investors trading through brokers online.

Next, the social risk associated with the usage of FinTech platforms is also important. It considers how much users trust reviews or word of mouth while deciding on a FinTech platform, which depends on how easy the users find the platform to access and use. It also includes their opinions on whether the risks outweigh the benefits provided by the FinTech platforms.

3. Research Objectives

The present research aims to examine the influence of eight variables: ease, functionality, privacy, reliability, security, data usage, regulatory support, and reviews on consumer perception of the benefits versus risks. Further, the study aims to compare the influence of these factors on the major FinTech platforms, such as GPay, PayTM, and PhonePe in India. Lastly, the study tests the gender differences for the assessment of risks and perceptions. The following research objectives guide the research:

1. To identify the important factors influencing consumer perception towards FinTech platforms.
2. To assess the relative importance of the factors across different FinTech platforms.
3. To identify gender differences in the assessment of the factors influencing perception towards FinTech platforms.

4. Research Methodology

The study utilized an online questionnaire for the collection of data. The questionnaire was developed based on some of the questions given by Jangir et al. [5]. Questions were designed to measure the different facets according to the model developed above that affect the risk that consumers face while utilizing FinTech platforms in India. A Likert scale from 1-4 was used to formulate the questionnaire; an even scale was decided to avoid neutral responses to the questions and obtain a definitive response for each question.

The questionnaire was shared using snowball sampling as it is commonly used when the population sample is unknown. The questionnaire was using Google Forms and distributed via the internet, email, and social media websites. A total of 207 responses were recorded and used for the analysis of perceived risks. As per the National Planning Commission of India (NPCI), the adoption rate of

FinTech platforms is 84%. Therefore, applying the formula for a 95% confidence level, this is an acceptable sample size. To analyze the data, Microsoft Excel and IBM's SPSS software were used.

The study tries to maintain a balance in both gender and age by including young and older customers and almost even gender distribution to understand FinTech risk perceptions. The sample majority includes retail consumers that use FinTech (95%). The questionnaire also shows that 52% of them utilize GPay, while PayTM comes in second at 32%. Table 1 gives the demographic information of the respondents.

Table 1. Demographics

		Frequency	Percentage
Gender	Male	114	55.07
	Female	93	44.92
Age	17-24	110	53.14
	25-30	4	1.93
	31-39	11	5.31
	>=40	82	39.61
FinTech App	Yes	196	94.68
	No	11	5.314
Most Used FinTech Platform	GPay	108	52.17
	PayTM	68	32.85
	PhonePe	18	8.69
	Others	13	6.28

Source: Author's work: Extracted from Excel

Before proceeding with the statistical tests, the normality of the data was tested. Both skewness and kurtosis values were well within the acceptable range to perform parametric tests [20]. To achieve the objectives of the study, factor analysis is conducted on the attributes identified

during the literature review. Further, regression analysis is conducted by taking factor components. After that, an independent factor t-test is performed to understand gender differences in risks and perceptions.

5. Data Analysis and Results

Table 2 gives the descriptive statistics of eight independent variables, measured on a scale of 4. As expected, the highest agreement came for ease of use, followed by regulation and functionality. The highest deviation is found for privacy, security and privacy perceptions and customer reviews.

Table 2. The Descriptives

Variables	Mean	Std. Deviation
Ease	3.67	0.652
Functionality	3.40	0.688
Privacy	2.74	0.974
Reliability	2.98	0.710
Security	2.65	0.973
Data	2.41	0.945
Regulations	3.61	0.650
Reviews	2.76	0.938

Source: Extracted from SPSS – Authors' work

The exploratory factor analysis identified two factors with Bartlett's Test of Sphericity ($\chi^2 = 259.923, df = 28, at p < 0.001$), which indicates that the data is good for factor analysis. However, the Kaiser-Meyer-Olkin (KMO) value is relatively less at 0.695 but sufficient to test these correlations [21].

The PCA extracted two components with eigenvalues greater than 1, explaining 48.651% of the variation. The total variance extracted is shown in Table 3.

Table 3. Total Variance Extracted

SN	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	2.525	31.561	31.561	2.525	31.561	31.561	2.155	26.933	26.933
2	1.367	17.089	48.651	1.367	17.089	48.651	1.737	21.718	48.651
3	0.943	11.787	60.438						
4	0.826	10.326	70.764						
5	0.731	9.131	79.895						
6	0.686	8.581	88.476						
7	0.545	6.809	95.285						
8	0.377	4.715	100.000						

Source: Extracted from SPSS – Authors' work

The Varimax method of rotation is used to extract the components to eliminate cross-loadings, which is given in Table 4. The attribute “reviews” is removed from the further analysis due to low factor loading. The two factors extracted are identified as security and privacy risks (SAP) and functional and regulatory risks (FAR).

The component score was saved for regression analysis. The regression was conducted using the step-wise method on SPSS 25, taking risk-benefit perception as the dependent variable. Table 5 gives the model summary.

As evident in the model, both factors are significant in the assessment of risk-benefit perception and explain 21.1% of the variation. Also, the functional and regulatory risks improve the perceptions significantly. The coefficients obtained by the model give the following regression equations:

Risk

$$- \textit{Benefit Perception for Fintech Platforms} = 3.053 + 0.241 \textit{ Security and Privacy Risks} + 0.212 \textit{ Functional and Regulatory Risks}$$

Further to understand the group differences for the users of different platforms, the one-way ANOVA was

conducted using SPSS 25. Table 6 shows the output of the comparison between the users of GPay, PayTM, PhonePe, and others.

The results show a significant difference in the impact of functional and regulatory risks on consumer perceptions, $F(3,203) = 4.651, p = 0.004$ on different platforms. Table 7 shows the multiple comparisons for the individual differences using Tukey post hoc tests.

The result shows that there are no significant differences in the assessment of security and privacy risks among the platforms. However, GPay is significantly better than PayTM and others in functional and regulatory risks.

Next, the gender differences were studied using an independent sample t-test. Table 8 shows the results of the test.

Since for security and privacy risks, Levene’s test is not significant, the t-value for equal variance is not assumed. The results show that security and privacy risks are significantly higher in male respondents. For functional and regulatory risks, Levens’s test approves the equality of variances, and the test results are the same [22]. Therefore, male respondents are more likely to be risk-averse than females.

Table 4. Rotated Component Matrix

Variables	Component	
	Security And Privacy Risks (SAP)	Functional and Regulatory Risks (FAR)
Data	0.733	
Privacy	0.751	
Security	0.620	
Reliability	0.555	
Ease		0.836
Functionality		0.685
Regulations		0.664

Source: Extracted from SPSS – Authors’ work

Table 5. Model Summary

SN	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.345 ^a	0.119	0.115	0.657	0.119	27.725	1	205	0.000
2	0.460 ^b	0.211	0.203	0.623	0.092	23.800	1	204	0.000
a. Predictors: (Constant), Security and Privacy Risks									
b. Predictors: (Constant), Security and Privacy Risks, Functional and Regulatory Risks									

Source: Extracted from SPSS – Authors’ work

Table 6. ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Security and Privacy Risks	Between Groups	4.135	3	1.378	1.386	0.248
	Within Groups	201.865	203	0.994		
	Total	206.000	206			
Functional and Regulatory Risks	Between Groups	13.249	3	4.416	4.651	0.004
	Within Groups	192.751	203	0.950		
	Total	206.000	206			

Source: SPSS output: Authors' work

Table 7. Multiple Comparisons: Tukey Honestly Significant Difference

Dependent Variable	(I) Platform	(J) Platform	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Security and Privacy Risks	GPay	PayTM	0.227	0.154	0.459	-0.173	0.627
		PhonePe	-0.024	0.254	1.000	-0.682	0.633
		Others	0.460	0.293	0.397	-0.298	1.218
	PayTM	GPay	-0.227	0.154	0.459	-0.626	0.173
		PhonePe	-0.251	0.264	0.778	-0.936	0.434
		Others	0.233	0.302	0.866	-0.549	1.015
	PhonePe	GPay	0.024	0.254	1.000	-0.633	0.682
		PayTM	0.251	0.264	0.778	-0.434	0.936
		Others	0.484	0.363	0.542	-0.456	1.424
	Others	GPay	-0.460	0.292	0.397	-1.218	0.298
		PayTM	-0.233	0.302	0.866	-1.015	0.549
		PhonePe	-0.484	0.363	0.542	-1.425	0.456
Functional and Regulatory Risks	GPay	PayTM	0.394*	0.151	0.047	0.003	0.785
		PhonePe	0.311	0.248	0.594	-0.332	0.954
		Others	0.889*	0.286	0.012	0.148	1.630
	PayTM	GPay	-0.394*	0.151	0.047	-0.785	-0.003
		PhonePe	-0.083	0.258	0.988	-0.753	0.586
		Others	0.494	0.295	0.339	-0.269	1.258
	PhonePe	GPay	-0.311	0.248	0.594	-0.954	0.332
		PayTM	0.083	0.258	0.988	-0.586	0.756
		Others	0.578	0.355	0.364	-0.341	1.497
	Others	GPay	-0.889*	0.286	0.012	-1.630	-0.148
		PayTM	-0.494	0.295	0.339	-1.258	0.269
		PhonePe	-0.578	0.355	0.364	-1.496	0.341

*. The mean difference is significant at the 0.05 level.

Source: SPSS Output: Authors' work

Table 8. Independent t-test for Gender Differences

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Security and Privacy Risks	Equal variances assumed	0.850	0.358	-2.178	205	0.031	-0.302	0.138	-0.575	-0.028
	Equal variances not assumed			-2.185	199	0.030	-0.302	0.138	-0.574	-0.029
Functional and Regulatory Risks	Equal variances assumed	5.246	0.023	-2.219	205	0.028	-0.307	0.138	-0.580	-0.034
	Equal variances not assumed			-2.195	187	0.029	-0.307	0.140	-0.583	-0.031

Source: SPSS Output: Authors' work

6. Discussion and Implications

Findings

As per the step-wise regression results, Security and Privacy risks (SAP) explained 11.9% of the variance solely, followed by Functional and Regulatory risks (FAR), accompanied by SAP that explained 21.1% of the variance. The addition of FAR into the model improves the perceptions significantly shown by a reduction in the standard error. FAR showed a significant difference ($p=0.004$) in its impact on consumer risk and benefit perceptions, as revealed by the results of ANOVA. Tukey's HSD shows that SAP is indifferent to the platform used by a consumer while FAR proved GPay to be preferred over PayTM and 'Other' platforms.

Finally, an independent sample t-test (Levene's test) was conducted to understand the gender differences in the 2 risks (SAP & FAR) perceived by them. The results depict that male respondents were more sensitive to SAP as compared to female respondents. Moreover, equal variances have been assumed for FAR as the significant value is determined to be less than 0.05, which states that the test results are the same across the board.

Implications

This research includes other aspects and factors of perceived risks that have previously been excluded from research, allowing a different approach to measuring perceived risk's influence on FinTech usage. This finding means that this research has wide-ranging ramifications for future research in the same field. This study provides insights that may be useful to financial institutions providing FinTech services regarding the risk factors that hesitate or influence FinTech adoption in India. This observation is especially applicable as FinTech is

becoming more popular in many countries, including India as more and more countries are embracing it.

Future Research Agenda

Future research should expand to include the perceived benefits of FinTech alongside the perceived risks users of FinTech face. This expansion would allow for better comparison between them and measure if one outweighs the other to provide a more comprehensive conclusion. In the future, researchers could also make use of different types of perceived risks, such as social risk, time risk, and others, to better analyze the users of FinTech [23]. Further research may also focus on other external factors, mainly the role of government regulations in FinTech adoption, since they play a crucial role in shaping consumer trust and confidence in these platforms. These external factors may lie out of the consumer's control but may still have a significant influence on their perception towards FinTech adoption [4].

Additionally, future research may also include diverse FinTech platforms and other services using Blockchain technology as the perceived risks and benefits can significantly correlate. The present research has taken a cross-sectional design. Future researchers can take a longitudinal design to explore the changes in consumer perception in this dynamic field of study.

7. Conclusions and Limitations

This research concludes that security and privacy risks show no difference between the platforms selected by the consumer as per the tests conducted above. On the other hand, functional and regulatory risks are higher in PayTM and 'Other' platforms in comparison to GPay. The regression model used to identify the impact on benefits

and risks perceived by consumers of FinTech platforms determined that the variables chosen (SAP & FAR) were able to explain more than 20% of the risk perceived. This article maintains an unbiased and even sample and conducts the literature review and quantitative analysis accordingly. The results also determine that the male gender is more sensitive to the security and privacy risks that FinTech platforms bring with them. For functional and regulatory risks, the results state that both genders are equally influenced by it. Numerous risk-reduction measures may be implemented into the user interface in the future to counteract customer worries, which could also be targeted towards the male customer base to reduce their perceived security and privacy risks and help FinTech platforms be more trustworthy.

The study encountered a few limitations regarding the number of questions asked in the survey, which affected the number of variables that could be explored. Moreover, the sample size was limited, which could potentially restrict the accuracy of the findings. Larger samples provide more information, increasing the accuracy of estimates and also allowing access to data from a higher number of distinct groups of people. Lastly, other types of FinTech platforms, such as online trading platforms, crypto and blockchain, could have been explored instead of focusing on payment service platforms considered in this research paper. At the same time, qualitative studies such as focus group discussions and interviews could provide more insights.

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