An Empirical Study to Assess the Factors Influencing Banking Customers Toward FINTECH Adoption in Tamil Nadu

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1 Introduction

The financial industry is changing rapidly by offering different services with latest technologies to meet the expectations of the end users. The leading technology and the growth of financial services industry helps to build the strong economy with more of digitalization. Even, the rapid adoption helps to serve their customers in a competitive way. Fintech is denoted as a novelty enabled with innovative technologies to offer novel services to their customers by companies in the financial services sector [1].

The advent of Fintech in India is aimed to reduce the floating of liquid cash and to improve the digital transaction. Though Fintech established in India during 1990s, post 2000 becomes the market for the digital economy, especially the growth was higher during COVID pandemic [2]. The Fintech adoption in the world market is expected to rise up to 52% [3], and the industry is estimated to reach $9.82 trillion in 2023 at 15.64% Compound Annual Growth Rate (CAGR) [4].

The flow of the research work is divided into seven modules, namely, Introduction to the study, Research Objectives, Literature Review, Research Methodology, Analysis & Interpretation, Conclusion, Limitation, and Future Research. A detailed description about the study and its proposed objectives are discussed in the first two modules. Previously published research works and its outcomes are presented in the third module of this report. The proposed statistical tools, applications, and its inferences are discussed in fourth and fifth modules of this study. The concluding

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remarks of the research work and its future scope are discussed and presented in the last two modules.

Robust financial services are the challenged outcomes of the financial institutions with backbone support from latest technologies [5]. The recent interaction between customer and a bank is the outcome of revolution took place in the Fintech industry and it is new for the current generation people. The older methodology of visiting a bank to do financial transaction is gone, and everything is done via online with the help of mobile applications, internet banking, etc. The customers' behavior toward Fintech usage is highly influenced by various factors such as ease of use, perceived risk, and convenience [6]. On the other hand, perceived usefulness is found as the highest stimulus variable with respect to Fintech adoption in Taiwan [7]. Many may be new to technologies, and if the customers perceive technologies as new path way, they may be influenced toward Fintech services [8–10]. The entries of more start-ups in the Fintech sector are witnessed after 2015 and are the main reason for the growth of Fintech in India. The Indian market witnessed the growth of Fintech services from $247 million to $1.5 billion during 2015. Further, the growth of mobile phone usage with high speed Internet connections has helped the Fintech market to grow with more phase [11]. Despite of latest technologies in the Fintech industry, it still serve the existing customers to reach traditional financial products/services [12].

1.1 Objectives of the Study

The scope to do the research on implications of Fintech in Indian market still has its own space. The quantum of research on Fintech usage among banking customers and factors influencing Fintech adoption in India are limited. Considering this gap and need, the current research is designed to assess the variables stimulus Fintech adoption by the customers of banks in Tamil Nadu. Further, this study extended its scope to assess the significant impact of identified variables on the Fintech adoption by the banking customers.

1.2 Research Methodology

The current research is designed to assess the variables stimulus Fintech adoption by the customers of banks in Tamil Nadu. A structured questionnaire was constructed to collect the opinion of banking customers from Tamil Nadu. The designed questionnaire was circulated to 200 respondents who were selected randomly and collected their opinion. Google form was used as a tool to collect the responses and the collected responses were analyzed with the help of statistical tools such as Descriptive Statistics, Exploratory Factor Analysis, Pearson Co-efficient of Correlation, and Simple Linear Regression. Further the research assumption was tested with the help of hypothesis framed and as given below

H1: The identified factors are significantly influencing the banking customers toward Fintech adoption.

2 Analysis and Interpretation

The demographic profiles of the respondents are analyzed using simple percentage analysis and are presented in Table 1 as given below.

A look at the demographic data presented in Table 1 shows that out of 200 respondents, 48.5% are male while the remaining 51.5% are female. In terms of age, the distribution of customers falls in the younger part with 55% in the 18–25 years age group. Only two customers are aged 55 and over. The survey of respondents' occupation shows that 42% of the respondents work in the private sectors, the second highest 30% followed as students. The annual income of the respondents showed that most of the respondents' income was between 6 and 10 lakh per year; 88% of the respondents, followed by 7% fall under the 5 lakh category. Data quality of customers shows that most of the respondents, that is, 54% are postgraduates, followed by 37% as graduates. Further, the analysis confirmed that 56% of the respondents do use Fintech services on daily basis and 23% of respondents use Fintech services once in a week.

3 Fintech and Their Attributes

This study identified 17 variables as the attributes of Fintech, and the variables are identified as the outcomes of the literature review [10]. The respondents were requested to share their opinion about the 17 variables or attributes on the Likert scale of 1–5; 1 be the lower response and 5 be the higher response. The data collected were analyzed using simple mean and standard deviation and the outcome of the analysis are shown in Table 2 as given below.

The data from Table 2 confirms that the mean value between 1.28 and 2.81, showing that bank customers have all these qualities in them to varying degrees in the lower part. The difference in their response is in the range of 0.50–1.24, which shows the consistency of the answers.

In order to understand the significant relationship between the variables chosen for the study, a null hypothesis is framed and is tested using chi-square test/Bartlett's test of sphericity. The result shown in Table 3 confirms that the Chi-square value is statistically significant at 1% level of significance and proved that the null hypothesis is rejected and alternate hypothesis is accepted. This signifies that the variables selected for the current research are correlated each other with statistical acceptance level. In addition, the correlation matrix showed in Table 4 indicates that

Table 1 Demographic profile of the respondents

S.No	Variable	Category	No. of respondents	Percentage
1	Gender	Male	97	48.5
		Female	103	51.5
		Total	*200*	*100.0*
2	Age	18–25 years	110	55.0
		26–35 years	34	17.0
		36–45 years	32	16.0
		46–55 years	22	11.0
		More than 55 years	2	1.0
		Total	*200*	*100.0*
3	Occupation	Student	60	30.0
		Govt. employee	6	3.0
		Private employee	84	42.0
		Self employed	32	16.0
		Home maker	18	9.0
		Total	*200*	*100.0*
4	Annual income	1–5 lakh	14	7.0
		6–10 lakh	176	88.0
		More than 10 lakh	10	5.0
		Total	*200*	*100.0*
5	Marital status	Married	86	43.0
		Unmarried	112	56.0
		Divorced	2	1.0
		Total	*200*	*100.0*
6	Educational qualification	Not a graduate	18	9.0
		Graduate	74	37.0
		Post graduate	108	54.0
		Total	*200*	*100.0*
7	Frequency of using technology	Daily	112	56.0
		Weekly	46	23.0
		Monthly	34	17.0
		Yearly	6	3.0
		Occasionally	2	1.0
		Total	*200*	*100.0*

there is no higher correlation; R value is not greater than the standard/acceptable value of 0.8. Hence, it is proved the absence of multicollinearity in the structure.

Table 5 indicates the amount of variance (Communality) extracted by the Fintech attributes identified for the study. It has already been defined that the communalities should be greater than 0.5 to define a structure as valid one [13]. From the data, it is very clear all the extraction values are higher than 0.6 and confirmed the valid structure.

Table 2 Fintech and their attributes

S.No	Attribute	Mean	SD
1	Convenient to work (F1)	1.45	0.681
2	Convenient to work with latest electronic gadgets (F2)	1.35	0.512
3	Paperless operation (F3)	1.36	0.573
4	Less working duration (F4)	1.28	0.504
5	Meet my requirements (F5)	1.66	0.787
6	Useful (F6)	1.37	0.545
7	24 * 7 Service (F7)	1.52	0.702
8	Confidentiality in the personal information stored (F8)	2.05	0.974
9	Satisfied service mechanism (F9)	1.89	0.803
10	Maintains good will/reputation (F10)	2.01	0.831
11	Referred by neighbors (F11)	2.33	1.024
12	To get latest discounts/offers (F12)	2.27	1.044
13	Latest products and services (F13)	2.13	0.943
14	Threat of loss of money (F14)	2.81	1.242
15	Threat of system hacking (F15)	2.66	1.011
16	Affordable cost to access the service (F16)	1.99	0.863
17	Less or no human interface (F17)	2.16	0.973

( ) – Inside parenthesis are the variable labels

Table 3 Chi-square test and measure of sampling adequacy

Kaiser-Meyer-Olkin (KMO) measure (sampling adequacy)		0.813
Bartlett's test of sphericity	Chi-square (approx.)	851.986
	Degrees of freedom (df)	136
	Significance	0.000[a]

[a]Significant at 1% LoS

The Principal Component Analysis (PCA) was used to extract the identified 17 variables and found that the Eigen values of three variables are higher than the standard level of one. It is sufficient to have 50–60% of total variance explained by all the variables extracted by above said methods [14]. The outcome of the analysis is given in Table 6, and from the table, it is understood that 61.078% of cumulative variance are extracted with the help of three factors identified.

3.1 Reliability Level and Grouping of Variables

Reliability of the collected respondents' opinion (data) is to be checked before proceeding further analysis. Hence, Cronbach's alpha was applied on the 17 variables constituted under three factors, and the results are 0.882, 0.835, and 0.755. The values of Cronbach's alpha are higher than the standard value of 0.6 and hence proved the internal consistency of the questionnaire/collected data [15]. The factor

Table 4 Degree of relationship between the variables

Var	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17
F1	1.0																
F2	0.61	1.0															
F3	0.52	0.63	1.0														
F4	0.64	0.64	0.63	1.0													
F5	0.42	0.41	0.34	0.44	1.0												
F6	0.60	0.52	0.42	0.73	0.50	1.0											
F7	0.51	0.53	0.34	0.53	0.52	0.59	1.0										
F8	0.22	0.33	0.11	0.33	0.33	0.31	0.33	1.0									
F9	0.22	0.32	0.14	0.32	0.31	0.34	0.39	0.66	1.0								
F10	0.33	0.44	0.23	0.31	0.34	0.32	0.37	0.52	0.64	1.0							
F11	0.13	0.13	0.11	0.10	0.12	0.13	0.21	0.24	0.33	0.22	1.0						
F12	0.22	0.20	0.11	0.24	0.33	0.33	0.34	0.30	0.25	0.32	0.38	1.0					
F13	0.33	0.33	0.22	0.22	0.44	0.32	0.38	0.31	0.44	0.43	0.41	0.482	1.0				
F14	0.11	0.13	0.10	0.14	0.21	0.11	0.28	0.41	0.11	0.14	0.24	0.43	0.33	1.0			
F15	0.22	0.21	0.10	0.31	0.41	0.09	0.23	0.13	0.32	0.18	0.33	0.44	0.53	0.12	1.0		
F16	0.21	0.14	0.32	0.42	0.10	0.17	0.31	0.22	0.23	0.10	0.42	0.33	0.24	0.53	0.13	1.0	
F17	0.11	0.23	0.33	0.40	0.21	0.14	0.21	0.33	0.23	0.21	0.22	0.33	0.44	0.44	0.23	0.42	1.0

Table 5 Communalities

S.No	Attributes	Initial	Extraction
1	Convenient to work (F1)	1.00	0.669
2	Convenient to work with latest electronic gadgets (F2)	1.00	0.670
3	Paperless operation (F3)	1.00	0.661
4	Less working duration (F4)	1.00	0.757
5	Meet my requirements (F5)	1.00	0.586
6	Useful (F6)	1.00	0.678
7	24 * 7 Service (F7)	1.00	0.549
8	Confidentiality in the personal information stored (F8)	1.00	0.636
9	Satisfied service mechanism (F9)	1.00	0.741
10	Maintains good will/reputation (F10)	1.00	0.535
11	Referred by neighbors (F11)	1.00	0.502
12	To get latest discounts/offers (F12)	1.00	0.517
13	Latest products and services (F13)	1.00	0.547
14	Threat of loss of money (F14)	1.00	0.537
15	Threat of system hacking (F15)	1.00	0.646
16	Affordable cost to access the service (F16)	1.00	0.738
17	Less or no human interface (F17)	1.00	0.521

( ) – Inside parenthesis are the variable labels

Table 6 Outcomes of PCA

	Eigen values/percentage variance explained		
Component	Total	Variance explained in %	Cumulative variance explained in %
1	4.315	25.313	25.313
2	3.668	21.627	46.940
3	2.415	14.138	61.078

loadings of 17 variables are normalized in order to determine the influence of the variables in determining the factor structure. The variance is squared and the squared loadings are taken in to consideration, as factor loadings is the correlation between factors and the variables.

The significant variation for the factors was considered and named after the deviation noted for the variables. The values of the rotated component matrix for the 17 variables are presented in Table 7, and the values are the correlation between the first factor and the variable. All the factor loadings are higher than the standard value of 0.5, with the maximum value as 0.865 and minimum factor loading as 0.560.

The factor loadings for the 17 variables are identified and presented in Table 8 with the factors marked. It is understood from the factor loadings that 24.32% of the variation is explained by the factor Conducive, 23.64% of the variation is explained by the factor Adaptability, and 13.18% of the variation is explained by the factor Security, cumulatively the variation explained by all three factors reaching 61.14%.

Table 7 Rotated component matrix

S.No	Attributes	Component		
		1	2	3
1	Less working duration (F4)	0.825		
2	Paperless operation (F3)	0.817		
3	Convenient to work (F1)	0.783		
4	Convenient to work with latest electronic gadgets (F2)	0.766		
5	Useful (F6)	0.765		
6	24 * 7 Service (F7)	0.607		
7	Meet my requirements (F5)	0.595		
8	Satisfied service mechanism (F9)		0.865	
9	Confidentiality in the personal information stored (F8)		0.798	
10	Maintains good will/reputation (F10)		0.712	
11	Affordable cost to access the service (F16)		0.714	
12	Latest products and services (F13)		0.598	
13	To get latest discounts/offers (F12)		0.560	
14	Referred by neighbors (F11)		0.564	
15	Threat of system hacking (F15)			0.824
16	Threat of loss of money (F14)			0.843
17	Less or no human interface (F17)			0.684

*PCA method of extraction

Table 8 Identification of factors

S.No	Factors	Attributes	Factor loadings
1	Conducive	Less working duration (F4)	0.825
2		Paperless operation (F3)	0.817
3		Convenient to work (F1)	0.783
4		Convenient to work with latest electronic gadgets (F2)	0.766
5		Useful (F6)	0.765
6		24 * 7 Service (F7)	0.607
7		Meet my requirements (F5)	0.595
8	Adaptability	Satisfied service mechanism (F9)	0.865
9		Confidentiality in the personal information stored (F8)	0.798
10		Maintains good will/reputation (F10)	0.712
11		Affordable cost to access the service (F16)	0.714
12		Latest products and services (F13)	0.598
13		To get latest discounts/offers (F12)	0.560
14		Referred by neighbors (F11)	0.564
15	Security	Threat of system hacking (F15)	0.824
16		Threat of loss of money (F14)	0.843
17		Less or no human interface (F17)	0.684

3.2 *Influence of Factors on Fintech Usage*

The significant influence of all the three factors, namely, Conducive, Adaptability, and Security on the customers' attitude toward Fintech is tested with the help of simple regression. The factors such as Conducive, Adaptability, and Security are considered as independent variables while the customers' Fintech adoption is considered as the dependent variable. The regression summary, ANOVA, and the coefficient tables are presented in Tables 9, 10, and 11, respectively, as given below. The regression summary table confirms that the values of R and R^2 are higher than the standard value of 0.6, and further the Durbin-Watson test reveals the model fit as the data is less than 2. Hence, the regression model considered as fit and well defined. From the ANOVA table (Table 10), it is understood that the value of F statistics is 4.594, and it is statistically significant at 1% level of significance as indicated by the significance value. Hence, the validity of the model is proved and proceeds further to assess the coefficient values.

The values of coefficients are presented in Table 11 for all three factors along with the constant value identified from the regression analysis. The t test value and its significance confirmed that significant influence on Fintech adoption was

Table 9 Regression summary for the usage of Fintech services

R	R^2	Adjusted R^2	S.E.	Durbin-Watson
0.870	0.759	0.759	0.462	0.794

Table 10 ANOVA

Model	Sum of squares (SoS)	Degrees of freedom (df)	Mean square	F	Sig.
Regression	6.839	6	2.343	4.594	0.003[a]
Residual	43.524	193	0.545		
Total	50.363	199			

[a]Significant at 1% LoS

Table 11 Regression summary – Fintech usage & Fintech factors

Model	Unstandardized coefficients		Standardized coefficients	T	Sign	95% confidence level	
	B	Std. error	Beta			Lower bound	Upper bound
Constant	0.867	0.343		2.642	0.005[a]	0.2284	1.524
Factor 1 (Conducive)	0.485	0.245	0.364	2.624	0.005	0.167	0.884
Factor 2 (Adaptability)	0.094	0.182	0.084	0.585	0.652	−0.184	0.351
Factor 3 (Security)	−0.024	0.121	−0.021	−0.124	0.814	−0.169	0.184

[a]Significant at 1% LoS

observed in a variable, namely, Conducive, and other two factors failed to influence significantly as the t test values are not significant either at 1% or 5% level of significance.

The regression equation can be formatted as:

$$Y = 0.867 + 0.485 \times X$$

where Y is the Fintech usage, X is the Conducive factor.

Thus by concluding that the identified factor (Conducive) is significantly influencing the Fintech usage of the banking customers from Tamil Nadu, and the other two factors are not influencing significantly.

4 Conclusion

This paper examines the factors influencing the banking customers' in adopting Fintech services. The Fintech attributes and the customers opinion about Fintech adoption were collected using the framed variables (17 No's) constructed under three factors, namely, Conducive, Adaptability, and Security. The reliability of the framed questionnaire was tested using Cronbach Alpha and found satisfactory. Further, the Exploratory Factor Analysis confirmed the total variance explained about 61.14% constituting, 24.32% of the variation from Conducive factor, 23.64% of the variation from Adaptability factor, and 13.18% of the variation from Security factor. Further, it is found that the customer wants to do banking transactions in a convenient way in a short time without going to the bank and is confident about the services offered by the bank. The regression analysis proved that out of three factors identified for this study, Conducive has significantly influencing the banking customers toward Fintech adoption, whereas, the other factors, namely, Adaptability and Security has not influencing the customers significantly toward Fintech adoption. Overall, these results can be seen as supporting additions to existing research pertaining to Fintech adoption by the banking customers.

4.1 Limitations of the Study

The data collection of this study is restricted and limited to Tamil Nadu only. An exclusive study can be done on various factors affecting the use of Fintech among banking customers. This study can be extended further by analyzing the influence of customers' demography, intention to adopt, knowledge level of digital transaction, and their attitude toward using Fintech.

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