J. Farm Sci., 36(2): (195-201) 2023

RESEARCH PAPER

Examining client tech-readiness in the digitization of Microfinance

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(Received: May,2023 : Accepted: June, 2023)

Abstract: The study on "examining client tech readiness in the digitization of microfinance" was taken up during the period in October to March 2021 in India, first and the most literate district of most literate state namely Kerala. The period coincided with the peak of COVID-19 and the data on the readiness of 500 clients were collected using a pretested structure questionnaire developed for the purpose. Statistical analytical methods used were exploratory factor analysis, confirmatory factor analysis and goodness of fit. Among the most influencing factors were the use of ATM counters with their own card, a feeling of insecurity among the clients that it will be difficult to avail microfinance if they don't switch over to technology use; all services are integrated with suitable technologies; loss of optimism- "A feeling that more things are going wrong" and the natural urge to know about the technologies before fellow clients which is a factor of innovativeness. This study is of utmost relevance as digitalisation has been felt as an imperative and inevitable need and these aspects serve as directive principles and need to be prioritised in the process of implementation.

Key words: ATM, Internet banking, Innovativeness, Mobile banking, Techreadiness

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Introduction

The use of state-of art ICT (Information and Communication Technology) is now spread in every sphere of human activity beginning from the home to business activities. The rapid development and advent of information technology in the financial sectors can be placed under three stages-digitalisation, digital transformation and digital financial inclusion (Mykailiuk *et al*, 2021). However, It's use is not uniform across the various financial providers neither among different countries nor within a country (Kumar *et al.*, 2006; Ozuru *et al.*, 2010; (CBK 2013; Mulwa and Waema, 2016 and Kalui, 2019).

The reasons ascribed to this is the non uniformity is the tech-readiness (TR), e-readiness in ICT adoption, resource availability and technological expertise (Kalui, 2019). In this paper we aim at study of technology readiness as the factor in the process of digitalisation of microfinance.

Technology readiness has been defined in many ways. Martin *et al,* (2008) which refers it as a combination of beliefs, related to technology that collectively determines the inclination in a customer, an employee or executive to adopt new technologies in order to reach his or her objectives. A second definition put forth by Parasuraman (2000) is the "propensity to embrace or use new technology to accomplish his or her goals in home or work life. A third in this line is based on emotional factors influencing adoption where in, it has been defined as the people's productivity to embrace and use new technology to achieve their goals at home or work place (De Silva and Sutha, 2019). The fourth definition in this line is proposed by Durga and Singla (2019) refers TR as the extent to which an organisation is capable of making optimal use of technical infrastructure and architecture for the purpose of employing social media technologies. Analysis of all the three reveals that the first speaks of all three players to adopt technology, the second and third on the level and inclination but the second is most apt within the framework of this study as the major utility is to remain connected anywhere and anytime. On the other hand, the tech readiness levels (TRL) are a method of estimating the maturity of technologies and is not the subject of the present study.

Information lies at the heart of microfinance and information technology can help to achieve various advantages such as added value, reduced costs, improves efficiencies increased outreach and to solve problems. The large data in terms of clientele base, small loans a wide depth of outreach are problems paced by MFI. When this information is stored on paper by hand its processing becomes slow and cumbersome, when it is held on a computer or digital platform it can be stored, accessed, processed, analysed and on the contrary presented for taking logical vital decision with maximum efficiency of precision and speed.

TR or the digitalisation of financial institution is one that has received maximum attention and microfinance and MFI are no different. MF deals with clients who are resource impoverished, lack formal access to credit and belong to the class of poorest of the poor. Hence microfinance is hailed as a means to pull the poor out of misery and poverty the first among SDG of the UN. This study has following objectives: a) To identify the most influencing factors that contribute to tech readiness of clients in adoption of technology b) Grouping the major factors that influence the tech readiness of clients and c) Testing and validating the model developed regarding the technology readiness.

This article follows traditional presentation of a research article with review of literature, Methodology, Results, Discussion, Conclusion and Recommendation.

Material and methods

Study area and sampling

The study area was selected after discussions with the various functionaries of MFI's.The locale of the study was selected as Kottayam district as it was the first declared cent percent literate district in the India and also known for financial literacy and commonly called as land of letters. The study centredon clients selected from all the five thaluks of the district.

The period of collection of data was from 2021-22 the period coinciding with the peak of COVID-19. The clients were those who had taken microloans from NABARD (National Bank for Agriculture and Rural Development). Data was elicited from 500 clients the requirement as specified in the studies on the sample size by Krejcie and Morgan (1970).

Instrument and data collection

The study was taken up using a structured questionnaire developed for the purpose which was used as the tool for data collection. The questionnaire was pretested and circulated among a learned group consisting of academicians and professionals who have a proven track of working experience in microfinance. The questionnaire consisted of statements developed mostly from TAM (Davis, 1986) and TRA (Ajzen, 1975).The answers to each statement was ranked on a five point Likert scale ranging from 1 to 5 following the psychometric scale in research.

The data was collected by approaching each client individually and the response elicited against each statement which is the respondents rating to each statement. The choices ranged from strongly disagree to strongly agree.

Data analysis

The clients of NABARD were given the questionnaire to fill. Out of 600 respondents, five hundred which were fully filled in were selected for the further analysis study.

The statistical software SPSS (20.0) was used to analyse the data. The reliability of the questionnaire was tested using coefficient of Cronbach's alpha for all the questions in questionnaire.The alpha value ranged from (0.706 to 0.776) that proved strongly the reliability of the questionnaire. A Cronbach's value greater than 0.7 is considered generally acceptable (Cronbach's, 1951).It is given in Table 1.

Pearsons correlation was used to work out the correlation coefficients which ranges from -1.0 to +1.0 the proximityto 1.0 whether negative or positive shows a stronger relationship, it is given in Table 2. Similarly, the regression values was worked out of the value (p) is less than 0.05 the variable is making significant contribution to the prediction of the dependent variable (Pallant, 2003).The significant test was conducted for each of the variable and this indication was made explicit as to whether the variable is making statistically significant contribution to the equation, as shown in Table 3. Evaluation of the latent construct measurement model for its validity and reliability was made by using Confirmatory factor Analysis.

Table 1. Reliability table

Factors	Mean	Standard Deviation	Cronbachalpha
Udtr1	4.5560	.61938	.714
Udtr2	4.1100	.53896	
Udtr3	4.3400	.58402	
Udtr4	4.2220	.56334	
Udtr5	4.8160	.53546	
Udtr6	4.2660	1.04183	
Udtr7	3.8180	1.30702	
Optimism1	4.0000	92179	.706
Optimism2	3.8040	.68008	
Optimism3	4.0020	.83869	
Optimism4	3.9440	.66464	
Optimism5	4.1140	.65258	
Optimism6	4.2300	.75514	
Optimism7	4.0820	.53652	
Innovativeness1	4.3800	.97442	.716
Innovativeness2	3.8960	.80404	
Innovativeness3	4.2560	.88772	
Innovativeness4	4.2920	.57218	
Innovativeness5	3.6620	1.47244	
Innovativeness6	4.3080	.72262	
Discomfort1	4.1420	1.00591	.710
Discomfort2	3.6500	1.19094	
Discomfort3	3.7040	1.34014	
Insecurities1	3.5460	1.05552	.724
Insecurities2	3.4000	.95594	
Insecurities3	3.4220	1.07061	
Insecurities4	3.5660	1.09180	
Insecurities5	4.1220	.65725	
Insecurities6	4.4240	.87048	
ATM1	3.9500	1.08159	.740
ATM2	3.3900	1.20864	
ATM3	4.0520	1.05997	
Mobilebanking1	3.7540	1.04675	.752
Mobilebanking2	3.9480	.94397	
Mobilebanking3	3.9720	1.01651	
Internetbanking1	3.5240	1.25562	.776
Internetbanking2	3.3320	1.21025	
Internetbanking3	3.7720	1.23412	

The convergent validity of the measurement model was ascertained by examining the loading factor, extracted mean variance and the reliability (Hair *et al.,* 2010). The recommended threshold level is 0.5.All values above 0.5 which indicated convergent validity was taken in the present study.

Factor analysis

The factor analysis method was used in the study consisted of Exploratory Factor Analysis- which consisted of reduction of a large number of correlated variables called factors. The condition for the EFA is to satisfy the requirements of a factor loading value of >0.5.The value of 0.5 is considered as an acknowledgement level for factor loading the study the cut off the value was fixed at 0.6. The exploratory factor table is given in Table 4. Further, the confirmatory factor analysis (CFA) was used to confirm the discriminant validity of the factor scale. After extraction the matrix of factor loading was submitted to a various orthogonal rotation as applied by Kaiser (1958). The

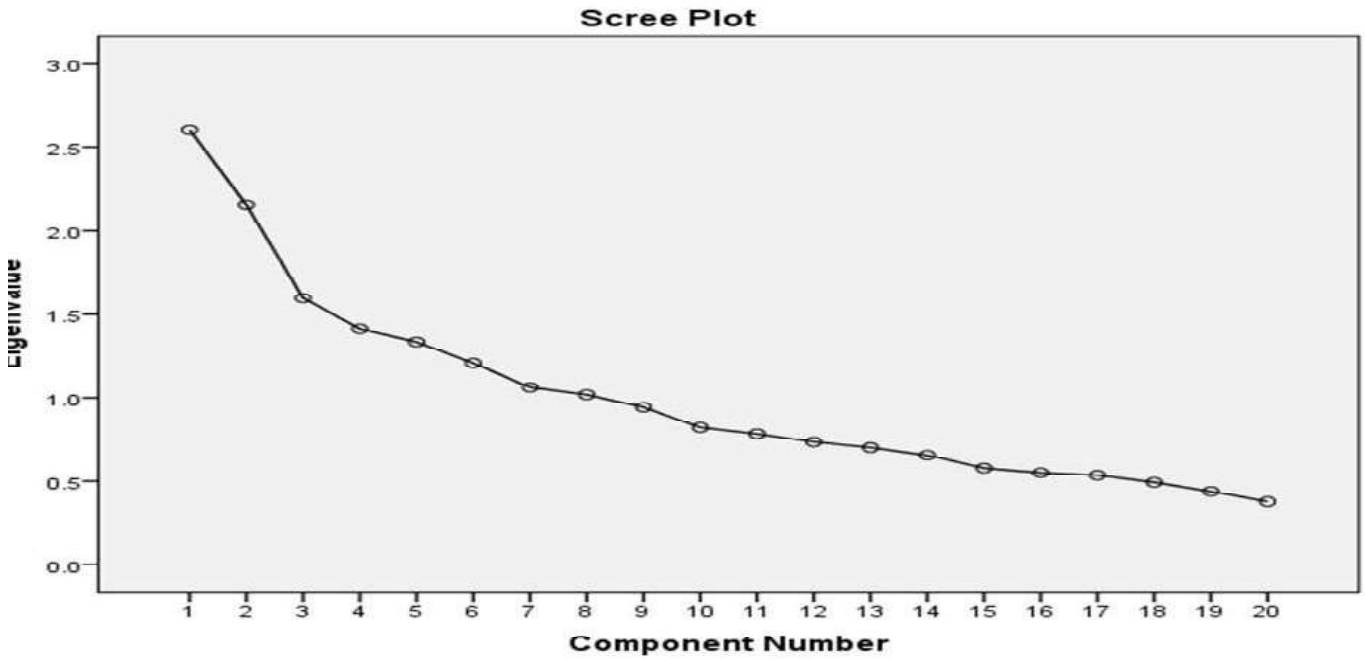

Fig.1 Scree plot diagram

array of communality, the amount of variance accounted by the common factors together was estimated by the highest coefficient in each array as suggested by Seiller and Stafford (1985).

Measurement model

Once the CFA was done the assessment of the fit of the measurement model was obtained. The criterion to evaluate the overall goodness of fit for analysing the data was fixed as chi-square test p>0.01, GFI and AGFI from 0.8 or more and RMSEA 0.05 or lower.

Statistical analysis

The data on EFA was carried out using the statistical package for social sciences (SPSS) version 20.0 whereas AMOS (23.0) was used to perform the confirmatory factor analysis. Both descriptive and inferential statistics were used. The level of model fitness was finalised by measuring the overall fitness of good as already discussed above.

Results and discussion

The results of the study are presented under the broad subheadings as presented below.These studies revealed that on aspects of general understandings of tech readiness, optimism, Innovativeness, insecurity the mean varied from 4 to 5.00 where as aspects of discomfort, insecurity and of ATM on aspects of the mean ranged mostly from 3 to 4.0. The standard deviation which measures the spread of the data about the mean value or how far each observed value is from the mean.

A similar picture emerged in the case of the SD. The SD of general understanding, optimism and innovativeness showed a valueless than one but insecurity, discomfort and aspects of ATM revealed values greater than one.

Testing of reliability

The results of the testing of reliability presented in table- revealed that the Cronbach's alpha value of all the aspects of the study were above 0.7. The value ranged from 0.706 in case of optimism to 0.776 in case of internet banking. The value of all the other aspects namely were general understanding (0.714), Innovativeness (0.716), discomfort (0.710), Insecurity (0.734) and ATM (0.740).Thus it is evident that each of construct used in the study was more than the generally accepted limit of above 0.5 which signified that all the observed variables were reliable and hence not excluded for further analysis.The reliability table is given in Table 1.

Exploratory factor analysis

The study revealed that all the observed variables not only satisfied the requirements of reliability coefficients but was also much more than the acceptable limits. Hence, the factor analysis was carried out to study the convergent and discriminant validity and the results presented in Table 4.

The scree plot with the factor on the horizontal axis (RHS) and the Eigen values on the vertical side revealed that there were eight factors with 28 statements out of a total of thirty-eight statements used in the study (Figure 1).

Therefore, it became a necessity to reduce and then eliminate the minor influencing factors and identify the most influencing factors. Hence, it was further subjected factor reduction using dimension reduction applying the principal component analysis method for EFA.This resulted in seven statements (6 independent variables statements and one dependent variable/ statement) falling under six factors. The factor consisted of single statement of use of ATM "I withdraw money from ATM using my ATM card, the second factor fell under the insecurity

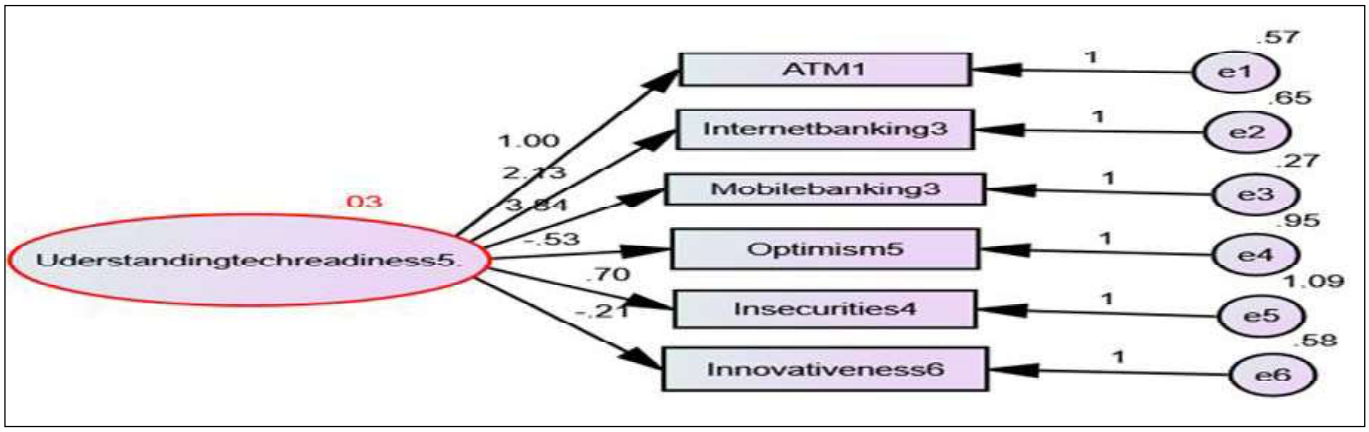

Fig 2 Confirmatory factor analysis

Table 2. Correlaton

Variables	Test type	Understtech Readiness	Optimism	Innovatism	Discomfort	Insecurity	ATM	Mobile Banking	Internet Banking
Understtech	Pearson Correlation	1	.118**	.041	.041	.097*	.134**	.236**	.135**
Readiness	Sig. (2-tailed)		.008	.357	.360	.031	.003	.000	.003
Optimism	Pearson Correlation	.118**	1	.426**	-.026	.514**	.260**	.139**	.273**
	Sig. (2-tailed)	.008		.000	.556	.000	.000	.002	.000
Innovatism	Pearson Correlation	.041	.426**	1	-.194**	.560**	.344**	.091*	.234**
	Sig. (2-tailed)	.357	.000		.000	.000	.000	.041	.000
Insecurity	Sig. (2-tailed)	.041	-.026	-.194**	1	-.140**	-.077	.062	.002
	Pearson Correlation	.360	.556	.000		.002	.087	.169	.973
		.097*	.514**	.560**	-.140**	1	.318**	.171**	.278**
	Sig. (2-tailed)	.031	.000	.000	.002		.000	.000	.000
ATM	Pearson Correlation	.134**	.260**	.344**	-.077	.318**	1	.356**	.374**
	Sig. (2-tailed)	.003	.000	.000	.087	.000		.000	.000
Mobile	Pearson Correlation	.236**	.139**	.091*	.062	.171**	.356**	1	.493**
Banking	Sig. (2-tailed)	.000	.002	.041	.169	.000	.000		.000
Internet	Pearson Correlation	.135**	.273**	.234**	.002	.278**	.374**	.493**	1
Banking	Sig. (2-tailed)	.003	.000	.000	.973	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3. Regression table

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.731[a]	.534	.520	.46879	.534	37.039	15	484	.000

a. Predictors: (Constant), Ewillingness, Optimism, connectedness, Discomfort, ATM, Egovernance, Innovatism, Mobile Banking, Eliteracy, Eexperience, Credit Card, Insecurity, Ebusiness, Internet Banking, internet usage

aspect *i.e.* "It will be difficult for me to avail microfinance, if I don't use technology", the third most influencing factors had two statements under the major aspect of internet banking a) Internet banking has helped me in viewing my savings regularly and b) mobile banking apps are more secure and safe for financial transactions. The fourth most influencing factor was that all the services provided by the microfinance institution are integrated with suitable technologies. The fifth factor was one that was of optimism of the clients *i.e.* "When it comes to using microfinance technology, I expect more things to go wrong than right. The last sixth factors centred on Innovativeness which was a response to the statement "I get to know the use of technology before others do". The confirmatory factor analysis is given in Figure 2.

Confirmatory factor analysis

The overall results revealed that the measurement exhibited a high degree of discriminant validity. The validity of the measurement of EFA was tested and confirmed. The conformity research model is presented in fig 2.

Evaluation of the goodness of fit using using linears structure model

The evaluation of the fit of the model is presented in Table 5, which revealed a chi-square value of 27.084, P value of 0.001, RMSEA 0.0063, RMR of 0.04,GFI of 0.984, and AGFI 0.962. These indices confirm that the most influencing factors of technology readiness of clients in adoption of technology are in the use of ATM, feeling of insecurity that a client will not be able to avail

Table 4. Exploratory factor analysis

	Component Matrix							
	1	2	3	4	5	6	7	8
Atm1	.711							
Udtr3								
Udtr1								
Atm3								
Mobilebanking2								
Optimism6								
Insecurities5		.712						
Innovativeness3								
Discomfort2								
Discomfort3								
Insecurities6								
Internetbanking3				.625				
Mobilebanking3				.599				
Atm1								
Udtr5					.615			
Udtr6								
Innovativeness4								
Optimism5						.617		
Optimism7								
Innovativeness6							.619	

Extraction Method: Principal Component Analysis.
A. 8 Components Extracted.

microfinance positive effects of internet banking, Internet banking helps me to viewing savings regularly, mobile apps are more secure and safe for financial transactions, all services provided by MFI are integrated with suitable technologies, an aspect of optimism a feeling of being innovative with use of technology in digitalisation of the microfinance sector.

A critical analysis of the results reveals very interesting results. Though most of the clients belong to the impoverished group the study area selected is the most literate part of the subcontinent but belong to the resource impoverished section. Hence, they have no access to formal banking sector as they can neither provide collateral nor are backed up by any public or private support.

The first most influencing factor is the use of ATM counter with their own ATM card revealed that given a backup they are ready to move into cashless transactions. This factor cannot be looked in isolation but becomes more meaningful when it is combined with the third most influencing factor of the positive effects of technology adoption. The two factors of viewing the savings regularly and the belief of the security of the apps go hand in hand. The first being a direct ownership of ATM card and adoption and second aspect of internet banking wherein the client has access to check and confirm the savings gives a boost in level confidence and automatically making the client tech ready. Though not exactly identical some of the studies in this direction are that of Auta, 2010;Masocha *et al*., 2011; Al fahim, 2012; Chavan, 2013; and Mwongeli *et al.,*2017.

Another possible reason for this result would have been the particular period of peak COVID-19 when the study was conducted forcing the clients to tech readiness were due to compelling factors Pramanick *et al*., 2019, Sanchez *et al*., 2020; Halpern *et al.,*2021,than a voluntary decision (Ozuru, 2010) or a combination of both (Li *et al.,* 2021, Luo,2022). A third aspect which would have promoted and made it as most influential factor is its utility at anytime and anywhere.

The second most influential factor is the insecurity felt by the microfinance clients it will be difficult to avail microfinance if the clients don't switch to using technology or are not tech ready. This has already been discussed as a compelling reason that was more a felt need with COVID-19, particularly considering the far outreach and large clientele base of the microfinance sector. Microfinance is the only resort of the poor, and hence the compelling requirements to be tech ready and tech driven has at least to some extent made the client become tech-savvy.

The fourth most influencing aspect is all that services are integrated with suitable technologies. The positive effects of having different services on a single platform and its all-round availability are a distinct advantage that has been realised by clients. The studies of Kalui, (2019) point to the unlimited potential available with technological advancement. This throws light on another major aspect of financial inclusion in the micro finance sector (Pauli, 2019).

The next aspect was the of loss of optimism and an expectation of more things are going wrong flows fundamentally from the second aspect spelled out as insecurity. Typically, this exposes the vulnerability of microfinance clients but at same time has to be read in combination with a feeling of being innovative as revealed by another aspect emanating from the study that there is a natural urge to know more of use of technology before others do. These two aspects bring out both the constraint and challenges faced by the MFIs on the one side but on the more important side underlines the absolute necessity promoting awareness instilling of confidence on clients and planning capacity building programmes particularly on human resource development focused on technology use, adoption, educating clients on the multiple uses and the unlimited potential of its use in this vital sector.

Conclusion

The study on"examining client tech readiness in the digitization of microfinance" has led to creative thoughts and interpretation on the fast-emerging process of use of technology advancement in the microfinance sector. The most influencing factor in tech readiness of clients have been identified as 'promoting effects of use of ATM', a feeling of insecurity that microfinance availability will become difficult of the client cannot use technology, the positive effects of internet banking, the

Table 5. Goodness of fit

Chisquarevalue	df	Pvalue	chisquare/df	RMSEA	RMR	GFI	AGFI	PGFI
27.084	9	.001	3.0093	.063	.040	.984	.962	.422

integration of all services with technologies, a loss of optimism and a general feeling of more things going wrong than right. Another factor influencing tech readiness is a feeling of innovativeness as the clients have a natural urge to use the latest technology before others adapt to it. Though the most influencing factors have been identified the study confirms the absolute need of human resources development focuses on technological applications and uses to overcome the challenges and bring in awareness of the rapid technological advancements in this vital sector.

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