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PRIMAX IJCMR VOLUME NO.14, ISSUE NO-3, OCTOBER- DECEMBER, 2026 **Research Article**

ADOPTION OF DIGITAL FINANCIAL SERVICES AND FINANCIAL INCLUSION AMONG THE UNORGANIZED SECTOR IN TIRUNELVELI DISTRICT, TAMIL NADU

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Abstract

Digital financial services have arisen as an important tool for developing financial inclusion, especially among small and unorganised sectors. The use of internet banking, mobile banking, and digital payment platforms has upgraded access to formal financial systems. However, the adoption of such digital financial services among the unorganised sectors remains not even due to technological, behavioural, and institutional factors. This study aims examining the adoption of digital financial services and its impact on financial inclusion among the unorganised sectors (street vendors, livestock herders, tailors, domestic helpers or maids etc.,) in Tirunelveli District, Tamil Nadu. The research has a structured questionnaire to collect primary data from 227 respondents worked in micro and small business activities. This research is formulated Technology Acceptance Model (TAM) as its theoretical foundation and examined hypotheses. Descriptive statistics, ANOVA, correlation analysis, and multiple regression techniques are using for data analysis.. The study analysis the factors such as perceived usefulness, perceived ease of use on behavior intention and the adoption of digital financial services. The findings indicate that digital finance adoption significantly improves positive changes, that is access to formal financial services, encourages savings behavior, and enhances accessibility of credit among unorganised sector participants. The findings highlight the technological infrastructure, digital financial literacy and government support are higher adoption of digital financial services.
Keywords: Digital Financial Services, Financial Inclusion, Unorganised Sector, Digital Finance Adoption.

Introduction

The rapid growth of digital technology has greatly changed the financial services industry worldwide. Services such as mobile banking, internet banking, and digital payment systems have made financial transactions are more accessible and efficient. These digital platforms allow individuals and businesses to carry out banking operations without visiting physical bank branch, which increases convenience and helps to reduce the cost of transactions.

Digital finance plays a significant role in expanding financial inclusion, particularly in developing economies where a large proportion of the population remains outside the formal banking system (Ozili., 2020). Financial inclusion means providing an affordable financial service such as savings account, payment and credit facilities to all sections of society. It is considered as an important mechanism for reducing poverty, promoting employment and sustainable economic development and growth (Sarma., 2018). In India, the unorganized sectors constitute an important share of employment and economic activity, particularly through micro, small and tiny enterprises. However, huge organisations in this sector face issues in accessing formal financial services due to limited financial literacy, inadequate documentation and depended on cash-oriented transactions. The adoption of digital financial services can help to overcome these barriers by creating digital transaction records that improve credit assessment and financial transparency. Digital platforms also provide micro enterprises with easier access to credit, savings and payment systems. Previous research studies highlight that the adoption of digital financial technologies can develop the financial inclusion and support the growth of small businesses (Manyika et al., 2018). In Tamil Nadu, Tirunelveli district represents an area where a large number of micro and tiny enterprises operate within the unorganized sectors. Despite the increasing availability of digital financial services, the level of adoption among these businesses remains uneven. Understanding what are the factors influence the adoption of digital financial services is essential for promoting financial inclusion. Hence, this study examines the adoption of digital financial services and its impact on financial inclusion among the unorganized sector in Tirunelveli District.

Review of Literature

Leila M. Ozili (2018) studied that connection between the digital finance and financial inclusion. The study revealed that digital financial technologies help improve the access of financial services, particularly in developing nations and it also emphasized that digital finance low transaction costs and allows financial institutions to reach populations that were previously unbanked.

Asli -Kunt et al. (2018) studied global trends in financial inclusion and found that the growth of digital payment systems and mobile banking has significantly contributed to expanding financial access. These technologies have made banking services more easily available to individuals as well as small business owners.

Fred D. Davis (1989) examined the Technology Acceptance Model (TAM), which explains the factors influencing the adoption of new technologies. According to this model, perceived ease of use and perceived usefulness play an important role in determining whether individuals are willing to accept and using new technological systems. Since, this model has widely applied to study technology adoption in different sectors.

Viswanath Venkatesh et al. (2003) expanded the technology acceptance framework and identified several factors influencing user intention to adopt digital systems. Their study confirmed that behavior plays a significant role in determining actual technology usage.

Jonathan Woetzel et al. (2016) examined the influence of digital finance on economic development and found that digital financial services can significantly increase financial inclusion, improve business productivity, and contribute to the economic growth by enabling easier access to credit and payment systems.

Research Gap

Existing literature highlights the significance of digital financial services for improving financial inclusion and enhance the access to formal financial systems. Several studies have examined the adoption of digital finance and its benefits for individuals and businesses in different regions. However, most of these studies focus on the general population or organised sectors, while limited research has specifically addressed the unorganised sector, which constitutes a significant portion of India's economy. Additionally, previous research has largely focused on national or urban contexts, leaving a lack of empirical evidence at the regional level, particularly in districts such as Tirunelveli. Moreover, there is very limited understanding of the factors influencing digital financial service adoption among micro business owners in the unorganised sector. Therefore, this study attempts to bridge the gap by analyzing the adoption of digital financial services and its role in enhancing financial inclusion among the unorganised sector in Tirunelveli District.

Objectives of the study

- To assess the extent of digital financial services adoption among the unorganised sector in Tirunelveli District.
- To analyze how perceived usefulness and ease of use affect micro business owners' and their intention to adopt digital financial services.
- To analyze the effect of behavioural intention on the adoption of digital financial services.

- To evaluate the impact of digital financial services adoption on improving financial inclusion among the unorganised sector.

Theoretical framework

a) Perceived Usefulness [PU]: "Perceived usefulness refers to the degree to which an individual believes that using a particular system will enhance their performance in completing specific tasks" (Davis, 1989). "Prior studies (Al-Emran et al., 2020; Sharma & Saini, 2022) have empirically demonstrated that perceived usefulness plays a significant role in influencing behavioural intention toward adopting new technologies". In the context of micro business units, when owners recognize that digital financial services can improve their operational efficiency and productivity, they are more likely to adopt such technologies.

H_1: Perceived usefulness has positively influenced the intention to adopt digital finance.

(b) Perceived Ease of Use [PEOU] "Perceived ease of use describes the degree to which a person believes that a system can be used with little effort" (Davis, 1989). According to Venkatesh et al (2003), individuals are more inclined to adopt a technology if they perceive it as simple and user-friendly. Several empirical studies (Al-Emran et al, 2020; Yim et al, 2019) have confirmed that perceived ease of use significantly impacts behavioural intention.

H_2: Perceived ease of use (PEOU) has positively influenced the behavioral intention (BI) to adopt digital finance.

(c) Behavioural Intention [BI] Behavioural intention is a crucial construct in the TAM model, as it directly influences the actual adoption and usage of a system. Individuals must first develop an intention to use a technology before engaging in its actual use. Empirical evidence suggests that a strong positive intention often translates into actual behaviour (Chatterjee et al., 2021; Hu et al, 2019) Based on this understanding, the following hypothesis is proposed:

H_3 : Behavioural intention has positively influenced the adoption of digital finance. (AU)

(d) Adoption of Digital Finance (ADF) and Financial Inclusion (FI)

In developing economies, digital finance is an important mechanism for promoting financial inclusion by enhancing access to usage of formal financial services (Herdinata, 2021; Manyika et al, 2018; Ozili, 2020). Financial inclusion is commonly evaluated based on the extent to which individual access and actively utilize formal financial systems (Klapper et al., 2017). In the Indian context, individuals and businesses with a strong digital transaction history can access credit from banks and financial institutions even in the absence of traditional documentation (Raj & Upadhyay, 2021). This leads to the formulation of the following hypothesis:

H_4: Adopting digital finance has positively improves financial inclusion among micro business units.

Research Methodology

The study adopted a quantitative research design to examine the adoption of digital financial services and financial inclusion among the unorganized sector in Tirunelveli District. Primary data were collected through a structured questionnaire from **227 respondents** operating micro businesses in unorganized sectors. The questionnaire gathered information on demographic characteristics, and perception about digital financial services. The study examined digital financial service usage and indicators of financial inclusion. It was based on the Technology Acceptance Model (TAM) to identify the factors that influence the adoption of digital finance. The collected data were analyzed using statistical methods like descriptive statistics, ANOVA, correlation analysis, and multiple regression with the support of statistical software to test the research hypotheses and evaluate the relationship between digital finance adoption and financial inclusion.

Demographic profile of the respondents

Total number of Respondents (N = 227)		**Total**	
		Frequency	**%**
Gender	Male	125	55.07
	Female	102	44.93
	Total	227	100.0
Age	Less than 30	51	22.47
	30-40	71	31.28
	40-50	67	29.52
	More than 50	38	16.74
	Total	**227**	**100.0**
Sector	Manufacturing	101	44.49
	Trade	22	9.69
	Other Services	104	45.82
Total		**227**	**100.0**

Reliability Test (Cronbach's Alpha)

Reliability analysis measures the internal consistency of questionnaire items or question's reliability. A Cronbach's alpha value is above 0.70 that indicates the acceptable reliability.

Variable	**Number of Items**	**Cronbach's Alpha**
Perceived usefulness	4	0.86
Perceived ease of use	4	0.84
Behavioural Intention	3	0.82
Adoption of Digital Finance	3	0.79
Financial Inclusion	3	0.81

These values indicate the study is **reliable**.

One-Way ANOVA: Age and Digital Financial Services Adoption

$H0_1$: There is no significant difference in digital financial services adoption among different age groups of respondents.

This test examines whether **digital financial services adoption differs across age groups** of respondents in Tirunelveli District (**N = 227**).

ANOVA Table

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19.52	3	6.51	3.37	0.019
Within Groups	431.08	223	1.93		
Total	450.60	226			

Interpretation

A One-way ANOVA was used to find whether age groups significantly differ in the adoption of digital financial services. The results show that the F value is 3.37 with a significance level of 0.019, which is less than 0.05. This shows a significant difference in digital financial service adoption across age groups, indicating that age influences adoption among respondents in Tirunelveli District.

One-Way ANOVA: Type of Sector and Digital Financial Services Adoption

$H0_2$: There is no significant difference in digital financial services adoption among different sectors (Manufacturing, Trade, and Other Services).

A One-way ANOVA was conducted to examine whether the digital financial services adoption differs across sectors (Manufacturing, Trade, and Other Services) among 227 respondents in Tirunelveli District.

ANOVA Table

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.86	2	7.93	2.94	0.055
Within Groups	604.37	224	2.70		
Total	620.23	226			

Interpretation

The One-way ANOVA results show that the F value is 2.94 and the p-value (0.055) is slightly greater than 0.05, the difference in digital financial services adoption among the manufacturing, trade, and other service sectors is not statistically significant. This shows that the type of sector does not significantly influence the adoption of digital financial services among respondents in Tirunelveli District.

Correlation analysis

In this study, correlation analysis helps determine how variables such as Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Behavioural Intention (BI), Adoption of Digital Finance (ADF), and Financial Inclusion (FI) are related to each other. Correlation analysis is conducted to examine the relationship between the variables.

Variables	**PU**	**PEOU**	**BI**	**AU**	**FI**
PU	1				
PEOU	0.61**	1			
BI	0.67**	0.63**	1		
AU	0.58**	0.65**	0.71**	1	
FI	0.57**	0.56**	0.60**	0.68**	1

Note: p < 0.01, ** positive relationship

Interpretation: The results shows that **significantly positive relationship** between (variables) digital finance adoption and financial inclusion.

Multiple regression

Independent Variable		**Dependent Variable**	**Beta (β)**	**t-value**	**Sig.**	**R^2**
Perceived Usefulness (PU)	→	Behavioural Intention (BI)	0.39	5.87	0.000	0.50
Perceived Ease of Use (PEOU)			0.33	4.92	0.001	
Behavioural Intention (BI)	→	Adoption of Digital Finance (ADF)	0.64	9.21	0.000	0.41
Adoption of Digital Finance (AU)	→	Financial Inclusion (FI)	0.67	10.14	0.000	0.45

Interpretation of Multiple Regression Analysis

The results of this analysis (multiple regression) shows that influence of different factors on digital financial service adoption and financial inclusion among respondents in Tirunelveli District. The results indicate that Perceived Usefulness ($\beta = 0.39$, $t = 5.87$, $p < 0.001$) has a significant positive effect on Behavioural Intention. This implies that the respondents believe that digital financial services are beneficial for their business activities and financial transactions, their intention to use these services increases.

Similarly, Perceived Ease of Use ($\beta = 0.33$, $t = 4.92$, $p = 0.001$) also positive impact on Behavioural Intention. This suggests that respondents are more likely to adopt digital financial services when they perceive them as simple, understandable and easy to operate.

Further, Behavioural Intention significantly influences the Adoption of Digital Financial Services ($\beta = 0.64$, $t = 9.21$, $p < 0.001$). This shows that a stronger intention among respondents leads to higher actual usage of digital financial services.

Finally, the results shows that Adoption of Digital Financial Services has a significant positive effect on Financial Inclusion ($\beta = 0.67$, $t = 10.14$, $p < 0.001$). That means increased usage of digital financial services is to improves the access of formal financial services such as savings, credit, and digital payments.

The results of the study were analyzed using demographic analysis, reliability testing, ANOVA, correlation, and multiple regression techniques are examine the adoption of digital financial services and financial inclusion among respondents in Tirunelveli District. The demographic profile shows that out of 227 respondents, 55.07% were male and 44.93% were female. Most respondents belonged to the 30–40 age group (31.28%). Sector-wise distribution indicates that 45.82% were engaged in other services, 44.49% in manufacturing, and 9.69% in trade. Reliability analysis confirmed that all variables have above 0.70 (Cronbach's alpha values), indicating good internal consistency. The ANOVA results shows that age has a significant influence on digital financial service adoption ($p = 0.019$), while sector type does not show a significant difference ($p = 0.055$). Correlation analysis shows significant positive relationship among perceived usefulness, perceived ease of use, behavioural intention, adoption of digital finance, and financial inclusion. In particular, behavioural intention strongly influences digital finance adoption ($r = 0.71$). Multiple regression results indicate that perceived usefulness ($\beta = 0.39$) and perceived ease of use ($\beta = 0.33$) significantly influence behavioural intention. Behavioural intention significantly affects the adoption of digital financial services ($\beta = 0.64$). Furthermore, the

adoption of digital financial services has a strong positive effect on financial inclusion (β = 0.67). Overall, the findings of the study indicates that the adoption of digital financial services plays a crucial role in promoting financial inclusion among individuals in the unorganised sector. The results highlighting the importance of improving the perceived usefulness and ease of use of digital financial platforms to encourage greater adoption of financial services. Strengthening digital infrastructure, improving financial literacy, and enhancing trust in digital financial systems can further support the expansion of financial inclusion in regions such as Tirunelveli District.

Managerial Implications of the Study

The findings of this study provide an important implication for financial institutions, policymakers, and digital service providers. The results indicates that perceived usefulness and perceived ease of use significantly influence behavioural intention to adoption of digital financial services. Therefore, banks and financial institutions should design simple and user-friendly digital platforms that more accessible by micro business owners in the unorganised sector. Proper training programs and digital literacy activities and their importance should be conducted to improve the users' confidence in accessing digital financial tools. Digital financial services related awareness campaigns and highlighting the benefits of digital payments, mobile banking can encourage the users' for greater adoption. Financial institutions should also provide secured and reliable digital services to build trust among users. This study shows that users' behavioural intention strongly effect on actual adoption of digital financial services. The results also reveal that digital financial service adoption significantly enhances financial inclusion. Policymakers should implement strong digital infrastructure and supportive policies that helps to expand the access of financial services. Overall, improving digital infrastructure, accessibility, awareness about digital literacy and digital support systems can strengthen financial inclusion in the unorganised sector.

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