Rural Women Empowerment through Digital Financial Literacy in Virudhnagar, Tamilnadu

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Abstract: *Currently, digitalisation has become an integral part of everyday life. Women in particular are using fintech services to manage their finances. This study analysed how rural women were empowered by the use of financial transactions and banking operations conducted through digital platforms. Women's Empowerment is considered a dependent variable,while digital financial literacy is treated as an independent variable. Convenience sampling was used to gather data from 400 rural women from the district of Virudhunagar in Tamil Nadu through a well-structured questionnaire. SPSS and AMOS were used to analyse the data. Confirmatory Factor Analysis was utilised to confirm the factors of literacy and women's empowerment. Findings from the Path Analysis showed that 50% of Virudhunagar rural women were empowered via digital financial literacy, especially economic empowerment.*

Keywords: Digital Financial Literacy, Women Empowerment, Path Analysis, Fintech Adoption

INTRODUCTION

In the digital era, people manage their finances through fintech services. Digital finance includes a wide range of financial services delivered through digital platforms, ranging from payment systems, savings and deposit accounts, credit and loan facilities, and insurance products to a variety of other financial offerings. It caters to a diverse range of users, covering individuals across all income groups, small- and large-scale enterprises, and government bodies at multiple administrative levels. Furthermore, the provision of financial technology services is not limited to traditional banking institutions alone, but includes a wide array of providers such as payment service providers, non-banking financial institutions, telecommunication companies, fintech start-ups, retailers, and other commercial entities engaged in financial transactions. In particular, women play a financial role in their families, and they allocate expenses and invest in certain areas digitally. Even uneducated and rural women use online financial services without any fear or anxiety.

Here, the researcher wants to understand how women utilize financial services with adequate knowledge, access, and proper usage under the framework of "Digital Financial Literacy." Numerous studies of online financial services have demonstrated how women become empowered through the use of fintech services. However, most of these studies have concentrated on urban areas. Consequently, this study's goal was to evaluate the extent to which online financial literacy empowers rural women and contributes to their overall empowerment. The researcher analysed which factors highly contribute to literacy and which dimension of empowerment is discovered to be the most crucial among rural women.

REVIEW OF LITERATURE

In the era of rapid technological advancement, digital literacy is crucial for making well-informed financial decisions and actively participating within the official financial system (Shehadeh et al.,2024). The International Telecommunication Union (2019) emphasised that the gender digital divide affects women's ability to benefit from fintech services, and Ozili (2018) emphasised that fintech innovations reduce gender-based barriers in accessing credit and formal financial services. Women have a strong degree of inclusion but low literacy in digital financial services (Khaerunnisa Nur Fatimah Syahnur et al.,2024). Similarly,

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UN Women (2020) reported that women face the biggest problem in accessing digital finance due to limited awareness and technological skills.

Furthermore, the Reserve Bank of India (2020) found that women are undereducated in finance and lack proper infrastructure (Neetu Chhillar et al.,2024). To solve these issues, programs related to online financial literacy should be conducted to improve women's confidence in handling digital transactions, savings, and credit management (Consultative Group to Assist the Poor, 2022).

In addition, La Mema Parandy et al.'s (2024) findings indicate that financial literacy significantly impacts profitability, with better understanding leading to increased profitability in business. Similarly, the World Bank (2021) reported that online financial services improve women's financial inclusion, especially in developing countries. The benefits of online financial literacy on women's adoption of fintech services improve their capacity to make decisions and achieve financial independence (Hasan et al. 2020). Bongomin et al. (2017) shows that online financial literacy mediates the connection between financial inclusion and women's empowerment.

METHODOLOGY

a) Method of collecting data and Sampling Design

The researcher used primary and secondary data in this study and employed both descriptive and analytical methodologies.

There are 6,44,603 rural women living in Tamil Nadu's Virudhunagar district. The size of the study's sample was established with reference to the research paper titled *"Determining Sample Size"* by Glenn D. Israel (1992), University of Florida, pp. 01–06. According to this study, a sample size of 400 is sufficient for a population exceeding one lakh. Therefore, the researcher gathered data from 400 rural female users of online financial services in Virudhunagar District using a well-structured questionnaire method. Rural women were chosen using convenience sampling, a non-probability sampling technique.

b) Variables and their Measurement

Hypothesis: Digital Financial literacy has a positive influence on rural women's empowerment levels.

The researcher measured women's empowerment through digital financial literacy using path analysis. Thus,

Digital Financial Literacy - Independent Variable

Women Empowerment - Dependent Variable

Digital literacy level in finance was evaluated with the statements of awareness, knowledge, accessibility, usability, security, understanding, and competence. Women's empowerment isoverly measured in terms of psychological, social, economic, and technological aspects. To fulfil these goals, the researcher employed a combination of inferential and descriptive statistical techniques using **Analysis of Moment Structures (AMOS)**software. Confirmatory Factor Analysis and Structured Equation Model were utilised.

RESULTS

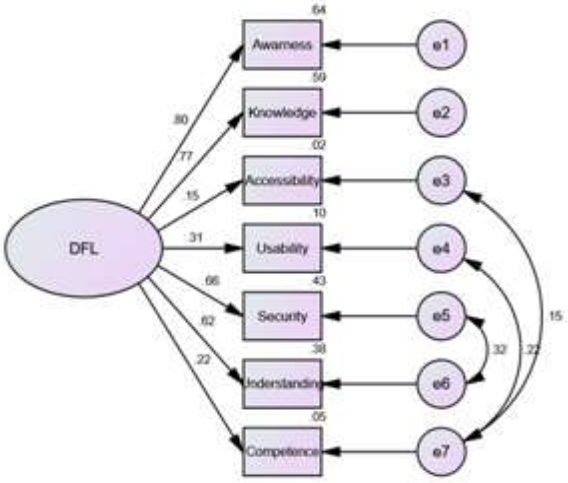
This study analysedthe extent to which women were empowered by their digital financial literacy. Data from 400 rural female users of online financial services were analysed using SPSS and AMOS. Table 1 displays the reliability of digital financial literacy (DFL) and women empowerment (WE).

Table 1: Reliability

Particulars	Cronbach`s Alpha	No. of Items	Interpretation
DFL	0.715	7	Acceptable Internal Consistency
WE	0.811	4	Good Internal Consistency

Source : Computed Data

Reliability analysis verified that digital financial literacy and women's empowerment have satisfactory internal consistency. **After verifying the reliability, the researcher tested whether the statements were valid and connected to the certainty through the use of Confirmatory Factor Analysis (CFA) in AMOS.**



Source: AMOS Output

Figure 1: CFA- Digital Financial Literacy

Figure 1 demonstrates the Confirmatory Factor Analysis (CFA) model of Digital Financial Literacy. The majority of the standardised factor loadings exceeded the suggested cutoff point of 0.50. Meanwhile, some goods had loadings that were marginally less than 0.50. The construct structure was sufficiently supported, as evidenced by the measurement model's overall good fit indices.

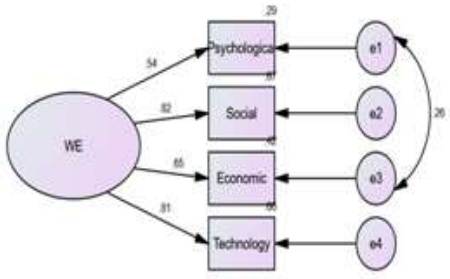


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Figure 2: CFA- Women Empowerment

Figure 2 - Confirmatory Factor Analysis (CFA) model for women's empowerment. Here, all standardised factor loadings exceeded the suggested cutoff point of 0.50, verifying the construct's dimensionality.

Confirmatory factor analysis was used to evaluate the factors, and the model fit was verified using standard goodness-of-fit indices to determine whether the measurement model was sufficient. To assess the model fit, three different forms of fit index are utilized: absolute fit indices (P Value, RMSEA, GFI), Comparative fit indices or incremental fit indices (AGFI, CFI, TLI, NFI), and parsimony fit indices (CMIN/df) (Hair et al., 1995, 2006 & 2010). Holme-Smith et al. (2006) recommend adopting three or more fit indices, one for each model fit category. Every index satisfies the cutoff values recommended by Hair et al. (2006). The key indices showing the model fit for women's empowerment and digital financial literacy are presented in Table 1.

Table 1

CFA Model fit summary:

Digital Financial Literacy & Women Empowerment

Fit Indices	Actual Values		Fit Threshold	Result
	DFL	WE		
P- Value	0.163	0.093	>0.05	Reached
RMSEA	0.032	0.067	<0.08	Reached
GFI	0.989	0.996	>0.90	Reached
AGFI	0.972	0.965	>0.80	Reached
CFI	0.993	0.997	>0.90	Reached
TLI	0.987	0.98	>0.90	Reached
NFI	0.977	0.995	>0.90	Reached
CMIN / df	1.405	2.818	< 5.00	Reached

Source: Computed Data

Table 1 displays the CFA model fit summary of Digital Financial Literacy and Women's Empowerment. All three fits are reached with threshold values. The Values of these indices confirm the model fit and suggest that the construct is valid.

DISCUSSION

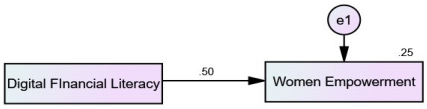
After confirming the CFA and Model Fit Indices, digital financial literacy and empowerment levels were calculated independently using SPSS. The method of Mean $\pm$ Standard deviation was applied to find the Digital Financial Literacy level, and Women Empowerment level was divided into Low, Moderate, and High.

Table 2 : Classification of Levels

Variable	Mean	SD	Low (Below)	Moderate (Between)	High (Above)
DFL	28.47	4.44	24.03	24.03 – 32.91	32.91
WE	16.32	2.61	13.71	13.71 – 18.93	18.93

Source : Computed Data

Table 2 shows that both variables show a moderate level among respondents (Digital Financial Literacy (266 out of 400) and Women Empowerment (278 out of 400)). After understanding the level, we examine the structural relationship on the extent to which women are empowered via digital financial literacy. To gauge the relationship, structural equation modelling (SEM) was applied.



Source: AMOS Output

Figure 3: Structural Equation Model

Figure 3 shows the structural model examining how exact digital financial literacy influences women's empowerment. The standardised path coefficient from digital financial literacy to women empowerment is 0.50; Each SD increase raises empowerment by 0.50 SD. The Squared Multiple Correlation (R^2) value for empowerment indicates that exactly 25% (0.247) of the variation in empowerment is explained by digital financial literacy.

The standard error (SE) is relatively low (0.041), suggesting that the sample is sufficiently large and representative of the selected population. Furthermore, the level of digital financial literacy is statistically significant in women empowerment at the 0.05 level, as the critical ratio (CR = 11.432) reaches the cutoff value of 1.96. Hence, we conclude that Digital Financial Literacy has a positive influence on the level of empowerment among rural women.

It is observed that under Digital Financial Literacy, Knowledge has the highest Critical Ratio (CR = 13.139), indicating a very strong and significant contribution to digital financial literacy. Similarly, under women empowerment, Economic shows a high Critical Ratio (CR = 10.479), reflecting its greatest contribution among women empowerment. Therefore, it revealed that higher levels of knowledge significantly enhance digital financial literacy, which in turn supports economic empowerment among rural women. Finally, the Structural Equation Model also discovered that digital financial literacy 50% influences women's empowerment, with a critical ratio of 11.432.

CONCLUSION

The present study analysed the extent to which rural women were empowered via digital financial literacy in Virudhunagar district. Structural equation modelling and confirmatory factor analysis confirmed strong validity and reliability. However, certain dimensions such as competence and usability require further strengthening of both capability and platform design to ensure meaningful empowerment.

While an existing study (Khaerunnisa Nur Fatimah Syahnur et al., (2024)) identified women as having a high level of literacy, this study revealed that rural women had a moderate level of literacy. This reflects improved access to digital training programs and increasing familiarity with financial technologies and demonstrates a positive shift in digital financial capacity. The findings indicate that 50% of rural Virudhunagar women were empowered by digital financial literacy, particularly in economics.

The research study has a limited virudhunagar district rural area. The researcher gathered data from 400 rural women in Virudhunagar District, which may not be representative of the entire population. This study primarily examined women's empowerment and digital financial literacy, which is a key limitation. Therefore, future research may expand the scope by examining digital financial inclusion or by conducting similar studies among women entrepreneurs.

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