

AN ASSESSMENT OF DIGITAL FINANCIAL LITERACY OF RURAL PEOPLE IN THE STATE OF KERALA

Thesis Submitted to the
UNIVERSITY OF CALICUT
For the Award of the Degree of

DOCTOR OF PHILOSOPHY IN ECONOMICS

By

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(U.O.No.5448/2020/Admn. Dated 15.06.2020)

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May 2025

DECLARATION

I, hereby declare that the work presented in the thesis entitled ‘**AN ASSESSMENT OF DIGITAL FINANCIAL LITERACY OF RURAL PEOPLE IN THE STATE OF KERALA**’ is based on the original work done by me under the guidance of Dr. Ibrahim Cholakkal, Professor, Department of Economics, E.M.E.A College of Arts and Science, Kondotty and has not been included in any other thesis submitted previously for the award of any degree. The contents of the thesis have undergone a plagiarism check using iThenticate software at C.H.M.K. Library, University of Calicut, and the similarity index found within the permissible limit.

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CERTIFICATE

This is to certify that the dissertation titled '**AN ASSESSMENT OF DIGITAL FINANCIAL LITERACY OF RURAL PEOPLE IN THE STATE OF KERALA**' is the record of the original work done by Nasira Banu M. under my guidance and supervision. The results of the research presented in this thesis have not previously formed the basis for the award of any degree, diploma, or certificate of this institute or any other institute or university.

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ACKNOWLEDGMENT

All praise and gratitude are due to Almighty Allah, the ultimate source of wisdom and knowledge, who bestows upon humanity the ability to seek, learn, and innovate. I extend my heartfelt blessings upon all His messengers, who have illuminated the path of guidance and success for mankind.

I express my deepest appreciation to my esteemed supervisor, Dr. Ibrahim Cholakkal, Professor, Post Graduate and Research Department of Economics, E.M.E.A. College of Arts and Science, Kondotty, for his unwavering support, invaluable guidance, and scholarly insights. His meticulous attention to detail, constructive feedback, and encouragement have been instrumental in shaping the trajectory of this research. His patience, generosity, and dedication have profoundly contributed to my academic growth.

I am equally indebted to Mr. Abdul Razak, Head of the Department of Economics, and all the distinguished faculty members of the Department for their continuous encouragement, thought-provoking discussions, and their role in broadening my intellectual horizons. Their invaluable feedback and support have strengthened my understanding of the subject matter.

I express my deepest gratitude to Prof. Shaheed Ramzan, Research Department of Economics, Government Arts and Science College, Kozhikode, for his invaluable guidance, constructive criticisms, and constant encouragement throughout my research. His meticulous corrections, insightful suggestions, and unwavering support played a crucial role in refining my thesis and enhancing its academic quality. I am genuinely grateful for the time and effort they dedicated to reviewing my work and for always motivating me to strive for excellence.

I extend my sincere gratitude to the University Grants Commission (UGC) for providing the necessary financial assistance, which enabled me to undertake and complete this research. I also thank the librarians of Maulana Azad Library, Aligarh Muslim University, Dr. John Mathai Centre, Thrissur, C.H. Mohammed Koya Library, University of Calicut and Shihab Thangal Central Library and Research

Centre, E.M.E.A College of Arts and Science. I thankfully acknowledge the help and cooperation extended to me by the administrative staff of E.M.E.A College of Arts and Science, Kondotty.

I take this opportunity to acknowledge my gratitude towards Prof. (Dr.) Riyad A.M, Principal, E.M.E.A. College of Arts and Science Kondotty, for his cooperation and continued support. I also take this opportunity to acknowledge the former principals, Dr. Abdul Muneer V, Dr. Ayoob CP and Lt. Abdul Rasheed. P., E.M.E.A College of Arts and Science Kondotti for their timely support.

With much gratitude, I remember the advice rendered by Dr. Rajula Helan K.P. Head, Department of Economics, John Matthai Center, University of Calicut and Dr. Zabeena Hameed P. from the same Department, for their timely help and statistical support, which significantly contributed to the success of my research.

I also extend my heartfelt appreciation to my beloved husband, Dr. Abdul Azeez N.P., Assistant Professor, Department of Economics, Aligarh Muslim University, whose unwavering support, patience, and encouragement have been a pillar of strength during this journey. His understanding and sacrifices enabled me to pursue my work with focus and confidence.

A special mention goes to my friends, colleagues, and seniors who stood by me throughout this journey. Their encouragement, insightful discussions, and unwavering support helped me navigate the challenges of research.

Above all, my deepest gratitude goes to my beloved parents, siblings, and family members, whose unconditional love, prayers, and sacrifices have been the foundation of my perseverance. Their constant encouragement and unwavering belief in my abilities have been my greatest source of strength. Without their support, this dissertation would not have been possible.

This work is dedicated to them.

Nasira Banu M.

ABSTRACT

Financial services have changed a lot with the invention and intervention of technology in all ways and means. Notable changes have taken place in banking and financial services due to digitalization. There is an increasing requirement for financial knowledge and literacy, at least a minimal level of necessary digital financial awareness and technological awareness and skills in this twenty-first century, as technological innovations are at a speedier rate and the interconnectivity of the various services is increasing. Therefore, digital financial literacy has assumed a greater significance in the 21st century due to the complex and varied financial services, the prevalence of fraudulent schemes, and the deregulation of regulators and government policies. It is considered an integral part of life skills, and the inability to access or use such services has effectively become an obstacle for individual, community, and economic development. Though most households hold a bank account, they are unaware of the many financial services, facilities and investment provisions due to their lack of financial knowledge, unsatisfactory and adverse financial behaviour, and negative attitudes. This is a challenge due to limited access to financial services available to rural and backwards areas and poor people, together with a lack of digital financial literacy and awareness about digitally provided services. However, the picture is a little different for rural areas. Internet penetration in rural areas is low as compared to urban areas. People from rural areas have a low internet self-efficacy factor. They are not aware of the different features of the Internet and do not know how to operate the Internet for various online activities. There is a strong need to introduce schemes or plans for the digitalization of rural India. Thus, digital financial literacy is a prerequisite for its effective inclusion and poses challenges for policymakers. This research study, entitled “An Assessment of Digital Financial Literacy of Rural People in the State of Kerala”, is relevant in this context. Thus, the study tries to understand digital financial literacy initiatives implemented by various stakeholders in India, especially in the State of Kerala. It examines the demand-side and supply-side aspects of digital financial literacy. It also measures digital financial literacy and identifies its socio-economic and demographic determinants in rural areas of Kerala. Besides these objectives, it analyzes the impact of digital financial literacy on the usage of digital financial services and explores the reasons, challenges and barriers that rural households face regarding digital financial literacy in Kerala.

In this study, both primary and secondary data were collected and used to assess the digital financial literacy of rural people in the State of Kerala. The interview schedule was developed to collect primary data from rural people in Kerala. Out of 14 districts of Kerala, three districts, namely Wayanad, Malappuram, and Ernakulam, have been selected for the study based on the rural population. Two Taluks were chosen from each selected district based on the proportion of the rural population. Two Panchayats were selected from every taluk using the same criterion. A proportionate sampling technique randomly selects a sample (respondents) from each chosen Panchayat. For the determination of the sample size, the study used the formula developed by Yamane 1967 and therefore, 400 samples were selected accordingly.

The study used two forces of demand and supply that are critical for determining digital financial literacy. The demand side of the digital financial literacy study considered dimensions like digital financial aptitude, digital financial awareness, digital financial attitude & behaviour and digital financial affordability. The supply side considered the dimensions from the 'financial service providers', namely the availability of digital financial

infrastructures and accessibility of digital financial services. A composite index of digital financial literacy is constructed where several dimensions of digital financial literacy are used to assess the extent of its level. For estimating the Digital Financial Literacy Index (DFLI), three core dimensions were used, namely digital financial aptitude, digital financial awareness and digital financial attitude and behaviour. The independent t-test and One-way ANOVA test were used to determine the statistically significant differences between the values of different parameters, i.e. demographic, socio-economic and digital financial literacy. The ordinal logistic regression model has been used to identify the factors contributing to variations in digital financial literacy. The study also investigates the role of digital financial literacy in enhancing the usage of digital financial services (DFS) by employing structural equation modelling (SEM).

The study found an overall digital financial literacy index of 0.39, showing a just satisfactory level of digital financial literacy in the state's rural areas. Malappuram has the highest digital financial literacy index (0.45) compared to other districts, followed by Ernakulam (0.39). Wayanad lags with a comparatively lower index (0.34), showing the respondents' lower understanding and usage of these tools. The results of the ordinal logistic regression model show that the key determinants include age, education level, caste, occupation, income, ration category, and participation in MGNREGS. Younger individuals, those with higher education, salaried or self-employed people, and higher-income earners are more likely to have better digital financial literacy.

The study highlighted the critical role of digital financial literacy in improving the usage of digital financial services among rural households in Kerala by SEM. The findings show that awareness of digital financial services is the most significant determinant among the various dimensions of digital financial literacy, with a strong positive influence on the usage of these financial services. Awareness of digital financial risks also emerged as a critical factor, underlining the importance of equipping users with the knowledge. The dimension of digital financial aptitude showed a moderately positive effect on the usage of digital financial services. Interestingly, though theoretically critical, digital financial attitude and behaviour did not show a statistically significant effect. The most common reasons for digital financial illiteracy include the lack of financial education in schools, a lack of awareness, and a lack of confidence in using digital financial services. Other factors like poverty, unemployment, and religious beliefs are less frequently cited as causes. The most significant challenge is the lack of financial knowledge and skills, followed by a widespread lack of awareness and concerns over the risk of financial loss and security issues. Other challenges include a lack of income, trust in digital services, and poor internet connectivity.

Based on the findings, the study recommends specific policy measures and interventions for stakeholders. These include implementing comprehensive and targeted digital financial literacy programs, along with awareness campaigns to enhance digital financial knowledge among rural populations in Kerala. Such efforts will promote effective and inclusive financial inclusion in the state

Keywords: Digital Financial Literacy, Digital Financial Aptitude, Digital Financial Awareness, Digital Financial Attitude & Behaviour, Digital Financial Affordability, Availability of Digital Financial Infrastructures, Accessibility of Digital Financial Services, Structural Equation Modelling, Ordinal Logistic Regression Model.

സംഗ്രഹം

സാങ്കേതിക വിദ്യയുടെയും ഡിജിറ്റലൈസേഷന്റെയും ആഗമനത്തോടെ എല്ലാ ധനകാര്യ സേവനങ്ങളിലും ബാങ്കിംഗ് ഇടപാടുകളിലും ശ്രദ്ധേയമായ മാറ്റങ്ങളാണ് സംഭവിച്ചുകൊണ്ടിരിക്കുന്നത്. അതുകൊണ്ടുതന്നെ ഈ നൂറ്റാണ്ടിൽ അടിസ്ഥാനപരമായ സാങ്കേതിക-സാമ്പത്തിക സാക്ഷരതയും അവബോധവും നേടിയെടുക്കേണ്ടത് കാലഘട്ടത്തിന്റെ ആവശ്യകതയാണ്. സങ്കീർണ്ണവും വൈവിധ്യപൂർണ്ണവുമായ ധനകാര്യ സേവനങ്ങളുടെ വികസനവും വഞ്ചനാപരമായ പദ്ധതികളുടെ അനിയന്ത്രിത വ്യാപനവും കാരണം ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയ്ക്ക് വലിയ പ്രാധാന്യം ഉയർന്നിട്ടുണ്ട്. അത്തരം സേവനങ്ങൾ ലഭ്യമാക്കാനോ ഉപയോഗിക്കാനോ കഴിയാത്തത് വ്യക്തിഗതവും സാമൂഹികവും സാമ്പത്തികവുമായ വികസനത്തിന് ഒരു തടസ്സമായി മാറിയിരിക്കുന്നു. ഒട്ടുമിക്ക ആളുകൾക്കും ബാങ്ക് അക്കൗണ്ടുകളുണ്ടെങ്കിലും സാമ്പത്തികപരമായ അറിവില്ലായ്മ, തൃപ്തികരമല്ലാത്തതും പ്രതികൂലവുമായ സാമ്പത്തിക പെരുമാറ്റം, നിഷേധാർത്ഥകമായ മനോഭാവങ്ങൾ എന്നിവ കാരണം നിരവധി ധനകാര്യ സേവനങ്ങളെ കുറിച്ചും നിക്ഷേപ വ്യവസ്ഥകളെ കുറിച്ചും അവർക്ക് വേണ്ടത്ര അറിവില്ല. പ്രത്യേകിച്ചും, ഗ്രാമീണ-പിന്നോക്ക പ്രദേശങ്ങളിലെ പാവപ്പെട്ടവർക്ക്, ധനകാര്യ സേവനങ്ങളുടെ പരിമിതമായ ലഭ്യതയും ഡിജിറ്റൽ സാമ്പത്തിക സേവനങ്ങളുടെ അറിവില്ലായ്മയും ഒരു വെല്ലുവിളിയായി മാറിയിരിക്കുകയാണ്. നഗരപ്രദേശങ്ങളെ അപേക്ഷിച്ച് ഗ്രാമീണ മേഖലകളിൽ ഇന്റർനെറ്റ് വ്യാപനവും കാര്യക്ഷമതയും അറിയും കുറവാണ്. അതിനാൽ ഗ്രാമീണ ഇന്ത്യയുടെ ഡിജിറ്റലൈസേഷനുവേണ്ടി പരമാവധി പദ്ധതികളും പരിപാടികളും കൊണ്ടുവരേണ്ടത് അനിവാര്യമാണ്. അതുകൊണ്ടുതന്നെ “കേരള സംസ്ഥാനത്തിലെ ഗ്രാമീണ ജനതയുടെ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ ഒരു വിലയിരുത്തൽ” എന്ന ഈ ഗവേഷണ പഠനം ഈ സാഹചര്യത്തിൽ പ്രസക്തമാണ്.

അതിനാൽ ഈ പഠനം ഇന്ത്യയിലും പ്രത്യേകിച്ച് കേരളത്തിലും വിവിധ ഏജൻസികൾ നടപ്പാക്കിയ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതാ പ്രവർത്തനങ്ങളെ മനസ്സിലാക്കാൻ ശ്രമിക്കുന്നു. ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ ഡിമാൻഡ്-സപ്ലൈ-സൈഡ് വശങ്ങളെ കുറിച്ചും ഇത് പഠിക്കുന്നു. കേരളത്തിലെ ഗ്രാമീണ മേഖലകളിലെ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരത അളക്കുകയും അതിന്റെ സാമൂഹികവും സാമ്പത്തികവും ജനസംഖ്യാപരവുമായ നിർണ്ണായക ഘടകങ്ങളെ കണ്ടെത്തുകയും ചെയ്യുന്നു. ഈ ലക്ഷ്യങ്ങൾക്ക് പുറമെ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരത, ഡിജിറ്റൽ ധനകാര്യ സേവനങ്ങളുടെ ഉപയോഗത്തെ എങ്ങനെ ബാധിക്കുന്നുവെന്ന് ഇത് വിശകലനം ചെയ്യുകയും കേരളത്തിലെ ഗ്രാമീണ കുടുംബങ്ങൾ ഇതുമായി ബന്ധപ്പെട്ട് നേരിടുന്ന വെല്ലുവിളികളും തടസ്സങ്ങളും പരിശോധിക്കുന്നു.

കേരള സംസ്ഥാനത്തിലെ ഗ്രാമീണ ജനതയുടെ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരത വിലയിരുത്തുന്നതിന് പ്രാഥമികവും ദ്വിതീയവുമായ വിവരങ്ങൾ ശേഖരിക്കുകയും ഉപയോഗിക്കുകയും ചെയ്തു. പ്രാഥമിക വിവരങ്ങൾ ശേഖരിക്കുന്നതിനായി ചോദ്യാവലി തയ്യാറാക്കി. ഗ്രാമീണ ജനസംഖ്യയുടെ അടിസ്ഥാനത്തിൽ വയനാട്, മലപ്പുറം, എറണാകുളം എന്നീ മൂന്ന് ജില്ലകളാണ് പഠനത്തിനായി തിരഞ്ഞെടുത്തത്. തിരഞ്ഞെടുത്ത ഓരോ ജില്ലയിൽ നിന്നും ഗ്രാമീണ ജനസംഖ്യയുടെ അനുപാതം അനുസരിച്ച് രണ്ട് താലൂക്കുകൾ വീതവും ഓരോ താലൂക്കിൽ നിന്നും അതേ മാനദണ്ഡം ഉപയോഗിച്ച് രണ്ട് പഞ്ചായത്തുകൾ വീതവും തിരഞ്ഞെടുത്തു. ആനുപാതിക സാമ്പിൾ ടെക്നീക് ഉപയോഗിച്ച് തിരഞ്ഞെടുത്ത ഓരോ പഞ്ചായത്തിൽ നിന്നും ക്രമരഹിതമായി സാമ്പിളുകൾ തിരഞ്ഞെടുത്തു. സാമ്പിളിന്റെ എണ്ണം നിർണ്ണയിക്കുന്നതിന് യമാനെ (Yamane) വികസിപ്പിച്ച സൂത്രവാക്യമാണ് ഉപയോഗിച്ചത്.

ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരത നിർണ്ണയിക്കുന്നതിന് ഡിമാൻഡ്-സപ്ലൈ എന്നീ രണ്ട് ഘടകങ്ങളാണ് ഉപയോഗിച്ചത്. ഡിജിറ്റൽ സാമ്പത്തിക അഭിരുചി, ഡിജിറ്റൽ സാമ്പത്തിക അവബോധം, ഡിജിറ്റൽ സാമ്പത്തിക മനോഭാവം, പെരുമാറ്റം, ഡിജിറ്റൽ സാമ്പത്തിക താങ്ങാനാവുന്ന വില തുടങ്ങിയ മാനദണ്ഡങ്ങളാണ് ഡിമാൻഡ് ഇനത്തിൽ പരിഗണിച്ചത്. എന്നാൽ സപ്ലൈ ഇനത്തിൽ ധനകാര്യ സേവന ദാതാക്കളിൽ നിന്നുള്ള ധനകാര്യ അടിസ്ഥാന സൗകര്യങ്ങളുടെയും ഡിജിറ്റൽ ധനകാര്യ സേവനങ്ങളുടെയും ലഭ്യതയുമാണ് മാനദണ്ഡങ്ങളായി ഉപയോഗിച്ചത്. അതുപോലെ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ ഒരു സംയുക്ത സൂചികയും

നിർമ്മിച്ചിട്ടുണ്ട്. ഇതിനുവേണ്ടി ഡിജിറ്റൽ സാമ്പത്തിക അഭിരുചി, ഡിജിറ്റൽ സാമ്പത്തിക അവബോധം, ഡിജിറ്റൽ സാമ്പത്തിക മനോഭാവം എന്നീ മൂന്ന് പ്രധാന മാനദണ്ഡങ്ങൾ ഉപയോഗിച്ചു. ജനസംഖ്യാപരവും സാമൂഹിക-സാമ്പത്തികവും ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയും തമ്മിലുള്ള സ്ഥിതിവിവരക്കണക്കിൽ പ്രാധാന്യപ്പെട്ട വ്യത്യാസങ്ങൾ നിർണ്ണയിക്കാൻ സ്വതന്ത്ര t-ടെസ്റ്റ് (Independent t-test) വൺ-വേ ANOVA ടെസ്റ്റ് ഉപയോഗിച്ചു. ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയിലെ വ്യതിയാനങ്ങൾക്ക് കാരണമാകുന്ന ഘടകങ്ങൾ തിരിച്ചറിയാൻ ഓർഡിനൽ ലോജിസ്റ്റിക് റിഗ്രഷൻ മോഡലാണ് (Ordinal logistic regression model) ഉപയോഗിച്ചിട്ടുള്ളത്. ഡിജിറ്റൽ ധനകാര്യ സേവനങ്ങളുടെ ഉപയോഗം വർദ്ധിപ്പിക്കുന്നതിൽ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ പങ്ക് അറിയുന്നതിന് വേണ്ടി ഘടനാപരമായ സമവാക്യ മോഡലിംഗ് (SEM) ഉപയോഗിച്ചു.

സംസ്ഥാനത്തെ ഗ്രാമീണ മേഖലയിലെ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ മൊത്തത്തിലുള്ള സൂചിക 0.39 ആണെന്ന് പഠനം കണ്ടെത്തി. ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ തൃപ്തികരമായ (Satisfactory) നിലയെയാണ് ഇത് സൂചിപ്പിക്കുന്നത്. മറ്റ് ജില്ലകളെ അപേക്ഷിച്ച് മലപ്പുറത്തിനാണ് (0.45) ഏറ്റവും ഉയർന്ന സൂചിക. തൊടുപിന്നാലെ എറണാകുളം (0.39). വയനാട് താരതമ്യേന താഴ്ന്ന സൂചികയോടെ (0.34) പിന്നിലാണ്. പ്രായം, വിദ്യാഭ്യാസ നില, ജാതി, തൊഴിൽ, വരുമാനം, റേഷൻ കാർഡ് വിഭാഗം, തൊഴിലുറപ്പ് പദ്ധതിയിലെ പങ്കാളിത്തം എന്നിവ പ്രധാന നിർണ്ണായക ഘടകങ്ങളായി ഓർഡിനൽ ലോജിസ്റ്റിക് റിഗ്രഷൻ മോഡലിലൂടെ കണ്ടെത്തി. പ്രായം കുറഞ്ഞ വ്യക്തികൾ, ഉയർന്ന വിദ്യാഭ്യാസം നേടിയവർ, സ്വയം തൊഴിൽ ചെയ്യുന്നവർ, ഉയർന്ന വരുമാനമുള്ളവരെല്ലാം മികച്ച ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുള്ളവരായിരിക്കാൻ സാധ്യതയുണ്ട്. കേരളത്തിലെ ഗ്രാമീണ കുടുംബങ്ങളിൽ ഡിജിറ്റൽ ധനകാര്യ സേവനങ്ങളുടെ ഉപയോഗം മെച്ചപ്പെടുത്തുന്നതിൽ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ നിർണ്ണായക പങ്ക് പഠനം എടുത്തുപറഞ്ഞു. ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ വിവിധ മാനദണ്ഡങ്ങളിൽ ഡിജിറ്റൽ ധനകാര്യ സേവനങ്ങളെക്കുറിച്ചുള്ള അവബോധമാണ് ഏറ്റവും പ്രധാനപ്പെട്ട നിർണ്ണായക ഘടകമെന്നും ശക്തമായ സ്വാധീനമുണ്ടെന്നും കണ്ടെത്തലുകൾ സൂചിപ്പിക്കുന്നു. ഡിജിറ്റൽ ധനകാര്യ അപകടങ്ങളെക്കുറിച്ചുള്ള അവബോധവും ഒരു നിർണ്ണായക ഘടകമായി കണക്കാക്കുന്നു. ഇത് ഉപയോഗിക്കാൻ അറിവ് നൽകേണ്ടതിന്റെ പ്രാധാന്യം അടിവരയിടുന്നു. ഡിജിറ്റൽ സാമ്പത്തിക അഭിരുചി എന്ന മാനദണ്ഡവും ഡിജിറ്റൽ ധനകാര്യ സേവനങ്ങളുടെ ഉപയോഗത്തിൽ മിതമായ സ്വാധീനം ചുമത്തിയിട്ടുണ്ട്. രസകരമെന്നു പറയട്ടെ, സൈദ്ധാന്തികമായി തെളിഞ്ഞതാണെങ്കിലും, ഡിജിറ്റൽ സാമ്പത്തിക മനോഭാവവും പെരുമാറ്റവും ഇതിൽ കാര്യമായി പങ്കുവഹിച്ചിട്ടില്ല. സ്കൂളുകളിൽ സാമ്പത്തിക വിദ്യാഭ്യാസം, അവബോധം എന്നിവ ഇല്ലാത്തതും, ഡിജിറ്റൽ ധനകാര്യ സേവനങ്ങൾ ഉപയോഗിക്കുന്നതിൽ ആത്മവിശ്വാസമില്ലാത്തതും, ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതയുടെ ഏറ്റവും പ്രധാനപ്പെട്ട കാരണങ്ങളാണ്. ദാരിദ്ര്യം, തൊഴിലില്ലായ്മ, മതപരമായ വിശ്വാസങ്ങൾ തുടങ്ങിയ ഘടകങ്ങൾ മറ്റു കാരണങ്ങളായി കാണുന്നു. സാമ്പത്തികപരമായ അറിവും നൈപുണ്യവും ഇല്ലാത്തതാണ് ഏറ്റവും വലിയ വെല്ലുവിളി. വരുമാനമില്ലായ്മ, ഡിജിറ്റൽ സേവനങ്ങളിലുള്ള വിശ്വാസക്കുറവ്, മോശം ഇന്റർനെറ്റ് കണക്ടിവിറ്റി എന്നിവയാണ് മറ്റ് വെല്ലുവിളികൾ.

ഈ കണ്ടെത്തലുകളുടെ അടിസ്ഥാനത്തിൽ, കേരളത്തിലെ ഗ്രാമീണ ജനങ്ങൾക്കിടയിൽ സാമ്പത്തിക സാക്ഷരത വർദ്ധിപ്പിക്കുന്നതിന് പ്രത്യേക നയപരമായ നടപടികളും ഇടപെടലുകളും പഠനം ശുപാർശ ചെയ്യുന്നു. ഇവർക്ക് വേണ്ടി സമഗ്രവും ടാർഗ്റ്റ് ചെയ്ത കൗണ്ടിങ്ങുമായ ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരതാ പരിപാടികളും അവബോധ കാമ്പെയ്നുകളും നടപ്പാക്കേണ്ടതുണ്ട്. അത്തരം ശ്രമങ്ങൾ സംസ്ഥാനത്ത് ഫലപ്രദവും എല്ലാവരെയും ഉൾക്കൊള്ളുന്നതുമായ സാമ്പത്തിക ഉൾപ്പെടുത്തലിനെ പ്രോത്സാഹിപ്പിക്കും.

സൂചകപദങ്ങൾ: ഡിജിറ്റൽ സാമ്പത്തിക സാക്ഷരത, ഡിജിറ്റൽ സാമ്പത്തിക കഴിവ്, ഡിജിറ്റൽ സാമ്പത്തിക അവബോധം, ഡിജിറ്റൽ സാമ്പത്തിക സമീപനവും പെരുമാറ്റവും, ഡിജിറ്റൽ സാമ്പത്തിക സേവനങ്ങളുടെ താങ്ങാവുന്ന വില, ഡിജിറ്റൽ സാമ്പത്തിക അടിസ്ഥാന സൗകര്യങ്ങളുടെ ലഭ്യത, ഉപയോഗസൗകര്യവും, ഘടനാത്മക സമവാക്യ മോഡലിംഗ്, ഓർഡിനൽ ലോജിസ്റ്റിക് റിഗ്രഷൻ മോഡൽ

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ABBREVIATIONS

ABPS	: Aadhar Payments Bridge System
ADFR	: Awareness of Digital Financial Risks
AEPS	: Aadhar Enabled Payment System
AIC	: Akaike's Information Criterion
ANOVA	: Analysis Of Variance
API	: Application Programming Interfaces
APL	: Above Poverty Line
APY	: Atal Pension Yojana
ATM	: Automated Telling Machine
AWDFS	: Awareness of Digital Financial Services
BIC	: Bayesian Information Criterion
BHIM	: Bharat Interface for Money
BPL	: Below Poverty Line
CD	: Coefficient of Determination
CD Block	: Community Development Block
CFI	: Comparative Fit Index
CHFS	: China Household Finance Survey
CTC	: Certified Training Centre
CTS	: Cheque Truncation System
DA	: Digital Aptitude
DBT	: Direct Benefit Transfer
DFABI	: Digital Financial Attitude and Behaviour Index
DFAI	: Digital Financial Awareness Index
DFAP	: Digital Financial Aptitude
DFAT	: Digital Financial Attitude
DFI	: Digital Financial Inclusion
DFL	: Digital Financial Literacy
DFLI	: Digital Financial Literacy Index
DFS	: Digital Financial Service
DISHA	: Digital Saksharta Abhiyan
FA	: Financial Aptitude
FII	: Financial Inclusion Insights
FLC	: Financial Literacy Centre

FinTech	: Financial Technology
G20	: Group of Twenty
GLEC	: Global Logistics Emissions Council Framework
HDI	: Human Development Index
HS	: High School
HSS	: Higher Secondary School
IAMAI	: Internet And Mobile Association of India
IBA	: Indian Banker's Association
ICT	: Information and Communication Technology
IDB	: Inter-American Development Bank
INFE	: International Network on Financial Education
IMPS	: Immediate Payment Service
IRDAI	: Insurance Regulatory and Development Authority of India
ISB	: Indian School of Business
IT	: Information Technology
ITU	: International Telecommunications Union
IVR	: Interactive Voice Response
JAM	: Jan Dhan Aadhar Mobile
KCC	: Kisan Credit Card
KFON	: Kerala Fibre Optic Network
KM	: Kilo Metres
KSITM	: Kerala State Information Technology Mission
KYC	: Know Your Customer
LDC	: Less Developed Country
LP	: Lower Primary
LPG	: Liquefied Petroleum Gas
MEIT	: Ministry of Electronic and Information Technology
MGNREGA	: Mahatma Gandhi National Rural Employment Guarantee Act
MNO	: Mobile Network Operators
M-pesa	: M (Mobile), pesa (Money)
NABARD	: National Bank for Agriculture and Rural Development
NCFE	: National Centre for Financial Education
NDLM	: National Digital Literacy Mission
NEFT	: National Electronic Fund Transfer
NFC	: Near Field Communication
NFLAT	: National Financial Literacy Assessment Test

NFLIS	: National Financial Literacy and Inclusion Survey
NGO	: Non- Governmental Organization
NIBM	: National Institute of Bank Management
NISM	: National Institute of Securities Markets
NITI	: National Institute for Transforming India
NPCI	: National Payment Corporation of India
NSFE	: National Strategy for Financial Education
NSSO	: National Statistical Survey Organization
OBC	: Other Backward Class
OECD	: Organization for Economic Cooperation and Development
OTP	: One Time Password
PAN	: Permanent Account Number
Paytm	: Pay Through Mobile
PERDA	: Pension Fund Regulatory and Development Authority
PDS	: Public Distribution System
PIN	: Personal Identification Number
PMGDISHA	: Pradhan Mantri Gramin Digital Saksharta Abhiyan
PMJDY	: Pradhan Mantri Jan Dhan Yojna
PMJJBY	: Pradhan Mantri Jeevan Jyoti Bima Yojana
PMMY	: Pradhan Mantri Mudra Yojana
PMSBY	: Pradhan Mantri Suraksha Bima Yojana
POS	: Point Of Sale
PWC	: Price Waterhouse Coopers
RBI	: Reserve Bank of India
RMSEA	: Root Mean Square Error of Approximation
RTGS	: Real Time Gross Settlement
SC	: Scheduled Caste
SDGI	: Sustainable Development Goal Index
SEM	: Structural Equation Modelling
SEBI	: Securities Exchange Board of India
SHG	: Self Help Group
SIM	: Subscriber Identity Module
SMS	: Short Message Service
SMEs	: Small and Medium-sized Enterprises
ST	: Scheduled Tribe
STK	: SIM Toolkit

TLI	:	Tucker-Lewis Index
UDFS	:	Usages of Digital Financial Services
UMANG	:	Unified Mobile Application for New-age Governance
UNESCO	:	United Nations Educational Scientific and Cultural Organization
UP	:	Upper Primary
UPI	:	Unified Payment Interfaces
USSD	:	Unstructured Supplementary Service Data
USA	:	United States of America
UN	:	United Nation
VIF	:	Variance Inflation Factor
WAP	:	Wireless Application Protocol

CHAPTER 1

INTRODUCTION

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1.1 Background of the Study

The working and progress of an economy mainly depend upon the financial system of a country, which includes the bank primarily as a central entity and other financial providers. The financial system of a country is deeply rooted in society and employs a large population. The financial sector performs crucial functions such as enabling saving and investment, protecting from various risks, and supporting the creation of employment opportunities and enterprises. The effects of financial development on economic growth are most prominent at lower income levels, so poorer developing countries will gain the most from the growth and development of the financial sector (Beck et al., 2007; Honohan & Bank, 2004). Also, a link between financial development and income inequality was found to be quadratic, implying that financial development is likely to be positively related to inequality at a low level of development. Still, once a threshold level of development is achieved, then the link between the two becomes negative (Frydrych & Aschim, 2014; Jalilian & Kirkpatrick, 2005). The development of the financial sector is mainly determined by the proportion of the country that has access to financial services. The inclusive financial system depends on the growth of the financial sector, especially through digitalization (Anarfo et al., 2019).

Inclusive finance and better access to financial services, especially by people living in the rural areas and vulnerable sections of the society, is a prerequisite for getting better employment opportunities, inclusive economic growth and financial development, reduction of poverty, and financial well-being (Beck et al., 2007; Bruhn & Love, 2014; Di Castri & Gidvani, 2014; Gupta & Kaur, 2014; Hasan et al., 2021; Keifer & Effenberger, 2016; Park & Mercado, 2015; Sassi & Goaid, 2013). The vulnerable sections of society are met with various advantages with access to finance, which will help them open a bank account for better saving and investment. They will benefit from proper experience in credit and its availability, along with an initiative to safeguard their homes. Beyond all these, financial services will help them to overcome poverty in its actual means and ways. Poor people of the country also have the right to actively participate in their personal and economic

development, which could be made possible by a well-developed financial system. At the outset, it is evident that expanding access to financial services will reduce inequality. The causes of unemployment and poverty in the country's communities could be attributed to financial exclusion, and thereby, a particular group in the society suffers. Thus, a well-developed financial system has a substantial positive effect on inclusive economic growth and reduces the unequal distribution of income and poverty (Beck et al., 2007).

Financial institutions and their various services are undergoing a dramatic transformation in this digital age. The changes are happening in their roles and responsibilities, service and product offerings, products to the delivery channels, infrastructures etc. The financial sector of India has been developing quickly over the last few years. During the last eight years, significant developments have been made to move India into an inclusive digital financial system through cost-effective, reliable, convenient, and secure means, bringing the underserved and excluded rural people into the mainstream of the economic system. Despite the rapid development of the financial sector, significant sections of the population of the country experience these positive changes at a much slower pace.

In the present scenario, accepting an inclusive financial system is important. The earnings of each citizen of the country are considered a financial asset for enhancing their financial status, which improves the progress of the nation. Financial inclusion is being considered as the stepping stone for more comprehensive and inclusive growth. It has become a matter of concern for central policy in many developing countries, including India. The government should take steps and measures to make it practical so that every section of society gets access to financial support, financial products, and even financial services. There should be timely and adequate credit at an affordable cost, fairly and transparently. Financial institutions serve as a strong backbone of the country for better economic growth and development of the rural economy. Moreover, various empirical research reveals that expanding a better and sound financial system contributes to economic growth and development (Aad et al., 2020; Ahmad et al., 2021; Tay et al., 2022)

. As a result, most developing countries like India promote and incentivize financial inclusion as a policy objective and concern for policymakers, especially those who neglect formal sector institutions.

Still, there is an immediate need to spread banking services countrywide to reach a vast population despite its extensive network of branches nationwide. Several households are still disconnected from banking institutions and are far from various banking services like holding a savings account or minimal credit facilities. Those who are denied access to finance are vulnerable sections of society and victims of several challenges due to financial constraints and discrimination. They cannot utilize economic benefits and opportunities and remain poor (Huang et al., 2021). Various constraints are attributed to this, like accessibility, high transaction costs and the delay in providing banking services. The current financial services offered should be made more effective by ensuring reliability and continuity. It should also be more flexible and convenient to extend banking and services to rural households. Certain factors hindering from getting proper access to financial services and products are lack of awareness and difficulty in affording financial products and services, financial illiteracy and inconvenience, inflexibility, non-customization, and low-quality products and services.

A significant trend has been observed in efforts towards financial inclusion time and again by various governmental and monetary authorities in India, namely Pradhan Mantri Jan Dhan Yojna (PMJDY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Mudra Yojana (PMMY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Skill India, Digital India, Stand Up India and Atal Pension Yojana (APY). Pradhan Mantri Jan Dhan Yojana is an incredible program introduced in 2016, that has created a remarkable result in the banking sector concerning removing financial untouchability in the country and creating a massive number of bank accounts. Despite these regular initiatives from all stakeholders, many people, mainly from rural areas, are excluded financially (Khaki & Sangmi, 2017). "It does not matter how many bank accounts you have open; if a person does not know about the financial options and services available, then all

policies, schemes, and financial products and services will become little beneficial. It is important for a person to first know what to look for and only think of the advantages he can get from it" (Gandhi, 2016). However, with higher financial facilities than ever before, especially in the rural areas of India, many people around the rural communities remain without access to essential banking and finance services, and even now, they depend on informal financial systems. PMJDY has the credit of getting remarkable development in financial inclusion through savings accounts in low-income group families, especially in remote areas. The success of this scheme cannot be confined to the opening of bank accounts, and it could be achieved when there is a sustainable operation of bank accounts for productive activities (Dahiya & Kumar, 2020). Such continuous operations could only fulfil the objectives of the scheme. They are being forced to open an account in the bank to draw direct benefit transfers. Financial inclusion will never become fruitful and effective when it is forced. Forced financial inclusion has its consequences of financial exploitation, resulting in greater financial data inclusion rather than financial inclusion.

With the financial services and products being digitalized, the sophistication of the financial system was enhanced, promoting competency and well-informed judgements for promoting financial well-being. The participants need to be informed of financial and digital updates through banking and non-banking financial institutions. "Digital innovations and technologies are progressively unified into the economy and are making a diverse influence on the financial sector by presenting new financial products and services"(OECD, 2018a; Ozili, 2018). The significant changes that occurred had strengthened digital financial literacy for adapting to the existing rapidly changing situations and strengthening digital financial literacy. "Therefore, the concept of digital and financial literacy became more critical and is considered one of the prerequisites and preliminary steps for the inclusion of people in the financial system of the country"(Abdul Azeez & Akhtar, 2021; Azeez & Banu, 2019). It is appreciable that the Reserve Bank of India (RBI), the Central Government, and various other financial institutions made effective efforts through projects and programs to enhance financial literacy and accessibility and help poor

people get out of poverty. "Financial education is intended to offer people with such financial knowledge, which could help them to maintain budgets, choose among various financial plans, regulate their borrowing and debts, as well as equip them for making investment decisions" (Azeez & Banu, 2019). Various attempts like demonetization, the digital financial advancing system, and the development of mobile communication from a global perspective could not financially help the inclusion of poor people. It is a fact that most individuals are quite unaware of managing finance; they even do not have enough knowledge on related financial matters.

A well-developed, accessible, available, and affordable digital financial infrastructure, digital financial modes, and channels, especially in rural areas, are preconditions for the success of digital financial inclusion. However, introducing digital technologies and innovations in rural regions of India can be a significant challenge. There is a decrease in rural population around the globe, and it is a fact that accessibility and level of education in rural areas are always lagging. The decline of employment opportunities around the world is also a matter of serious concern. The education and literacy rates are generally considered lower in rural areas, where the level of usage of smartphones is mainly for communication and social media participation. That presents a challenge when introducing digital payment applications, which require more advanced digital skills. There is often inadequate infrastructure, including necessary IT infrastructure, particularly in remote rural areas and large indigenous populations. The costs related to IT infrastructure present a significant challenge in rural areas where poverty and unemployment rates are often high, especially in developing countries and least-developed countries (LDCs). Digital technologies require basic literacy, numeracy, and specialized technical knowledge and skills for the smooth conduct of financial services. People without such financial, digital and numerical competencies can end up marginalized in various ways in such an increasingly digitally driven society.

1.2 Financial Inclusion in India

In the present scenario, accepting an inclusive financial system is important. It is to be noted that the inclusion of the financial system has also become a matter of concern in policy in many developing and underdeveloped countries. The earnings of each citizen of the country are considered a financial asset for enhancing their financial status, which in turn enhances the progress and status of the nation. Financial inclusion is considered the stepping stone for more comprehensive growth by several countries. The Rangarajan Committee Report defined financial inclusion as "ensuring access to various financial services and timely, adequate and affordable credit where required by vulnerable sections of the society such as weaker sections and low-income groups" (RBI, 2008). It is also defined as a state in which "all bankable people of a country can easily access and use of available formal financial services and products at an affordable cost (David-West et al., 2016; Kasprowicz & Rhyne, 2013; Ozili, 2018; Sarma, 2008; Sinha, 2014). A modern, growing and healthy economy depends on the fundamental pillars of financial inclusion, which mainly includes providing access to financial services to all people across the social sectors at affordable costs on time and tailored to their needs when they desire, from reliable and responsible providers (Dahiya & Kumar, 2020; Pazarbasioglu et al., 2020). For better inclusive financial and economic growth and development of the economy, financial institutions and service providers are the strong backbone of the country.

Moreover, various empirical researches reveal that the expansion of a better and sound financial system and financial inclusion contributes to economic growth and development (Adedokun & Ağa, 2021; Asli Demirguc-Kunt Leora Klapper & Singer, 2017; Dahiya & Kumar, 2020; Huang et al., 2021; Kim et al., 2018; Lee et al., 2020; Pradhan & Sahoo, 2021; RBI, 2021; Sarma & Pais, 2008; Sethi & Acharya, 2018). Financial inclusion can reduce poverty, financial stability, and economic development for all segments of society (Bruhn & Love, 2014; Gomber et al., 2017; Park & Mercado, 2015; RBI, 2021). The government and other stakeholders should take steps and measures to make it practical. Every section of society is getting access to financial support, financial products, and even financial

services, especially in this digital era. There should be a need for timely and adequate credit availabilities at an affordable cost fairly and transparently. As a result, most developing countries like India promote and incentivize financial inclusion as a policy objective and concern of the policymakers, especially for those neglected by formal sector institutions.

The availability and access to financial services, especially by rural people of the country and vulnerable sections of society, is a precondition for their empowerment. The vulnerable sections of society are met with various advantages with access to finance, which will help them open a bank account for better saving and investment. They will benefit from proper participation in credit and its availability and an initiative to safeguard their family. Beyond all these, financial services will help them to overcome poverty in its actual means and ways. Poor people in our country also have the right to be actively involved in their personal and economic development, which could be made possible by a well-developed financial system. At the outset, it is evident that expanding access to financial services will reduce inequality. The causes of unemployment and poverty in the country's communities could be attributed to exclusion from the financial aspect, and thereby, a particular group in the society suffers. Despite these advantages, inadequate access to financial services is observed in rural areas of India. It is underpinned by factors such as lack of easy access to available and affordable financial services and products, economic nonviability from a demand and supply side, and cultural and regulatory factors.

Financial inclusion has been considered an important part of India's pro-growth economic policy measures and initiatives. A significant trend has been observed in efforts towards financial inclusion time and again by various governmental and monetary authorities in India. Pradhan Mantri Jan Dhan Yojana (PMJDY) is one such incredible program introduced recently, which has created a remarkable result in the banking sector by removing financial untouchability and unbanked and underbanked areas in the country and creating a massive number of bank accounts. PMJDY has the credit of having a remarkable development in

financial inclusion through savings accounts in low-income families, especially in remote areas. The success of this scheme cannot be confined to the only opening of bank accounts; it could be achieved when there is the sustainable operation of bank accounts. Such continuous operations could only fulfil the objectives of the scheme.

Still, there is an immediate need for the extension of banking and financial services across the country to reach a vast population despite its wide network of branches nationwide. In India, several households, especially those in rural areas, are still not connected to banking institutions and are far away from various banking services like holding savings accounts or minimal credit facilities. Multiple constraints and reasons are attributed to this backwardness, such as accessibility, high transaction costs, and the delay in providing banking services to them. Certain factors hinder proper access to financial services and products. They lack awareness and difficulty in affording financial products and services, financial illiteracy and inconvenience, inflexible, not customized, and low-quality products and services (Azeez N.P. Abdul & Akhtar, 2021). The current financial services provided should be made more effective by ensuring reliability and continuity. It should also be more flexible and convenient to extend banking and services to rural households.

1.3 Digitalization of Finance

In the 21st century, the phrase "digitalization of the economy" is becoming popular and rapidly developing worldwide as the most significant driver of innovation, competition, and growth. It is a global trend. "In the recent past, the world has faced a significant improvement in the digitalization of daily human activities by influencing how people communicate and interact through social and commercial media, as well as their financial relations. These advancements in digital technology are driving considerable changes in the global economy and society as a whole" (OECD, 2015b). Technological innovation can enhance productivity, accelerate economic growth, enable knowledge and information sharing and also increase access to essential services. Financial inclusion can be promoted with the various opportunities available in the digital economy, which may lead to the progressive economic development of the country.

In the contextual environment of globalization, innovation, and information, digital technology is one of the leading transformations in the economy. The world is continuously experiencing incredible innovations in all spheres. Everything seems just a fingertip away in the virtual world of digital systems influencing all streams of business, science and social functions. The economic growth of the country depends on its well-structured and innovative financial system. Finance, which is said to be an integral part of all sectors, has witnessed rapid technological innovations. Financial institutions are undergoing a dramatic transformation during the digitalization era. Digitalization improves financial services significantly. The changes are happening in their roles and responsibilities, delivery services, products to the distribution mode and channels, financial transaction platforms, etc. (Vives, 2019). With the financial services and products being digitalized, the sophistication of the financial system was enhanced competency and well-informed judgements for promoting financial well-being. The participants need to be informed of updates related to financial and digital aspects correctly through banking and non-banking financial institutions. "Digital innovations and technologies are progressively unified into the economy and are making a diverse influence on the financial sector by delivering new financial products and services" (OECD, 2018a; RBI, 2021; van Der Lugt, 2018). Digitization of financial services will enable increased access and enhance financial inclusion, especially of those unbanked and under-banked people, promote overall savings, increase economic growth and improve well-being (Arellano et al., 2016; Berkeley, 2017; Lewis et al., 2016; Malady & Buckley, 2014; Mukherjee et al., n.d.). Digitization of the financial sector is revolutionary because it decreases the costs of financial services and products and creates an inclusive digital financial system in the country. These technological changes create new opportunities for the financial system to drive inclusive growth and innovation, opening the doors to greater financial inclusion and participation by all people (DFI, 2015).

The concept of 'Digital Finance' is a recent and emerging area of the financial system, which includes financial technology, digital payment systems, and digital financial products such as digital derivatives, digital securities, digital carbon

credits, and a wide range of digital forms of conventional financial products and services (DFI, 2015; Ozili, 2018). Digital Finance describes the digitalization of the financial industry in general. It encompassed a magnitude of new financial products, financial businesses, finance-related software, and novel customer communication and interaction delivered by financial technology companies and innovative financial service providers (Gomber et al., 2017). Digital Finance can provide access to banks and their services, e.g., payment systems and credits, that otherwise could hardly be reached. Digitalization in financial services is not a new development, but the application is widened with the latest developments in Fintech services. These and other digital innovations create opportunities for countries to build more inclusive, productive, and prosperous societies. 'The technological concepts that initiate the recent developments in digital finance are blockchain technology, social networks, near field communication (NFC), peer-to-peer technologies, big data analytics and technology enablers. The technological enablers facilitate the financial process, like fast and mobile Internet, artificial intelligence, worldwide connectivity, mobile devices, intuitive user interfaces, and security technologies' (Gomber et al., 2017).

India stands on the list of the fastest developing countries and is under the deeper shadow of digitalization. During the last six years, there has been remarkable development to move India into a more inclusive digital financial system through cost-effective, convenient, reliable and secure means, bringing the unbanked rural households into the mainstream economy. Despite the rapid development of the financial sector during the digitalized era, significant sections of society still experience these changes at a lower pace, especially in the rural areas of India.

1.4 Digital Financial Divide in India

The term 'Digital divide' implies the gap between those people who have access to digital technologies and those who do not have such access. It refers to the unique and disproportionate pace of development in societies with access to digital infrastructure and services (Chandwani et al., 2016; Funredes, 2002; Paul, 2002; Radcliffe et al., 2012). This concept was initially popularized about the differences

in Internet access among the rural and urban areas of the USA. The access differential in digital technologies leads to social disparities due to the differences in the benefits between those who use it and those who do not. The term has gained importance as most developing and underdeveloped nations worldwide have considered this disparity or gap an obstacle to their overall socio-economic empowerment. This rising disparity has gained worldwide attention among planners and policymakers.

The Internet is expanding quickly, and not all countries, especially developing countries, can keep up with the constant changes. Most developing countries have low Internet penetration, leading to a denial of access to much web-based information and the latest technology. The digital divide does not just mean that someone doesn't have technology; it can also mean a difference in access to technology. Some areas and segments of society do not have the same high-quality computers, fast Internet, technical assistance, or simple telephone services.

The digital divide not only exists between countries but also within the countries as well, i.e., between urban and rural areas, men and women, educated and the uneducated, between different economic classes, and between the more and less industrially developed nations –driven by the availability, affordability and reliability of digital connectivity and services. The factors influencing the digital divide vary from region to region. The digital divide is the perceived gap between individuals and geographical areas at different socio-economic conditions regarding the opportunities they have to access ICTs and their Internet use for a wide variety of activities. As a result, a mass divide is being created across society, affecting the economy, education, information, financial access, etc. It is a significant concern of the governments and various stakeholders worldwide.

India has significantly initiated the revolution of the digital payment system by joining with other countries, specifically in the financial sector. Besides, as digital payments have been spread into rural areas, their impact is transformative based on exploring the opportunities in the technological era. Since the demonetization of 2016, the government emphasized using digital payment services through e-wallets,

online gateways, and PoS portals. Several companies, such as Free Charge and Paytm, launched their services in rural India, and also the government launched services like the BHIM app. An individual needs access to a working smartphone with an adequate internet connection and speed, as well as an active bank account along with either a debit card or credit card. So, it can be identified that the digital infrastructure is a massive roadblock for the digital financial divide.

Within the country, we can find the digital divide between rural and urban India is significant. Nearby, 70 per cent of the population of India lives in rural areas. India has many rural villages that do not have telephone, Internet and other digital connectivity. The rural infrastructure of India is severely backdated, and even the primary forms of the Internet are absent in most rural India, which is the basic necessity of digital financial transactions. According to the World Bank's report (Robinson, 2023), 'India is the second-largest telecommunication market. Although 25 per cent of mobile users in India use digital literacy, only 6 per cent of India's total mobile users do so. Although the government has announced zero balance accounts, people, especially from rural areas, are not reciprocating equivalently regarding transactions or account usage. Almost 65 per cent of mobile users in India are smartphone users, and most of the users from rural areas lack the basic knowledge of operating smartphones and even ATMs. Even now, they depend only on basic conventional banking instruments such as cheques, withdrawals, and so on (Bapat, 2012).

Despite various efforts and initiatives taken by Govt. and other financial institutions, the digital gap in India is still present, especially in digital finance, because of limited access to digital resources and infrastructures and an absence of digital and financial literacy. In rural areas, which are usually hardly populated, the investment and installation of physical infrastructures, such as bank branches, broadband infrastructures and cell phone towers, are less economically viable and profitable. This can affect developing countries disproportionately as they are often located and isolated in rural areas, whereas working-age men more tend to be mainly in urban regions (UN Statistics, 2016). People, especially those living in rural areas of developing countries like India, further face persistent structural issues and

constraints, including their higher likelihood of being out of school and formal education system. It ultimately translates into being confined in technology-poor environments in terms of accessibility and affordability, where it is difficult to use digital technologies and there are scarce (if any) financial resources to use to go online. More than half the country's population is unaware of the Internet, and around 20 per cent of the population uses it. Internet usage in India is closely associated with social media use, and only 10 per cent of people use it for work. One of the essential criteria of the digital financial divide is the language barrier. Most of the content on the web is either written in English or other foreign languages, which Indians are not well versed in. As a result, getting benefits out of these contents is not possible. Bridging such a digital gap requires considerable effort from the government and other stakeholders in the country, which is more than normal for all stakeholders.

1.5 Digital Financial Services (DFS)

Rapid digitalization led to the introduction of Digital Financial Services (DFS), providing the opportunity to expand financial inclusion by instigating more specialized digital financial services and products, especially for the excluded and underserved groups. Digital financial services are a medium of delivering all financial products and services using Internet technology without visiting physical bank branches. Ozili (2018) acknowledges that 'while there is no standard and appropriate definition for the concept of digital finance, there is some consensus among the scholars that digital finance includes all financial products, services, technology and digital infrastructure that facilitate people to have access to payments and other credit facilities provided through the Internet (online) i.e. digital platforms without the need to access bank branch physically or without dealing directly with financial service providers. It provides financial services to the underprivileged, unbanked or underbanked segments of the population through digital skills, platforms and electronic money models (Arellano et al., 2016; David-West et al., 2018; Grimes et al., 2010; Scott et al., 2017). DFS is a cost-efficient and effective digital delivery channel, electronic payment system, and electronic banking

products and services (David-West et al., 2020; Pazarbasioglu et al., 2020). DFS includes mobile money, mobile banking, internet banking, e-wallets, app services, etc. 'DFS comprised of all electronic or digital products and services offered by financial institutions, e.g., credit and chip cards, electronic exchange systems, transfer of money, home and online banking, and home trading services as well as automated teller machines (ATMs)' (Gomber et al., 2017). These services could be accessed through 'electronic cards, smartphones, chips, tablets, phablets, biometric devices and any other electronic system'(Rana et al., 2019). 'It is a financial service provided through an electronic platform (e.g., mobile phones, debit or electronic credit cards, internet).' Besides providing financial products, DFS could also include behavioural nudges such as SMS text promoting savings or texts on reminders for repayments (Financial Inclusion Insights, 2017).

A wide range of digital financial products like credit, savings, payments, and electronic credit is included in digital financial services. It also constitutes insurance products with digital delivery modes like smart cell phones, internet connections and point-of-sale (PoS) terminals. Cash has been replaced by plastic cards in many developed economies for some time. "The goal of financial services and products made offered through digital platforms is to contribute to sustained and inclusive economic growth, poverty reduction and to the financial inclusion objectives of developing economies" (Keifer & Effenberger, 2016; Di Castri & Gidvani, 2014; ITU, 2016; Muthiora, 2015; Sassi & Goaid, 2013; Zulfqar et al., 2016). "Ideally, there are three important constituents of digital financial service, namely a digital transactional infrastructures and platform, and the level of usages by individual and agents of a device – most commonly a smart mobile phone – to interact via the digital platform" (Kate Lauer and Timothy Lyman, 2015). Digital financial services are made effective when the user has a bank account and transaction of adequate funds through the accounts for facilitating cash payments or receiving income. It could be facilitated through many digital platforms, including mobile services, internet facilities and personal computers. Thus, the significant factors affecting digital financial services are the country's digitalization, accessibility and affordability, and convenience, which shows their low transaction cost. If digital

financial services are more convenient and accessible, with high versatility and lower transaction costs, including minimum interest rates on loans, the demand will be better (Ahmad et al., 2021).

"However, in developing countries, bank accounts and internet connections are still only reaching half of the population (ITU (International Telecommunications Union), 2015)". "Instead, digital systems trusting on smart mobile phone technology have accumulated the attention of financial inclusion advocates and providers for their potential to facilitate financial services to the remote unbanked rural population. Mobile network coverage spreads nearly 90 per cent of the world (Frydrych & Aschim,2014)". Requirements for using smart mobile-based services are commonly less awkward than those that have a bank account. Thus, mobile services are much more easily accessible and affordable to low-income people, especially in rural and remote regions.

Many developing countries facilitate DFS through various platforms like mobile services, which are handy and provide electronic payment and other services. People can easily send and withdraw money and make other necessary payments through their mobile money accounts. DFS mainly depend on agents as it is less expensive than providing a bank branch in an unbanked area. The cash-in or cash-out services offered by agents are significant for the disbursement of DFS. They play an essential role in helping new customers start bank accounts through mobile and engage themselves in exchanges through digital mode.

Certain value-added services are provided through digital financial platforms by utilizing mobile phone features like messaging. Information is considered the basis of financial inclusion as it helps build the financial ability and capability of the users. It is also to be noted that value-added services mainly provide informational services rather than financial services. "They are also changing the way financial services are delivered, with an overall global upward trend in the uptake of digital financial services. This uptake of digital financial services is expected to continue to grow in the coming years, acting as a catalyst for further development and innovation" (OECD/INFE, 2017).

The speed and revolution of innovation in digital financial products and services, including financial technology innovations, is remarkable. In underdeveloped and developing nations, DFS can increase the accessibility of financial services systems, especially among rural people who were unbanked or underbanked in the past (Finau, 2017). It promises to vastly spread the scope, range, and complexity of financial service strategy and delivery. The entire journey of digital financial transformation to empower rural households remains difficult. Many challenges characterize the digital financial transformation of rural India, such as inadequate digital infrastructure, lack of trust, lack of financial knowledge, and additional costs involved (Chandwani et al., 2016).

1.6 Digital Financial Inclusion

As internet connectivity has become an integral part of life and the medium for everyday exchanges, information sharing, and access to essential and financial services, connecting with everyone is considered a necessity rather than a luxury. However, some people still face real constraints on participation and are excluded from the formal financial system. Although the overall digital divide has narrowed across the country in recent years, it has also deepened where gaps exist. Digital inclusion is thereby reducing this digital divide wherever it exists. It is mainly based on the presumption that all people should be able to utilize digital technologies to manage their health and well-being, access education and services, organize their financial matters, and connect with other people. The primary purpose of digital inclusion is to enable all people to access and use digital technologies efficiently and effectively. It goes beyond simply maintaining a computer or having access to a smartphone. Social and economic active participation and involvement lie at the heart of digital inclusion, which uses online and mobile technologies to improve skills, enhance the quality of life, educate, and promote well-being, civic engagement, and sustainable development. There are also larger national goals at stake. Digital inclusion is necessary for social, economic, and environmental transformations. For the advantages of digital technology to be shared by everyone, constraints to inclusion must be pinpointed and addressed from the outset. Access to

digital technology was observed as the basic and necessary driver of digital inequality. The conceptualization of digital inequality has emerged, recognizing the role digital skills and knowledge, attitudes and behaviours, and affordability of access play in promoting or hindering digital participation of people. One of the essential aspects of digital inclusion and technology is the financial inclusion of the unreserved, excluded, and unbanked section of society. i.e., digital financial inclusion.

Digital financial inclusion is a multidimensional concept that has recently received worldwide attention from policymakers and financial institutions. "Digital financial inclusion refers to access to digital technologies and use of formal digital financial services and products by excluded, unbanked, underbanked and underserved segments of the population (Kate Lauer and Timothy Lyman, 2015; RBI, 2021). Such services should be suited to the poor people's requirements and delivered accordingly, at a cost both affordable and accessible to people and sustainable for providers" (Caruana et al., 2015; Kaiser & Menkhoff, 2017; Malady & Buckley, 2014; Zhang et al., 2019). The key elements of digital financial inclusion are digital financial transaction platforms, service providers, digital devices, and infrastructures (Caruana et al., 2015; GPFI, 2016; Kate Lauer and Timothy Lyman, 2015). Digital financial inclusion improves the economic growth and development of the country in many ways. It increases the income and savings of people, decreases the cost of financial services and reduces the gap between urban and rural income groups and income inequalities (Ozili, 2018; Schneider, 2018; Zhang et al., 2020). It can make service providers profitable and helps the sustainable development of micro and small enterprises (Yang & Zhang, 2020; Zhang et al., 2019) and human capital development (Ahmad et al., 2021). The availability and accessibility of digital financial transactions for the general public, including vulnerable, lower- and middle-income classes and remote rural areas, improve digital financial inclusion and make real growth possible and enjoy the benefits (Huang et al., 2021; RBI 2021). Digital financial inclusion enhances the convenient accessibility, coverage and efficiency of digital financial services (RBI, 2021; Yang & Zhang, 2020).

One of the essential requirements for the success of digital financial inclusion is Digital Financial Literacy. The demand side issues of digital financial inclusion are having knowledge and awareness of digital financial products and services, absorption and adaption capacity of people, etc., which may create demand for these services. The evidence shows that a higher level of digital financial literacy positively affects digital financial inclusion, thus contributing to the country's economic growth (Azeez NP, 2020; Banerjee et al., 2017; Tony & Desai, 2020).

1.7 Digital Financial Literacy

Digital financial literacy has assumed a greater significance in the 21st century due to various products and services of finance, the prevalence of fraudulent schemes, and regulators and government deregulation policies. It is considered an integral part of life skills, and the inability to access or use such services has become an obstacle for individual, community, and economic development. The significant changes have strengthened digital financial literacy for adapting to rapidly changing situations and strengthening digital financial literacy. "Therefore, the concept of digital financial literacy became more critical nowadays and is considered a prerequisite and preliminary step for the inclusion of people in the financial system of the country" (Azeez & Banu, 2019; Azeez N.P, 2020; Lyons & Kass-Hanna, 2021). It enables one to manage personal finance prudently and achieve financial and social well-being. To learn digital financial literacy, we first need to understand financial literacy. A person is said to be financially literate if he/she can do finance transactions better and make decisions with accurate analysis, understanding, and management of financial matters. The person can manage money by making proper use of informed judgements.

Financial literacy is one of the prerequisites to improve effective financial inclusion and financial security. It refers to whether individuals hold adequate awareness, knowledge, skills and positive financial attitudes required to make well-informed financial decisions and practices (Atkinson & Messy, 2012a, 2012b; OECD, 2015a, 2017). The person can manage money by making proper use of informed judgments. "It is the information and understanding of the financial

matters and risks, as well as the skills, inspiration, and level of confidence to apply such knowledge and understanding for making proper, efficient and effective decisions across various financial contexts. It also helps to develop the financial well-being of individuals and society, and enable them to participate in economic life (OECD, 2015)”. The core skill in the digital financial system is essential and needs the hour in the present scenario. "Therefore, governments and financial institutions worldwide are interested in finding efficient approaches to enhance the financial literacy level amongst their population. Many of these stakeholders are in the process of creating or leading a national policy strategy for financial education to give learning opportunities throughout a person's life" (Atkinson & Messy, 2012; OECD, 2015b). "The OECD defines financial education as the process of acquiring knowledge and awareness about various financial services offered by financial institutions, concepts and risks and develops the skills and confidence level to become more aware of risks, challenges and opportunities, to make well-informed choices, to know where to go for help, and to take other active measures to enhance the financial well-being, (OECD, 2005)”. “This definition was endorsed by G20 leaders in 2012 (INFE/OECD, 2012) and is used in a majority of countries, (OECD, 2015a”).

"In the recent past, the world has faced a significant improvement in the digitalization of daily human activities by influencing how people communicate and interact with each other through social and commercial media, as well as their financial relations. These advancements in digital technology are driving considerable changes in the global economy and society as a whole" (OECD, 2015b). Digitalization of the economy and technological innovation leads to the introduction of the concept of 'digital literacy'. Digital literacy means awareness, knowledge, and skills for various digital contexts and mediums, namely computers, the Internet, tablets, smartphones, digital applications, and platforms (A. Lyons et al., 2019). "Digital financial literacy is the knowledge, acquired skills, confidence and competencies and evolve necessary behaviour and attitudes to effectively digital utilization devices for financial transactions" (Alliance for Financial Inclusion, 2021; Lyons & Kass Hanna, 2021; OECD, 2015a, 2018b). Digital financial literacy

is also the ability of the person to use financial resources by consistently monitoring effectively and thus improving the well-being and developing economy.

The main dimensions of digital literacy include digital technology, its access and usage, mobile phone aptitude, mobile money and other digital financial skills, and access and use of social media (A. Lyons et al., 2019; A. C. Lyons et al., 2019; A. C. Lyons & Kass Hanna, 2021). The technology can be considered transformative if and only when the customer requires adequate awareness and aptitude to use and apply these technologies to enhance their lives. Therefore, financial literacy is the prerequisite to accessing and using digital financial services in an informed, responsible, effective, and transformative manner, including various dimensions of digital literacy. From this perspective, digital literacy has gained the wide attention of various stakeholders. Digital financial literacy (DFL) is the application of a combination of both financial and digital literacy to facilitate the use of digital financial services. It is increasingly being recognized as the solution for addressing and using digital financial services (Stephen G, 2022).

The advent and development of financial technology or simply 'Fintech', especially in the digitalization era, coupled with the Covid-19 pandemic and demonetization and movement towards digital economy in India, accelerated the access to digital financial services, providers of digital financial platforms and infrastructures. "Financial technology means using software, applications and other digital platforms and devices to provide financial services through digital devices such as internet, smartphones, etc" (Morgan & Trinh, 2020). It has become an emerging and promising tool to stimulate financial inclusion in the digital era. These digital financial services are convenient, accessible, user-friendly, and affordable alternatives to conventional financial services. This rapid expansion of digital financial services, leading to improving financial inclusion, has brought a new challenge of connecting basic financial literacy to digital literacy. Accordingly, researchers have proposed a framework to conceptualize and operationalize the concept of digital financial literacy (DFL) as a combination of various dimensions of financial literacy and digital literacy (A. C. Lyons & Kass Hanna, 2021). Because

the basic financial literacy concept and its components are becoming inadequate tools for explaining digitalization in financial services. Digital financial literacy is a multidimensional concept similar to financial and digital literacy. It includes "awareness of digital financial risks, knowledge of digital financial products and services, awareness of digital financial services, and knowledge of consumer rights and redress procedures" (A. C. Lyons & Kass Hanna, 2021; Morgan et al., 2020).

Digital financial services also help to select their exact services and products according to their need and requirements by giving necessary information. Promoting digital financial literacy leads to various aspects of financial inclusion and prosperity in a sustainable manner. Digital financial services are untouched or unreached in rural areas and should be taken to vulnerable sections of society. If people are financially literate, it will keep them informed and make them confident enough to manage finances and make financial decisions. The higher construction, maintenance, and other operating expenses have greatly hindered the spread of digital financial services and infrastructures to poor sections of society or rural areas where such amenities are challenging. "The physical infrastructures are expensive to build and maintain in far-flung areas while moving to urban areas is costly for many rural customers" (Prasad et al., 2018). Digital finance has several opportunities to include the mob in finance-related matters, expanding the services through mobile phones. Thus, the individual is getting the ability to access financial services.

It is appreciable that the Reserve Bank of India, The Central Government, and various other financial institutions made effective efforts through projects and programs to enhance financial literacy and accessibility and help poor people get out of poverty. "Financial education is intended to offer people with such financial knowledge, which could help them to maintain budgets, choose among various financial plans, regulate their borrowing and debts, as well as equip them for making investment decisions"(Azeez & Banu, 2019). The various attempts like demonetization, the digital financial advancing system, and the development of mobile communication from a global perspective could not financially help the inclusion of poor people. It is a fact that most individuals are pretty unaware of

managing finance; they even do not have enough knowledge on related financial matters.

The expansion of digital financial services intensified the financial and digital divide at faster rates. The transition to digital financial services has exposed critical disparities in digital literacy, and targeted users, especially from rural areas, are more vulnerable than others. These people are unable to gain the benefits and improved opportunities of digitalization. Inadequate financial awareness and aptitude become significant obstacles to adopting and usages of digital financial services. Therefore, financial literacy, digital literacy, and digital financial literacy are becoming crucial factors that affect people's inclination to accept and use digital financial services. It indicates the urgency of educating people on digital banking mechanisms. It boosts not only banking but also the economic growth of the country. Thus, digital financial literacy becomes the key to creating a generation of informed people capable of benefiting from the best innovations and technology have to offer and, thereby, greater digital financial inclusion.

"Digital financial literacy has become an important need for our country. It became important after the demonetization rollout by the government of India; the present prime minister of India declared on 8 November 2016 the demonetization " (Mahajan & Singla, 2017). The primary objective behind demonetization was to convert India to a digital and cashless economy and eliminate the existence and use of black money in the country. The main motive behind this reform policy was to guarantee online or internet connectivity for rural people by supporting them with high-speed network connectivity (Rani, 2016). The scope was to promote a cashless economy; thus, it is helping to promote digital financial services. "The e-wallet establishments have seen a speedy expansion in the number of transactions and traffic on their websites and app-based platforms, which are generally driven by many urban and metropolitan parts of the country" (Ganiger. V. Sunitha: B. Ranganatha, 2017). The people of India witnessed a severe financial divide due to demonetization. People were crowded at the counters of ATMs and banks for financial transactions, enlightening that India may take a long time to go for the

digital financial system and later on to a cashless economy. Despite the extended digital communications to bank accounts and other devices, a tiny proportion of people can transact without cash withdrawal or regularly visiting the bank. This is mainly because of the lower digital financial literacy levels of the people. This clearly indicates an urgent need to make people understand the banking mechanisms that boost banking and the country's economic growth. Nevertheless, it is inevitable for the proper functioning of the 21st-century world. Thus, digital financial literacy is the key to creating a generation of informed people capable of benefiting from the best innovations and technology.

Financial services could be made more accessible to rural households with the advent of technological innovations and the advancement in rural areas by tapping telecommunication systems, even though certain obstacles are being faced in offering Digital Financial Services (DFS). The credibility of DFS can be attributed to the number and quality of agents, which are limited in rural areas. It further depends on the type and quality of customer service, skills, and quality. It might be a dilemma for people in rural areas to handle digital financial devices as they are not very accustomed to modern technological tools and instruments. Besides this, network connectivity is also a problem with people living in rural areas compared to people living in urban areas where the network coverage is more than enough.

However, introducing digital technologies and innovations in rural regions of India can be a significant challenge. Around the globe, there is a decrease in rural population, and it is a fact that accessibility and the level of education in rural areas are always lagging. The decline of employment opportunities around the globe is also a matter of serious concern. The education and literacy rates are generally considered lower in rural areas, where the level of usage of smart mobile phones is high and mainly for communication and social media transactions. That presents a challenge for the introduction of digital payment applications, which requires more advanced digital skills. There is often inadequate infrastructure, including necessary IT infrastructure, particularly in remote rural areas and large indigenous populations.

The costs related to IT infrastructure present a significant challenge in rural areas where poverty and unemployment rates are often high, especially in developing and least-developed countries (LDCs). Digital technologies also require basic literacy, numeracy, and specialized technical knowledge and skills. People without such competencies can end up marginalized in increasingly digitally driven societies.

1.8 Relevance of the Study

Financial services have changed a lot with the invention and intervention of technology in all ways and means. Notable changes have taken place in banking and financial services due to digitalization. There are complex and diverse services and products related to finance available in the country, including borrowed products and investment opportunities open to the general public. Along with its benefits, it also has risks that may not be readily noticeable. So, it is evident that scope and complications have increased significantly in matters related to financial decisions that people have to manage. Clear-cut differentiation between the range of digital and financial products and services should be made available to individuals. There is an increasing requirement for financial knowledge and literacy, at least a minimal level of necessary digital financial awareness and technological awareness and skills in this twenty-first century as technological innovations are at a speedier rate and the interconnectivity of the various services is increasing.

Proper digitalization is more or less attributed to the financial literacy and literacy rate in the digital aspect. Faster improvements in the digital payment system and mobile communication are linking poor households in rural areas through mobile phones to the digital interface. People should also be informed of the demand and supply side, which is possible by attaining digital financial literacy. The masses should be financially literate to benefit from inclusive growth by providing access to financial services and products, which is the main aim of financial inclusion. Thus, financial literacy stimulates demand, i.e., letting the masses know the purchasing possibilities. Financial inclusion is based on the demand of the people, acting from the supply side of the financial market. Both are the twin pillars that inform people about what they should purchase.

It should ensure that digital financial services reach weaker or unreached sections, especially in rural areas. It will help people be informed and confident in their financial decisions regarding their savings and wise application. The higher construction, maintenance, and other operating expenses significantly hindered the spread of digital financial services and infrastructures to poor sections of society or rural areas where such amenities are challenging. The physical infrastructures are expensive to build and maintain, such as in far-flung places, while moving towards urban areas is costly for many rural people of the country. However, the unbanked individual nowadays is increasingly accessing financial services through digital platforms. Digital finance holds several opportunities for greater financial inclusion and expansion of essential services using mobile phones.

Therefore, digital financial literacy has assumed a greater significance in the 21st century due to the complex and varied financial services, the prevalence of fraudulent schemes, and the deregulation of regulators and government policies. It is considered an integral part of life skills, and the inability to access or use such services has efficiently become an obstacle for individual, community, and economic development. It enables one to manage personal finance prudently and achieve financial and social well-being. It is rapidly recognized as a core skill for operating in the more complex digital financial system. Therefore, governments and financial institutions around the world are interested in finding efficient approaches to enhance the level of digital financial literacy among their excluded population, and many are in the process of creating or leading national policy measures for improving financial education, which provides learning opportunities throughout life (OECD, 2015c).

Everyone connected with the financial system must be more financially and digitally literate, including all financial services and product users. It is also to be highlighted that not only existing financial services users but the financially excluded poor households, the lower- and middle-income groups as well as the high-net-worth people, those persons who are the providers of services and even the policymakers and the regulators also should have financial and digital literacy. It is

also evident from the various studies done in different countries at the institutional/organizational level and the academic degree that the financial literacy level is low and needs policy measures for its enhancement. The widespread improvement in financial inclusion drives throughout the world shows sufficient evidence that without proper and high financial literacy, there is no ultimate achievement of financial inclusion.

Though most households hold a bank account, they are unaware of the many of financial services, facilities and investment provisions due to their lack of financial knowledge, unsatisfactory and adverse financial behaviour, and negative attitudes. People are opening bank accounts forcefully to take MGNREGA wages, old age, and agricultural pensions, getting LPG and other subsidies, etc. It is pointed out here that most people are unaware and not familiar with the basic concepts of finance and cannot make the savings that are necessary to make sensible saving and investment decisions and appropriate utilization of digital instruments. All these are due to the digital and financial illiteracy of the people, especially from rural unbanked people. Their knowledge and skills of various financial institutions, financial activities, and financial products are inadequate. Educating them with all the necessary and adequate knowledge could make their economic activities more fruitful. Most households have a bank account, which is being opened forcefully, and due to a lack of digital and financial education leads to improper utilization of services. States like Kerala and Goa, Chandigarh, Puducherry and Lakshadweep have recently been declared 100 per cent financially included in coverage of all households with at least one bank account. Despite sudden growth in account opening under PMJDY, there is evidence that India's digital finance force has a limited impact, mainly due to account dormancy and lower usage levels. Forty-eight per cent of account holders at various financial institution made no deposits or withdrawals transactions from that account over the past few years. The dormancy of bank accounts is higher among those sections of the populations with lower access to technology, such as more impoverished and rural populations.

This is a challenge due to limited access to financial services available to rural and backward areas and poor people, together with a lack of digital financial literacy and awareness about digitally provided services. These factors are hindering the inclusive financial development of the country. Facilitating and promoting an inclusive financial system is a significant part of the development plan for economic progress. Moreover, within the broader sphere of the inclusive financial system, access to capital and borrowing opportunities are crucial areas that need to be addressed to empower and drive traditionally underserved sections financially. The standard of living, education level, internet self-efficacy level, acceptability and adoption of new technology level, digital transaction platforms and infrastructures, and economic growth level are drastically different in India's urban and rural areas. People from urban areas are updated with new technology; they can use reliable and fast Internet for various online and financial transactions. They are comfortable with online transactions and can quickly transfer funds through the Internet and other banking platforms. However, the picture is a little different for rural areas. Internet penetration in rural areas is low as compared to urban areas. People from rural areas have a low internet self-efficacy factor. They are not aware of the different features of the Internet and do not know how to operate the Internet for various online activities. There is a strong need to introduce schemes or plans for the digitalization of rural India.

Thus, digital financial literacy is a prerequisite for its effective inclusion and challenges for policymakers. It also attempts to satisfy emerging financial inclusion and find a better solution to sustainable financial inclusion, particularly in rural areas. There are many ways to promote digital financial literacy, such as modern and old delivery methods as per the requirement and by utilizing the opportunities for better decision-making and behavioural change. It has become an essential need for our country. Indian government selected demonetization to tackle black money and make India a cashless digital financial economy. It promotes a cashless economy and increases the use of digital financial services. The e-wallet establishments have seen a speedy expansion in transactions and traffic on their websites and app-based

platforms, generally driven by many urban and metropolitan parts (Ganiger, V. S.& B. Ranganatha, 2017).

The recent experience of demonetization in India has revealed the severe digital financial divide. Despite the extended digital communications to bank accounts and other devices, a tiny proportion of people have been able to transact without regularly withdrawing cash or visiting the bank. This is mainly because of the lower digital financial literacy levels of the people. Thus, the awareness of the banking mechanisms not only boosts the financial and banking sector but also allows for the growth of the economy. Hence, it has become an increasingly important requirement for the smooth functioning of modern society and for transforming rural India. Thus, digital financial literacy is the key to creating a generation of informed people capable of benefiting from the best innovations and technology. Thus, digital financial literacy is a prerequisite for its effective inclusion. Although demonetization invited the number of digital financial services in India, are the rural people ready and capable of absorbing these digital financial services? This research study entitled “**AN ASSESSMENT OF DIGITAL FINANCIAL LITERACY OF RURAL PEOPLE IN THE STATE OF KERALA**” is relevant in this context.

1.9 Research Questions

- a) What are the digital financial literacy initiatives implemented by various stakeholders in India, particularly in the State of Kerala?
- b) What demand and supply factors influence digital financial literacy in rural areas of Kerala?
- c) What is the current level of digital financial literacy in rural areas of Kerala, and what are its key socio-economic and demographic determinants?
- d) What are the impact of digital financial literacy on the usage of digital financial services in the rural areas of Kerala?
- e) What are the reasons, challenges, and barriers rural households in Kerala face regarding digital financial literacy?

1.10 Objectives of the Study

- a) To understand digital financial literacy initiatives implemented by various stakeholders in India, especially in the State of Kerala;
- b) To examine the demand-side (Digital financial aptitude, Digital financial behaviour & attitude, awareness and affordability of digital financial services) and supply-side (Availability and accessibility of digital financial services) aspects of digital financial literacy in the rural areas of Kerala;
- c) To measure the level of digital financial literacy and identify its socio-economic and demographic determinants in rural areas of Kerala.
- d) To analyze the impact of digital financial literacy on the usage of digital financial services in the rural areas of Kerala.
- e) To explore the reasons, challenges and barriers rural households face regarding digital financial literacy in Kerala.

1.11 Hypothesis of the Study

H0: The digital financial literacy of rural people in Kerala is not satisfactory.

H0: There is no statistically significant difference in digital financial literacy among the different socio-economic groups.

H0: There is no association between socio-economic and demographic variables and digital financial literacy.

H0: There is no impact of digital financial literacy on usages of digital financial services.

1.12 Limitations of the Study

The study is mainly based on the primary data collected from 20 villages in the state of Kerala. Therefore, the survey results are location-specific, and the conclusions drawn may not apply to a different state having different socio-economic conditions. The study is subjected to the usual limitations of sample

survey techniques. The study is based on individuals from rural areas and does not cover households.

1.13 Scheme of the Study

This research work has been organized into seven chapters, aligned with the specific objectives drafted in the study.

Chapter I: Introduction

The first chapter of this thesis is comprised of an introduction, providing a background to the study along with key concepts like financial inclusion, digitalization of finance, the digital financial divide in India, digital financial services, digital financial inclusion and digital financial literacy. Then, the chapter progresses towards the relevance and objectives of the study. Finally, this chapter enumerates various limitations of the study and the scheme of the thesis.

Chapter II: Literature Review

The second chapter conducted an extensive and detailed review of the literature incorporating empirical and methodological sources. This chapter is divided into four sections. The first section focuses on the literature review on financial literacy, especially in digital financial literacy. The second one is related to the review of literature on digital finance. Thirdly, the literature review emphasizes digital and financial divide-related studies, and finally, the methodological evaluation of literature is related to digital financial literacy and identifying the research gap.

Chapter III: Sources of Data and Research Methodology

The third chapter starts the discussion with data sources with a main focus on sampling design, pretesting and pilot survey, the locale of the study, targeted population and sample size determination, sampling techniques and demographic profiles of respondents. The next section of the chapter proceeds with the theoretical framework of the methodology, which comprises the demand side of digital financial literacy, the supply side of digital financial literacy, and the methodology

related to the measurement of digital financial literacy and its determinants. Finally, it also includes the methodology for examining the impact of digital financial literacy on the level of digital financial service usage.

Chapter IV: Initiatives for Digital Financial Literacy

The fourth chapter analyses the significance and importance of digital financial literacy, especially in promoting an inclusive financial system. The chapter details national-level initiatives taken by various stakeholders, including programs by the Government of India (Digital India, PMJDY) and the Reserve Bank of India (RBI), to enhance digital financial literacy and safely use digital financial services. It also discusses digital financial literacy in Kerala, including its unique socio-economic context, challenges, and state-specific initiatives by local bodies and NGOs to promote digital financial literacy and ensure inclusive digital usage.

Chapter V: Demand and Supply-sides of Digital Financial Literacy

The fifth chapter examines the demand and supply aspects of digital financial literacy from the perspective of rural people based on primary data. The demand side of digital financial literacy highlights the role of abilities, attitudes, and awareness of respondents. Digital financial aptitude refers to the skills needed to use digital financial tools influenced by financial and digital literacy. Digital financial attitude explores trust and willingness to adopt such services. The affordability of digital financial services addresses cost barriers like device and service expenses, while digital financial awareness focuses on knowledge of users' available services. Similarly, the supply side of digital financial literacy discusses dimensions like the availability of digital financial infrastructure and accessibility of digital financial services.

Chapter VI: Estimation of Digital Financial Literacy & Its Determinants

The sixth chapter focuses on measuring digital financial literacy in the study area across various demographics, identifying its determinants, and examining its impact on the usages of digital financial services. It provides a detailed analysis of digital financial literacy levels, broken down by districts, age groups, gender,

religion, caste, marital status, education level, and occupation, along with variations and patterns across these categories. The chapter explores the key factors—such as socio-economic status, digital infrastructure, and education—that influence the digital financial literacy of the rural people of Kerala. The chapter also examines how digital financial literacy affects the adoption and usage of digital financial services. Finally, the chapter also identifies the reasons and challenges of digital financial illiteracy, along with the reasons for not preferring digital financial transactions and the factors that affect the propensity of its adoption.

Chapter VII: Findings and Suggestions

The last chapter concludes with a summary of the key findings from the analysis, mainly based on primary data, including demand and supply side aspects of digital financial literacy, disparities across demographics, the factors influencing literacy levels, the challenges faced, and the impact of literacy on digital financial service adoption. The study also provides actionable recommendations to improve digital financial literacy and identifies areas that need deeper exploration.

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CHAPTER 2

REVIEW OF LITERATURE

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- 2.1 *Literature Reviews on Financial Literacy*
 - 2.2 *Literature Reviews on Digital Finance*
 - 2.3 *Literature Reviews on Digital Financial Literacy*
 - 2.4 *Literature Reviews on Methodology of Measuring Digital Financial Literacy*
 - 2.5 *Research Gap*
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Researchers have conducted several studies on digital financial literacy in various countries and groups. Many research articles, working papers, and reports have drawn attention to financial literacy and the movement towards the digital economy. Many institutions and individual researchers have studied the same, and its implementation and absorbability are related to specific countries, states and districts. Various research studies and government reports have focused on the success of usage and awareness of digital financial services by various sections and groups of society.

2.1 Literature Reviews on Financial Literacy

Mitchell & Lusardi (2015) state that although it is worth assessing how people are financially literate, it is hard to explore how people process financial information and make well-informed decisions based on this knowledge. This is so because financial literacy comprises a number of concepts, including financial awareness and aptitude, financial skills, and financial capability.

Lusardi (2017) tried to understand the comprehensive overview of working women's financial capability. They examined how a key indicator of finance has changed between 2012 and 2015. It was found easy and tangible for working women to manage their household expenses with the economy's recovery. In turn, they became financially less fragile. Carrying credit cards is not a habit among the female respondents. They are not even in agreement with unconventional finance services.

A. C. Lyons & Kass-Hanna (2021) found that households in nations with higher financial literacy were more likely to engage in positive savings behaviours and formal borrowing. The countries with better financial and technological infrastructure, higher levels of human development, more political stability, and stronger legal rights were more likely to engage in financially inclusive behaviours. However, there was considerable variation across the countries. The effects of financial literacy, infrastructure, and other socio-economic macrofactors do not apply equally to all people. While these factors improved financial inclusion outcomes on average, economically vulnerable groups were more responsive to their effects than less vulnerable groups. The young, women, the less educated, and low

income level people face significant and interconnected barriers to accessing financial services. As a result, more targeted and comprehensive programmes addressing the multiple barriers to financial inclusion may be required, allowing interventions like financial literacy to be effective. Therefore, there is a need to frame financial education programmes in such a way to cater the needs of various audiences, particularly the most vulnerable populations, to improve financial literacy. Those who are already financially secure can benefit from similar initiatives as well. Their use of financial services deepens their financial knowledge and skills through a "learning by doing" process. Thus, there exists a two-way relationship between financial literacy and financial inclusion.

Yahaya et al. (2019) attempted to examine the relationship between financial knowledge and financial attitudes among university students in Malaysia. The study was conducted with a sample of 370 students through a behavioural approach. The study used both simple linear regression and multiple regression analysis as statistical techniques. The study revealed that university students have moderate financial literacy knowledge. Students in management courses have more financial knowledge than students in other courses. Financial knowledge is having a remarkable impact on the financial attitudes of the respondents. Financial attitudes also significantly influenced financial behaviour, as revealed by the results. Further, it was found that financial knowledge does not significantly influence financial behaviours.

Ergün (2018) analyzed the financial literacy levels of university students in eight European countries regarding personal finance. The study was conducted through an online survey with a sample of 409 using a questionnaire, and the results of the study found that a medium level of financial literacy existed among the sample. It is also revealed that students from Poland were more literate. Students living alone are more knowledgeable than students staying with their parents. More than parental influence, technological and environmental influence are considered to be notable, as revealed by the study.

Lusardi & Oggero (2017) tried to understand the comprehensive overview of working women's financial capability. They examined how a key indicator of finance has changed between 2012 and 2015. It was found easy and tangible for working women to manage household expenses with the recovery of the economy, and in turn, they became financially less fragile. Carrying credit cards is not a habit among female respondents; rather, they are not in agreement with using unconventional finance services.

Morris & Koffi (2015) evaluated the link between financial literacy level among Canadian University students and their prior education on the subject. The results of the study disclose that enhanced financial skills among the students concerning the classes on finance. The significance was less or nearly insignificant in the secondary-level courses. The analysis of the study made a point that certain socio-demographic factors also influence making people financially literate.

Robert (2013) tried to find out whether there is a relationship between entrepreneurial success and financial literacy in Nairobi. The researcher interviewed 79 SMEs from Nairobi, querying both financial literacy and SMEs' success. A positive association was found between financial literacy and entrepreneurial success in Nairobi. The association between high and low financial literacy is also attributed to the big players and low players in the study.

Bendre & Singh (2017) considered financial literacy as an essential adjunct for promoting financial inclusion, consumer protection and, ultimately, financial stability. The study emphasized the need for financial inclusion, which is pursued in a commercially viable manner. This is possible only if the entire suite of financial products and services is offered to the customers. There is a need for financial literacy in both developed and developing countries as it leads to improvements in knowledge and skill, freedom from the vicious circle, empowerment of entrepreneurship, and extreme penetration in the financial market. Therefore, both concepts of financial inclusion and literacy need to go hand in hand, enabling the layman to realize the needs and advantages of the financial products and services the formal financial institutions render.

Shih & Ke (2014) deal with two major issues related to financial decisions made by consumers and the relationship between the theoretical and practical applications. The study was conducted on a sample of 535 college students using the questionnaire tool. The outcome of the study exposed certain positive and negative determinants of financial decisions. Retention planning and higher financial knowledge are positive determinants, and anxiety is a negative determinant. The higher the financial practice, the higher the possibility of high-risk financial decisions. A notable result revealed from the study was that females are taking risks when investing in financial products, which are of high risk compared to males. This is also attributed to the status enjoyed by women in Taiwan for such a difference in decision-making related to financial matters.

Patrick et al. (2016) explain the individuals' financial literacy level through socio-economic and demographic variables. Financial literacy helps people make more assertive, efficient and well-informed decisions in the monetary context of their lives. As an indicator of measuring the financial literacy level, three criteria were adopted: financial attitude, financial behaviour, and financial knowledge. Logit and Probit models were estimated from the socio-economic and demographic explanatory variables like gender, age, marital status, dependent family members, occupation, educational level, educational level of parents, and individual and family income. Marginal effects (incremental propensity) were found to be statistically significant association at the conventional levels for these variables: gender (9.56 per cent), educational level (2.54 per cent), individual income (6.32 per cent), and family income (3.73 per cent). The marginal effects (incremental propensities) were found to be negative and statistically significant for the dummy dependent family members (-7.51 per cent), showing that individuals with no dependent family members and have higher levels of education and both individual income and family income levels are likely to belong to the category with high financial literacy. Furthermore, the result shows that 67.1 per cent of respondents were categorized as having low financial literacy levels. These findings confirm that there is a need to design an effective measure to minimize the problems related to financial illiteracy. It is mainly recommended that major efforts and initiatives be

undertaken to enhance financial literacy among the women respondents having dependent family members who have a low level of educational and income levels.

Aggarwal & Gupta (2014) examined the influence of various demographic factors like gender, discipline and level of qualifications on financial literacy and tried to determine the relationship between demographic characteristics and financial awareness. The survey was conducted on a sample of 148 students from different colleges, and the result of the study revealed that other demographic factors are influenced significantly by education as a variable. They surveyed 148 respondents from different colleges and revealed that discipline and education level significantly impact financial literacy. As revealed in the study, male students have more awareness related to financial matters than female students. Certain demographic factors like level of education, stream and discipline positively influence financial awareness. The researchers also recommended that at a very early stage, financial knowledge should be given to the students so that it may lead to better life satisfaction and academic performance.

Agarwal et al. (2017) portrayed the overall picture of financial literacy programs in various stages initiated by governments. Their research suggested that if a youth is financially literate, it will benefit himself and the whole community. But regrettably, only a few people are aware of it. Further, the researchers also recommended that the financial literacy program be included in the school and college curriculum. For the best performance of any financial literacy program, there should be a motivated teacher, ample resources, a relevant curriculum, and community involvement.

Sekar.M & Gowri.M (2015) studied financial literacy and the factors that affect Gen. Y employees in Coimbatore. Certain factors like income, family status, education, gender, and age of the respondents have direct or indirect impacts on depicting their financial literacy, as revealed through the study. The study also concluded that low-income employees have comparatively low financial literacy.

Arif (2015), in his research, tried to understand the relationship between financial literacy and determinants of investment decisions amongst investors in the

stock exchange of Karachi. About 154 investors participated in the survey. The study revealed that the financial literacy score was below 50 per cent, representing a low financial literacy level. As the age increased, the financial knowledge of the respondents increased. It was found that male sampled respondents are comparatively more financially alert and aware than females. The study also pointed out that married respondents are more financially literate than unmarried respondents.

The National Centre for Financial Education (2019) conducted a second financial literacy and inclusion survey in 2019 based on the OECD framework. Financial literacy is measured using the three financial components used by the OECD: financial knowledge, financial behaviour and financial attitudes. At the national level, the survey reported that only 27 per cent of respondents are financially literate. The survey found that western region respondents are more highly financially literate (37 per cent), followed by North East (33 per cent), North (32 per cent), and South (30 per cent) regions. The survey also found that only 4 per cent of rural respondents and 33 per cent of urban respondents are financially literate. The male respondents were found to be financially more literate (29 per cent) than females (21 per cent). Youngsters are more financially literate than middle and old age people. The age group of 18-29-year-old respondents are the most financially literate (30 per cent), followed by 30-49 years (27 per cent), 50-69 years (25 per cent) and 70-79 years (23 per cent). The higher-educated and higher-income respondents found a higher level of financial literacy. In a nutshell, the survey found a low level of both financial literacy and financial inclusion among respondents nationally. It also observed from the survey that there is a close positive and significant relationship between financial inclusion and financial literacy. Higher financial inclusions have higher financial literacy and vice versa. The survey also concluded that the rural-urban gap is in terms of both financial inclusion and financial literacy. The respondents located in the rural areas are much more backwards regarding both financial indicators than those in urban areas.

2.2 Literature Reviews on Digital Finance

Patil (2018) observed that the digitalization trend has created many opportunities in the financial sector, such as the demand for a wide range of services, the merger of financial services of banking and non-banking financial companies, the replacement of physical or branch banking and improving efficiency. The future anticipation of Aadhaar eKYC will make people's life easier. The study pointed out that digitalization in financial services is not a new progress, but the access and usages is widened with the new improvements in fintech services. The key to survival in this sector will be the ability to adapt and adjust to technological changes.

R. Singh & Malik (2019) found that the shift from physical check clearing to Cheque Truncation System (CTS) technology, as well as the development of online and mobile banking from traditional brick-and-mortar banking and the introduction of BHIM and UPI applications, signifies the widespread impact of digitalization in today's banking environment. Since information technology (IT) is essential to a functioning banking system, Indian banks have built strong infrastructures to take advantage of IT's advantages, including contextual banking and open Application Programming Interfaces (APIs). Despite the inherent hazards, the banking industry has gradually embraced digitization to provide efficient consumer services via computers and mobile devices. Rural banking clients find it difficult to accept digital payments, even though the Indian banking sector competes in the technology department worldwide. This study analysed the prospects and difficulties that the rural banking industry faces, with a particular emphasis on digitization, and to assess the role that digital literacy plays in modern banking. The study aims to understand the attitudes and actions of rural customers regarding these services by shedding light on the digital technologies and techniques that banks in rural India have embraced.

Chen & Zhao (2021) looked at the connection between the poverty rate and digital finance in the rural areas of China. Their research, which is based on information from the 2017 China Household Finance Survey (CHFS), shows that

digital finance considerably reduces rural households' absolute and relative poverty. Digital finance is emerging as an effective weapon to fight against rural poverty and unemployment through processes like easy availability of credit and information, stimulating entrepreneurship, and developing social networks. Theoretical frameworks such as social capital and financial inclusion theories give additional insight into the transformative potential of digital finance in enhancing the socio-economic capacity of rural people. These revelations have significant ramifications for practitioners and politicians, providing direction for the planning and execution of focused initiatives to combat rural poverty. To fully realize the potential of digital money in promoting inclusive growth and prosperity in rural China and beyond, research activities must continue.

Hasan et al. (2022) analyzed the impact of financial knowledge on rural consumers' access to financial technology (fintech) services in Bangladesh. They investigated the same by using three well-known econometric models: logistic regression, probit regression, and complementary log-log regression. They concluded that financial knowledge is one of the most powerful forces in promoting fintech access and helps to foster financial communication among rural low-income groups. Appropriate knowledge of various fintech service influences can significantly impact getting fintech access, especially when expanding other financial services. Consumers in rural areas are only familiar with a small number of fintech services, so they are limited to those services. Person-to-person transactions appear to be nothing more than activities in rural areas. As a result of their lack of understanding of other fintech services, they do not seek out other services. Furthermore, there is no visible training programme organized by financial institutions to encourage rural consumers to use fintech services. There are several obstacles to gaining fintech access. These issues act as significant roadblocks to promoting financial inclusion. Only the specific services are known to the respondents. In Bangladesh, financial institutions' initiatives to improve financial literacy are mainly unnoticed. They usually advertise their services; however, these policies are insufficient to inform rural consumers about financial products and services.

Shen et al. (2020) tried to find different channels to achieve financial inclusion in China. They used the Partial Least Squares approach to Structural Equation Modelling to see the relationships between financial literacy, Internet usage, digital financial product usage, and financial inclusion. They found that using the Internet does not directly affect financial inclusion. Internet use can only indirectly promote financial inclusion by encouraging people to use digital financial products. Instead, digital financial products are necessary for financial literacy and Internet usage to affect financial inclusion effectively. The Internet and digital financial products are critical in bridging the gap between financial literacy and financial inclusion. The study suggested introducing and designing riskless digital financial products and services for customers excluded from traditional finance. They concluded that policymakers should improve consumers' financial literacy and promote digital financial products to improve financial inclusion.

Ozili (2020) inspected how digital finance is delivered to the poor and questioned whether it is pro-poor and pro-development or not. It claimed that while the transition to digital finance has advantages, the risks to poor people are significant. The study contests the claim that technology is neutral for everyone, arguing that it is not neutral for everyone, particularly the poor. It demonstrated that digital finance exacerbates existing inequalities in the financial system, worsening the plight of the poor. The idea that poor people will directly gain from digital finance is flawed. Apart from enhanced money management through digital finance apps, digital finance has no further benefits for the poorest individuals. In addition, integrating the poorest into the financial system exposes them to threats in the formal financial system. Of all, only with government help does digital finance make a solid business case. Fraud risk, lack of internet connectivity, systematic risks, technology and infrastructure risks, loss of trust, lack of clarity on who protects the poor from digital risk, and shifting existing risks to new consumers are risks that poor people face.

Upadhyay & Reddy (2021) examined the digital financial inclusion assessment in India using supply and demand data to examine characteristics such as

per capita bank accounts, cards, retail payment systems, and internet and broadband connections. These two datasets reveal significant gaps in the amount of digital financial inclusion, with the supply side appearing to exaggerate the extent of digital financial inclusion. They also provide a theoretical model for demand and supply side digital financial inclusion equilibrium. The supply of digital financial inclusion is split into two parts: "autonomous" and "induced." They discovered that digital financial inclusion demand and (induced) supply are exactly proportional to users' income levels and the incentives offered for using digital financial inclusion products/services. To fulfil a higher level of demand for digital financial inclusion, both the demand and supply sides of the equation must balance and complement each other, and supply-side infrastructure must be available and scalable.

Sheerin (2019) studied the present status of the usage of digital currency in India compared to other developed countries. They tried to evaluate the challenges and opportunities related to it. The result of the study revealed that though India has attempted to make the country a cashless economy, the effort is still not achieved in all sectors of society. Therefore, the researchers recommend the spread of financial literacy in rural areas through private agencies to a great extent, and there should be provisions for getting advantages and incentives through digital payment through savings in the banks. They also suggested that there is a need to reduce the charges of digital transactions.

Haider (2018) examined the innovative financial technologies that support the livelihoods of the people. A wide range of financial services could be made possible through online and mobile banking, which may trigger access to digital financial technologies. A range of financial services could be made fruitful through the help of internet connection and authentication through a biometric system. People from low-income families could also use digital financial services as they are very affordable and appropriate.

Singh & Rana (2017) tried to understand the customer perception towards digital payment. Their study revealed that, except for education, no other demographic factor has a higher effect on the acceptance of digital financial

transactions. ANOVA estimation of the data also supported their findings of the study. It also revealed that the level of education of the customer influenced the acceptance of digital transactions. The respondents who studied the above matriculation and have internet knowledge are more prone to transacting digitally. The area with more literate people has more digital transactions. The sudden growth of smart and Internet penetration influenced the adoption of digital transactions in that area.

Ozili (2018) explored the impact of digital finance on financial inclusion and financial system stability. With the advancement of the economy, financial inclusion has had a remarkable and significant effect on digital finance. He examined the multiple benefits of digital finance to individuals, digital finance providers and the government. This study analyzed the impact of digital finance on financial inclusion and financial system stability. According to him, a two-way causal relationship between digital finance and financial inclusion appears. As against the view of the World Bank that greater digital finance leads to greater financial inclusion, he stated that, in practice, greater digital finance might not lead to greater financial inclusion. But lead to greater financial data inclusion. Financial data inclusion merges biometric information with bank accounts, and financial inclusion adds to the number of individuals who have formal access to financial services and products, mainly via formal bank accounts. It also discussed digital finance and its implications for financial inclusion and financial stability. Digital finance through fintech providers positively affects financial inclusion in emerging and advanced economies; they will pay to obtain these services from conventional regulated banks. Despite the benefits of digital finance, this study has highlighted some challenges that digital finance poses for financial inclusion and financial stability. There are both cons and pros of digital financial services. The major pros are that it enables people to make and receive payments within a second, while the major cons is that it requires a smartphone; those who don't have smartphones were excluded.

Balakrishna & Virmani (2019) studied the independent forest-dependent communities involved in joint forest management schemes from Rayalaseema and

coastal Andhra to understand the level of numeracy and financial literacy among them. The study shows that only one-third of the participants know the notion of simple interest. At least half of them were about the time value of money, but most respondents faced difficulty understanding the mathematical symbols. The socio-economic analysis of the study revealed that education and proximity to town have a positive effect on numeracy and financial literacy.

Way & Wong (2010) stated that past practices could be enhanced through digital media. This assumption serves as the background for enhancing financial literacy through technology and tools developed through technology, as well as the growth of education. The researchers also went to the extent of developing an "ecological model" for enhancing financial literacy and also proposed an action plan along with further research.

Alexander (2017) studied the role of fintech and digital financial services. This study states that financial inclusion is measured in terms of accessibility, usage and quality of the financial products and services. Financial inclusion has become a major international financial policy objective and has been included in many international declarations, such as the Maya Declaration. Fintech has a crucial role in increasing financial inclusion by enhancing formal access and usage to digital financial services for those businesses and individuals who were excluded from traditional financial markets earlier. Fintech companies are developing new digital financial products and services that will result in billions of people increasing the accessibility of digital services and access to new investment products. This study states that internationally, there are 2.5 billion unbanked individuals and 200 million small businesses that haven't access to formal financial services. High percentages of unbanked individuals and companies are in Asia, Africa and the Latin America, . Of the unbanked individuals, one billion have mobile phones. The wide use of mobile phones, mobile technology, and mobile networks leads to more options for individuals and small and medium enterprises with less cost. The study states that there are some significant barriers to financial inclusion, especially for developing countries, including the lack of market infrastructures and the geographical distance

between the service providers and the users. In many countries, there is little significant competition in the financial services industry, which leads to higher operating costs and high costs and charges for individuals to open bank accounts. Moreover, weak regulatory institutions and legal uncertainties lead to moral hazards and adverse selections.

OECD (2017) found that the Internet has changed the world faster than any previous technology. In less than three decades, more than 40 per cent of the world's population has gone online. Today, in some of the world's most impoverished families, it is more likely to find a mobile phone than a toilet with running water. Digital technologies created a new form of participation and inclusion; they can improve the efficiency of organizational and administrative procedures and provide a diverse possibility for creativity and innovation. Digitalization deeply emphasizes the inequality and disadvantages suffered by specific population groups. On a global scale, the digital footprint of industrialized nations, including access, scope of use, and organization of digital content and products, is totally disproportionate compared to those of developing and newly industrialized countries. It also pointed out that the Internet empowers people with access to it. Those with little or no access are faced with the prospect of increasing social and economic inequality.

OECD (2018b) analyzed the growing importance of digitalization and the need for financial literacy in the digitalized era. They identified the demand and supply aspects of digital financial literacy and emphasized the need for regular data on these aspects depending on national circumstances. The demand side comprises public awareness, demand for and present use of digital financial services, as well as its users' attitudes and behaviours and the population's digital literacy. The main focus of the supply side components was the products and services offered to customers, the channels utilized by providers, the physical infrastructure required for the safe development of digital financial services, and the technology needs that enable them.

OECD (2018) has devoted considerable attention to the various opportunities and expected challenges created by digital financial services for existing and new

users of financial products and services. This policy guidance aims to identify and promote effective initiatives that enhance digital financial literacy in light of digital financial services and channels' advantages, unique characteristics, and risks. This study identifies that digital financial services provide some benefits as well as some new threats to customers and entrepreneurs. These threats can have a negative effect on customers. It states that policymakers should consider the evolving nature of digital financial literacy and its implications. This study analyzed the supply and demand-side aspects of digital financial services. The supply side includes the availability of the financial products, the physical infrastructure and the channels used by the providers. The demand side aspect of digital financial services includes the awareness of demand and the use of digital financial services, the attitudes and behaviours of the digital financial services users, and the digital and financial literacy of the people. The policymakers should build trust in digital financial services to reduce uncertainties, protect the customers and entrepreneurs from digital crimes, ensure that financial education about digital financial services is made available through all relevant channels, and also promote and support the evaluation of the impact and effectiveness of both financial education programmers addressing digital financial services and the digital tools chosen to achieve financial education outcomes.

Kate Lauer and Timothy Lyman (2015) aim to provide national and global policymakers with a clear picture of the development of digital financial services for the low income group and the need for their attention and informed understanding of financial services. The access and use of digital financial services to these people by formerly financially excluded customers provides a lot of benefits, including the economic growth and stability of both the customers and the economy as a whole where they live. The advances in the accessibility and affordability of digital financial services led to the transformation of the cash-based economy into a digital economy. This study states that there are some risks beyond these benefits due to low numbers of customers who are not experienced with formal financial services and are unfamiliar with customer rights. It also pointed out that digital financial services should be suited to the customer's needs and should be provided very

responsibly, at an affordable cost and sustainable for the providers. According to this study, these financial service providers can be grouped into four.

1. a full-service bank providing a basic and simplified transactional account for transaction, transfers of fund, and storage of value of money via mobile phones or payment cards plus a point-of-sale (POS) terminal;
2. a limited-service niche bank providing such an account through mobile device or payment card plus POS terminal;
3. a mobile network operator, e-money issuer, and
4. A nonbank, non-MNO e-money issuer. Digital financial services can make the customer's life easier for them by permitting them to transact locally in small amounts and better manage their characteristically uneven income and expenses.

This study states some risks related to digital financial inclusion, like the risk of loss, theft, and other financial crimes which are present in cash-based transactions, digital technology-related risks such as risks of disrupted service and lost data, including payment instructions, agent-related risks such as financial crime and consumer risks, many of which are due to the physical distance between agents, operational risks include fraud, agent error, poor cash management by the agent, and poor data handling, product- and model-specific issues in digital financial inclusion, and also some consumer protection issues.

ITU (2016), explained the digital financial services and their roles in the financial ecosystem. The players include users, providers, infrastructure and governmental policies, laws, and regulations, and all three players are needed for the financial ecosystem. The user includes consumers, businesses, government agencies, and non-profit groups who are in need of compatible finance products and services. The suppliers include certain authorized financial institutions, banks, and nonbanks who are in the work of providing digital products that are easily accessible, affordable, and safe. The service can be accessible, affordable, and safe only through better financial, technical, and other infrastructure and through better government

policies. According to this study, digital financial services are provided to contribute to the reduction of poverty and to achieve other benefits of financial inclusion. Along with the benefits of digital financial services, the study also discussed certain challenges. This report recognizes the goal of reaching digital liquidity. The merchant acceptance of digital payments is considered a key element of the digital financial service ecosystem. Broad merchant acceptance enables poor consumers to spend the full amount of the money they receive or deposit it in any of the digital wallets. The study also discussed some of the main policies and regulatory issues that currently preventing digital financial services from developing and reaching the poor.

Ravi (2017) attempted to identify the significance of using digital payment in India as it boosts the Indian economy in a cheaper and better way. He discussed the development of new technology through which people could make transactions through phones, even without the Internet, by referring to NPCI. I also added that it would be really helpful for the people in rural India. His study also encompasses details on the novel methods of digital payment, including the importance of the IT Act, the significance of ICT in India and transaction cost reduction.

Finau et al. (2016) conducted a study to identify the perception of digital financial services among rural dwellers in Fiji. Researchers also tried to find the factors which enhance the adoption of digital financial services. Even though much of the population has activated the application, only a few use it effectively. The survey was conducted by researcher on a sample of 101 respondents from the three provinces of Fiji. Lack of liquidity and the implicit cost are hindering the penetration and reach of digital financial services. Those who attended any training program were aware of the digital financial services and are using digital financial services more than the other non-trained people, as they could calculate the real implicit cost.

Bhatt (2020) tries to analyze the policies launched by the government of India to increase the level of internet self-efficacy of people in rural areas. The paper examines the programmes like "digital village scheme and digital Village 2.0 campaign" and its effect on villager people after its application in selected villages.

It is stated that India witnessed an annual growth of 18 per cent in the number of internet users in 2018, and it is expected to grow by 11 per cent in 2019. The smartphone market has a high potential for growth in India. People are using smartphones to conduct their day-to-day work. People are using the Internet through their smartphones, which is the main reason for the development of M-commerce in India. The rate of internet penetration in urban areas is 66 per cent and only 25 per cent in rural areas in 2018. After the inclusion of 4G and 3G networks, the Indian internet user base has increased, and it is expected to double to 600 million users by 2020 from 343 million users at present. The adoption of data-enabled devices is expected to increase with the Bharat Net initiative under the Digital India Scheme. Still, 55,000 villages don't have mobile connectivity because it is not commercially feasible for service providers. India, as a country, includes urban areas and rural areas. The standard of living, education level, internet self-efficacy level, adoption of new technology, and economic growth level are drastically different in urban and rural areas. People from urban areas are updated with the new technology; they are able to use the Internet properly for different online activities. They are comfortable with the online transaction process, and they can easily transfer funds through Internet banking. But the picture is a little different for the rural areas. Internet penetration in rural areas is low as compared to the urban area. People from rural areas have low internet-self efficacy factors, which means they are not aware of the different features of the Internet and are unable to operate the Internet for various online activities. There is a strong requirement to introduce schemes or plans for the digitalization of rural India. This paper also aims to find out the outcome of the Digital Village scheme in rural India and what the next probable step of the government is towards increasing the digitalization of rural India. The government of India is working very hard to introduce schemes to make rural India more digitally active. To increase the efficiency of the public sector, the government of India initiated a 'Digital India Programme'. This programme is to really evolved India into a digitally empowered society and knowledge economy. The objective of this programme includes arrangements of high-speed Internet, citizens of India should be available on the cloud, financial transactions should be electronic or cash

less, citizens should be digitally literate, availability of digital resources in Indian languages and public sector or government departments should be digitally active so that people can submit their government documents/certificates through online mode (Ministry of electronics & information technology, Government of India).

Som (2017) evaluated how digital banking is transforming India. After demonetization, the Indian Government has taken effective measures to sustain transactions through digital mode in the upcoming financial years. In the wave of digital transactions, the traditional banking sector is influenced, and to remain in the market, they have started innovating digital financial products and services. India's structural design for digital finance is far better than that of countries like the USA and China. These include the eKYC system and Aadhaar authentication. The smartphone penetration in India can be a driver for digital banking, but technology interference and other advances are only a helping guide, not a driving force. India suffers from digital infrastructure. Though the card has been around for two decades, its spending has not increased much.

Gerrard et al. (2006) attempted to examine the reluctance of consumers to use internet banking. The study pointed out that the reluctance is mainly due to the risk factor involved, which is discouraging them from doing Internet banking. Another factor, as identified in the study, is the lack of need as perceived by the consumers. Certain other factors were also identified, like illiteracy related to financial matters, inertia, and problems related to IT accessibility, fatigue and pricing.

Papadopoulos (2011) gave an elaborative explanation of why the initial interest related to electronic media cannot be sustained. The investigators made an in-depth analysis of the penetration of electronic money from various nations. An attempt is also made to analyze its failure. The pros and cons of the success of e-money are also investigated in the study. In the present scenario, people are moving to transactions through e-money, and this paves the way for the development of a society that uses cash at a minimal level.

Manoharan (2007) portrayed the e-payment system in India and its impact on the Indian banking system. There is a trend in the present scenario in their mode of operations due to the recent developments in the banking system. Alternative banking practices could be made possible through an e-banking system. The study also focuses on various payment systems, including retail electronic systems and large and retail payment systems.

Suresh (2008) elaborates on the study by focusing on opportunities developed for the banking system in organizing, marking profits, and service delivery by enhancing e-banking technology. The study also highlights that the success of e-banking could be achieved when both business models and technology knowledge are preserved.

Singhal & Padmanabhan (2009) conducted a study to identify the perception of customers in using Internet banking by using both primary data and secondary data from a sample of 68 using a structured questionnaire. The factor analysis technique was the statistical model employed in the study. Half of the samples were of the perception that the Internet banking system is feasible, accessible, and more flexible so as to confront their needs.

Al-dalaien (2017) highlighted the conceptual background of the cashless economy and examined the benefits of the cashless economy to the general public in India. They interviewed 112 respondents, consisting of students, teachers, and businessmen. They applied the *t*-test as the statistical tool to test the hypothesis. The study result revealed that a cashless economy is not beneficial to the general public.

Garg & Panchal (2017) tried to understand the perception of people on the introduction of a cashless economy. The research area of the study was Delhi, and the outcome of this work revealed that a cashless economy could curb black money and that it would help counterfeit fake currency. A cashless economy is also a solution for emerging terrorism and robbery, thereby improving the economic growth of the country. The researchers pointed out that it was a right and commendable step taken by the Indian government to move towards an economy which is cashless. It helps in the growth and development of the economy in India.

The authors also suggest that campaigns be conducted to make the public aware of the benefits of electronic payments.

Patankar et al. (2017) discussed the influence of digital literacy programs across India. According to the researchers, technology and connectivity should go hand in hand for the development of the socio-economic levels of the country. The real progress of the country is vested in inclusive growth. The study revealed that almost ten million people have enrolled in the literacy schemes under NDLM and DISHA, of which only 8.2 million participants have been trained, and 5.25 million have been duly certified successfully. They highlighted various innovative approaches through which programs can be implemented throughout the nation.

Thomas & Krishnamurthi (2017b) reviewed the impact of demonetization on the rural economy and identified the opportunities and challenges in the way to a cashless rural economy. On analyzing various existing literature, they found that the scope of the cashless economy in rural areas is minimal. Inadequate banking and digital infrastructure, lack of awareness, and illiteracy are the major hurdles to a cashless rural economy. Their research, too, came out to the same conclusion. They suggested that including PDS and MGNREGA in cashless mode will increase the cashless transition in rural India.

Rajanna (2018) attempted to survey 150 participants from the Chikkmangaluru district of Karnataka. The study focused on the perception and awareness of cashless transactions among the sample of the state. The outcome of the study reported that most respondents have access to digital transactions in their daily lives, and most have access to ATMs. The respondents were satisfied with the initiative of the government and other stakeholders for cashless or digital transactions but still feared cybercrime and illegal access to the customers account. The socio-economic dimension of the respondents has a significant influence on the awareness and perception of a cashless economy.

Ashitha (2018) analyzed e-literacy programmes offered to the citizens under the Akshaya project to bridge the digital divide in the state. The Akshaya project was initiated in Kerala to bridge the digital gap through an e-literacy programme.

The problem of the digital divide is identified as a severe disease that affects the nation and must be cured as early as possible for the inclusive growth and development of the nation. These obstacles, such as illiteracy, lack of skills, infrastructure and investment in rural areas, must be tackled. In India, the problem of the digital divide is not restricted to backward states like Bihar, Rajasthan, Uttar Pradesh, and Orissa with traditionally weak infrastructure but also to states such as Karnataka, Tamil Nadu, and Andhra Pradesh. The government of Kerala has identified the differences between the people in rural and urban areas in terms of electronic literacy and accessibility to information and communication technology. Akshaya is one of the dream projects implemented by the Kerala government to bridge the digital divide through e-literacy programs and as an instrument in rural empowerment and economic development. The project was started with the aim of making rural people e-literate and technologically empowered. The e-literacy program was implemented in three phases. They are basic computer literacy courses, advanced computer courses and digital financial literacy, respectively. After the implementation of the Akshaya project, more citizens depend on Akshaya centres for e-literacy courses than other centres. It is evidence of the success of the e-literacy program conducted by the Akshaya project. She found that the Malappuram district has the highest difference between the people who get e-literacy through the Akshaya project and those from another source. The project enables to reduce the digital divide in the state to a large extent by making citizens e-literate. The achievement of Malappuram district as the first 100 per cent e-literate district shows the success of the programme. This e-literacy program conducted by Akshaya helps citizens not only familiarize themselves with the basics and scope of IT but also ensures hands-on skills in operating computers and the Internet and its application in various areas of life. The Akshaya programme also faces some problems. Even though major segments of people are aware of and participate in the programme, the overall participation in free e-literacy services among poor people remains low. Accessibility is the main reason for this non-participation among rural and marginalized sections of society. She concluded that the e-literacy programme implemented by the Akshaya became a success in the state of Kerala. It makes

Malappuram district fully e-literate, and the mission continues to make Kerala a fully e-literate state in India. The programme is in the third phase of its implementation, but it is now available only in the two Akshaya centres of Kerala. She suggested that it is wise to implement the project in all districts in a fast manner to make the project a grand success in the future, and significant changes in content & delivery of e-literacy are also an important ingredient for the success.

2.3 Literature Reviews on Digital Financial Literacy

Ranavade (2019) evaluated the idea of inclusive digital literacy among rural people in net banking, focussing the transformative role of technology adoption in the banking industry. The statement underscores the noteworthy influence of technical progress on economic expansion and the transition to a cashless economy, which the Government of India is promoting. New channels for financial transactions are made possible by the widespread use of digital banking services, such as debit/credit cards, electronic payment gateways, and mobile applications. Furthermore, the proliferation of new channels like social media and websites and the expansion of Internet and mobile services have completely changed how rural communities access banking services. It has been determined that digital literacy is essential to providing rural communities with equal access to resources, career opportunities, and education, as well as giving them the ability to make decisions. Ultimately, digital literacy transforms branch banking in rural communities by acting as a potent catalyst for digital inclusion.

Rai, Dua, & Yadav (2019) investigated the financial literacy level of working women in Delhi in terms of their financial behaviour, attitude, and knowledge. They considered a sample of 394 working women based on public and commercial organizations using a standardized questionnaire with a 5-point Likert scale. The analysis used structural equation modelling and moment structure analysis to analyse the correlation between the three independent variables. The results show that financial conduct and attitude correlate more strongly with working women's financial literacy than financial knowledge.

George (2020) observed that India's need for digital financial literacy has grown, especially with the implementation of demonetization. Given the pervasive integration of digital technologies and computers into many facets of daily life, the country must strategically move forward in this manner. A contemporary priority is the shift to a cashless and digital economy, and digital literacy is critical for individual to make informed financial decisions in a digital setting. There is still a clear national split in this sector despite a notable increase in online engagement and the usage of web and mobile applications, particularly in urban regions. During the demonetization phase, the overcrowding at ATMs and bank branches highlighted how far India still has to go towards complete digitalization. In order to achieve greater financial inclusion and literacy, this study looks into the state of digital financial literacy and its significance as a first step. It also looks at how different demographics affect financial and digital financial literacy and what helps and what doesn't help with the uptake of digital financial goods. For this study, a convenience sampling technique was used to gather a sample of respondents. The results imply that demonetization and other outside variables do have an impact on digital financial literacy. Therefore, promoting rural people to use digital services and products needs a deliberate action on the side of both the government, service providers and fintech companies. It means simplifying technology, highlighting the advantages of digitization, and offering incentives to encourage its uptake.

Cnaan, R.A., Scott, M.L., Heist, H.D., & Moodithaya (2021) evaluated the importance of financially including marginalized groups of people in the digital finance era. The study examined how rural Indian communities are becoming cashless societies by contrasting neighbouring villages with those that have been formally designated cashless. The results indicated that the adoption of digital banking is low in both kinds of villages, with differences between states. The use of digital banking is significantly predicted by financial literacy and internet availability. The study highlighted the risk of alienating vulnerable communities and caution against prematurely adopting digital banking and cashless societies.

Kass-Hanna, Lyons, & Liu (2022) investigated the relationship between resilience-building financial behaviours and multidimensional financial and digital literacy measures to address the global financial exclusion issue. The study examined how financial and digital literacy affects saving, borrowing, and risk management behaviours using data from Inter Media Financial Inclusion Insights (FII) surveys conducted across seven countries in South Asia and Sub-Saharan Africa. The results highlight the significance of digital and financial literacy in encouraging inclusive and resilient financial system, with regional and demographic group-specific differences noted. The study has implications for policymakers who want to improve long-term financial resilience by highlighting the significance of including digital literacy within conventional financial literacy frameworks. The study highlighted how important comprehensive literacy programs are to promote financial inclusion and resilience-building practices globally.

Azeez, Jawed, & Banu (2022) examined the association between demographic characteristics and digital financial literacy in rural parts of India. It highlights how important digital financial literacy is for academics and decision-makers. The rural and urban digital divide has been exacerbated by faster internet technologies and growing digitalization, worsening problems with digital illiteracy and incompetence. According to the literature, demographic factors that have been found to impact digital financial literacy substantially include age, gender, marital status, education level, social groupings, religion, career, family size, socio-economic status, and landholding size. The research selected 500 respondents from rural areas in the Uttar Pradesh district of Aligarh using a multi-stage sampling technique. The study intends to guide the creation of focused financial training programs to improve digital literacy in rural India by analyzing the relationship between digital financial literacy and demographic characteristics.

Kulshrestha (2023) found that financial inclusion and literacy are essential for economic growth. Fintech presents a viable resolution by delivering inventive and easily obtainable financial offerings. The study investigates how fintech might improve financial inclusion and literacy among low-income Indian households.

Fintech may significantly enhanced financial literacy and inclusion by providing convenient, easy, users friendly and affordable financial services and financial education initiatives. Nonetheless, there are obstacles like restricted digital infrastructure and regulatory worries. The report suggests legislative frameworks, financial education initiatives, and investments in digital infrastructure to address these issues. In general, fintech has great promise for fostering equitable economic growth by resolving the obstacles.

A.Anandalakshmy, Sajeer.Cdr., (2023) studied digital financial literacy among the women in the Malappuram district of Kerala. The study highlighted several variables, such as peer influence, financial inclusion, awareness, and technology accessibility, which impact digital financial literacy. It has been discovered that 65.6 per cent of the difference in working women's investment behaviour is explained by digital financial literacy. It emphasized how crucial it is to strengthen digital literacy programs to empower women to make wise financial decisions.

Panakaje, Rahiman, Parvin, Kulal, & Siddiq (2023) emphasized the significance of financial literacy in promoting inclusive growth, especially in the rural areas of Karnataka. The study gathered 398 responses and analyzed them using Structural Equation Modelling. The finding shows that financial inclusion raises socio-economic empowerment, which is directly influenced by financial literacy. In order to support socio-economic development in rural areas, the study underlines the necessity of government investment in financial literacy initiatives and the construction of digital financial transaction infrastructure.

Panda et al. (2013) argued that the digital divide is even witnessed among professionals who are working in the digital environment. Besides the rapid spread of the Internet, the gap is growing wider as the technological standards grow even faster. Networks, high-level machines and software and more capable professionals are also required. It is, therefore, important to identify what a literacy programme is designed for whom and what impact it has on learners. Any information literacy programme should be interesting, keep the learners thinking and engaging, make

them realize what they have been missing, and should have a rippling effect on the world of participants.

Radcliffe et al. (2012) pointed out that payments are considered as the connective tissue of a financial system. Wealthy households are using digital financial payment systems, whereas poor households use physical assets for their payments, such as cash, gold, etc. This gaping 'cash-digital divide' creates two mutually reinforcing inequities in the financial lives of poor people. It makes it expensive and risky for the poor to use basic financial services, and it separates the poor households from the formal economy by making it expensive for banks, utility companies, insurance companies, financial institutions and other stakeholders to transact with them. The study argues that to solve this fundamentally, we need to build low-cost 'on-ramps' that enable poor people to convert their physical cash into digital money, and we need to integrate those on-ramps with formal institutions so poor people can meet their financial needs in digital form. Once poor customers are transacting (at an affordable price) with their peers, banks, governments, and utility companies, we will have achieved digital financial inclusion. Once poor households are connected to an integrated digital financial system, they will experience direct welfare benefits through several channels, including 1) access to a basic store-of-value account; 2) payment connections to peers; 3) payment connections to institutions, like utility companies, enterprises, and governments; and 4) access to enhanced financial services.

2.4 Literature Reviews on Methodology of Measuring Digital Financial Literacy

a) Financial Literacy

It is necessary to assess the methodological literature on financial literacy before attempting to define digital financial literacy. There is no commonly agreed definition for financial literacy and a universally approved measurement method. The most extensively used and well-known knowledge-based financial literacy test was developed by Lusardi & Mitchell (2008; 2011; 2015), and many others have since followed the same methodology. The questions that they have typically been

asked to respondents in the past are numeracy (interest), compound interest, inflation, and risk diversification. Using one of two methodologies, researchers frequently utilize a combination of these questions to create a financial literacy score. The first method involves adding together the number of right responses to arrive at a score. Scores can range from 0 (zero accurate answers) to the maximum number of correct answers (total number of questions asked). Another way is to divide the total number of questions asked by the percentage of accurate answers. Scores can range from 0 to 100 per cent in this situation. These scores have the advantage of offering a quick, easy, and objective assessment of a person's cognitive financial ability. They also serve as a "benchmark" for comparisons by assessing one's understanding of a few key financial literacy concepts that should, for the most part, be general knowledge among target demographics and geographic regions (Hizgilov & Silber, 2019; A. C. Lyons, 2021). Despite these benefits, some flaws have been uncovered, including probable errors and sensitivity to question design and wording. (GLEC, 2017; A. Lyons et al., 2019; A. C. Lyons, 2021; Nicolini et al., 2013)

To address these concerns, several researchers have chosen to utilize more thorough financial literacy tests (OECD/INFE, 2016; OECD, 2017b, 2017a, 2018, 2019), which include extra items that cover a broader range of financial concepts. Other researchers have employed subjective assessments of people's self-reported financial knowledge and skills. In these circumstances, respondents may be asked to rate how "knowledgeable" or "competent" they believe they are regarding their money on a Likert scale. They could also be questioned about how familiar they are with the finances of the household or how confident they are that they have the knowledge and/or abilities to properly handle their finances. These perception metrics, however, are not always superior to test-based measures since they are susceptible to overconfidence bias.

Overall, this body of work implies that financial literacy is multidimensional, but it has never before presented the study in the context of a structured multidimensional framework — that is, until now. The building of complete

financial literacy indices, which comprise a blend of objective and subjective knowledge measurements, as well as experience indicators, is beginning to emerge as a way to directly model and more rigorously assess the multidimensionality of financial literacy (Lyons, A. C., & Fontes, 2021; A. Lyons et al., 2019; Lyons, A. C., Grable, J. E., & Zeng, 2017). The number of correct answers to the objective knowledge-based questions with some additional indicators for subjective financial knowledge and experience to create these indices as explained in the table 2.1.

Table 2.1

Multidimensional Financial Literacy Indices

Financial Literacy Indicator	Lyon, Grable & Zeng (2017)	Kass-Hanna, Lyons, Liu & Zeng (2019)	Lyons & Fontes (2021)
Objective Financial Knowledge	Compound Interest Inflation Risk Diversification	Compound Interest-1 Compound Interest-2 Numeracy Inflation Risk Diversification	Compound Interest Inflation Risk Diversification
Subjective Financial Knowledge		Financial capability	Financial capability Financial Knowledge
Financial Experience	Financial Course Financial information search		Saving Practices Usage of financial planners

b) Digital Literacy

The domains of education and technology have pushed the majority of the work to define and measure digital literacy (European Commission, 2016, 2019; Fraillon et al., 2015; ITU, 2018; UNESCO, 2018; van Deursen, Helsper, & Eynon, 2014). Global organizations and institutions like the European Commission, OECD, and UNESCO are also striving to develop frameworks for defining and assessing digital literacy in a range of digital mediums, mainly computers, the Internet, tablets, mobile phones, digital applications, and other platforms. Only a few recent

researches have attempted to define and quantify the precise effects of digital literacy in the context of financial literacy and financial behaviour. Lyons, A. C., & Fontes (2021) examined the effects of financial literacy and digital literacy, as well as social media usage, on the financial health of U.S. households – specifically, households' financial portfolios, which included holdings of financial and non-financial assets and debt. Lyons A. C.& Kass Hanna (2021) looked into the effects of both financial literacy and digital literacy on the ability of households to build financial resilience. They created multidimensional measures of financial literacy and digital literacy. They investigated their association with saving, borrowing, and risk management behaviours using data from seven South Asian and Sub-Saharan African nations.

Lyons, A. C., & Fontes (2021) and Lyons, A. C.& Kass Hanna (2021) employed a collection of popular digital literacy measures encompassing four essential dimensions: (a) digital technology access and usage, (b) mobile phone proficiency, (c) mobile money and other digital financial proficiencies, and (d) social media access and usage. The table also shows the metrics. A dimension's score was computed by adding together the number of tasks that participants could complete within that dimension. The validity and reliability of the various metrics were then tested using statistical analysis. The authors also developed a composite index for digital financial literacy to look at the combined effects of financial literacy and digital literacy. They found that financial literacy and digital literacy were important determinants in developing favourable financial habits and long-term financial security. Surprisingly, digital literacy had a stronger association than financial literacy, stressing the necessity to redefine standard financial literacy to include digital literacy, as well as the importance of defining and measuring digital financial literacy.

c) Digital Financial Literacy

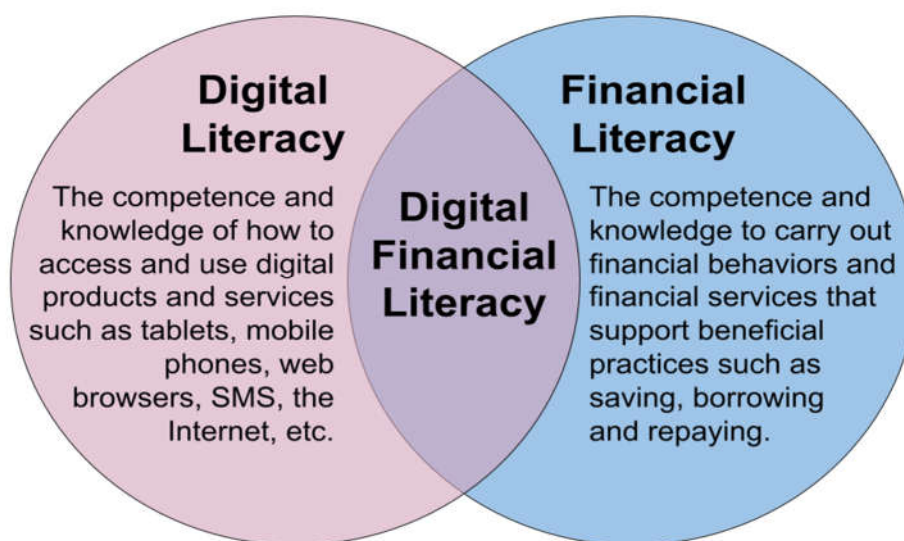
There is a clear need to redefine traditional basic financial literacy to include digital literacy in the digital age. It can be termed 'digital financial literacy', which refers to the combination of both literacy skills. To operate digital financial services,

you must have digital literacy, including knowing how to access and use a mobile phone, Internet and other digital platforms, and basic financial literacy. It provides even more autonomy and confidence in using these digital financial services, potentially leading to more frequent, efficient and informed use.

Morgan & Long (2020) and OECD (2017a) recognized the importance of digital financial literacy and proposed four dimensions to measure digital financial literacy, namely knowledge of digital financial products and services, awareness of digital financial risks, knowledge of digital financial risk control, and consumer rights and redress procedures. The first dimension is knowledge of digital financial products and services, which encompasses a fundamental understanding of these products and services. Individuals should be aware of non-traditional financial goods and services available via digital platforms such as the Internet and mobile phones. The understanding and awareness of digital financial services and risks is the second aspect of digital financial literacy. Individuals and businesses should be aware of the additional hazards that may arise while using digital financial services, which are more varied but sometimes more difficult to detect than those linked with traditional financial products and services. Digital financial services should be aware of online fraud and cyber security threats. Digital financial risk control is the third pillar of digital financial literacy, and it refers to digital financial services users' understanding of how to protect themselves from hazards associated with their use. They should be able to use computer programmes and mobile apps to avoid spam, phishing, and other forms of fraud. In circumstances where digital financial services users fall prey to the aforementioned hazards, then the fourth dimension understands consumer rights and redress procedures. Users of these services should be aware of their rights, as well as where they can go and how to seek restitution if they are victims of fraud or other losses.

However, a more comprehensive analysis was proposed by Lyons A. C. & Kass Hanna (2021), who formally drew out a conceptual framework to explain the linkage between financial literacy, digital literacy and digital financial literacy. This framework explains the precise areas of proficiency under each of the three literacy

concepts and identifies five basic qualities that are universal to all three. These dimensions are (1) Basic knowledge and skills; (2) awareness (knowing about available financial and digital products and services); (3) practical know-how (knowing how to access and use them); (4) decision-making (including financial attitudes and behaviours); and (5) self-protection (including consumer protection and data privacy). The combination of financial literacy and digital literacy is the first dimension of digital financial literacy, which combines fundamental financial knowledge and basic digital skills. The second dimension, on the other hand, includes elements related to being aware of and "*knowing about*" available digital financial services (such as digital payment tools), as well as elements related to "*knowing about*" positive financial attitudes and practises such as saving regularly, borrowing responsibly, and preparing for emergencies. The third one is the ability or "*practical know-how*" to employ digital financial services such as online banking and mobile money to complete digital financial chores and transactions. The fourth dimension includes a financial literacy aspect that captures the capacity to make proper financial decisions in general, as well as a particular element that captures the ability to select and employ digital financial services appropriately. The capacity to detect and avoid online scams and frauds, specifically related to digital financial services, is the final dimension.



2.5 Research Gap

In the digitalized world, the concept of digital financial literacy is seen as an appealing and lucrative research topic. The necessity and need for an in-depth and comprehensive investigation of financial and digital literacy are regarded as vital in light of the findings described above. According to the numerous literature evaluations, many studies have previously been undertaken on the issue of basic financial literacy at the macro level, but this area of research has yet to be investigated at the micro level. Even though this literature and research focused rigorously on financial literacy, digital finance, and its literacy on the international level, very few studies in India, particularly in Kerala, have been undertaken to assess digital financial literacy. Most studies ignored the digital dimension of finance and people's digital financial literacy, particularly in rural and remote areas where most of India's population lives. The current study focuses on the digital financial literacy of people living in rural areas of Kerala. The study looks at the availability and accessibility of digital financial services and infrastructures (supply-side aspects) and the rural people's ability to absorb digital financial services in terms of aptitude, awareness, attitude, behaviour, and affordability (demand-side aspects). As a result, the study aspires to be a game-changer in the field, recommending precise and actionable ways to improve the efficacy of digital financial literacy in rural India.

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CHAPTER 3

SOURCES OF DATA AND RESEARCH METHODOLOGY

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- 3.1 *Sources of Data*
 - 3.2 *Theoretical Framework of Methodology*
 - 3.3 *Methodology for Measuring Digital Financial Literacy*
 - 3.4 *Methodology for Estimating the Statistical Significance*
 - 3.5 *Methodology for Identifying the Determinants of Digital Financial Literacy*
 - 3.6 *Methodology for Finding the Impact of Digital Financial Literacy on Usages of Digital Financial Services*
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This chapter discusses the sources of data, sampling design, the theoretical framework, and the research methodology used to achieve the stated objectives of the present study.

3.1 Sources of Data

In this study, both primary and secondary data were collected and used to assess the digital financial literacy of rural people in the State of Kerala.

3.1.1 Primary Data and Sampling Design

The primary data have been collected through survey schedules, telephonic interviews of experts and other participatory approaches among various stakeholders. The interview schedule was developed to collect primary data from rural people in Kerala. This schedule was designed for the collection of information relating to the socio-economic and demographic factors, demand and supply side aspects and dimensions of digital financial literacy, namely, digital financial aptitude, digital financial awareness, digital financial attitude and behaviour, digital financial affordability, availability of digital financial infrastructures and accessibility of digital financial services, factors promoting and hindering the digital financial literacy, problems and challenges faced by rural people while absorbing digital financial payments and services.

i. Pretesting and Pilot Survey

A well-structured interview schedule was used as a tool for collecting primary data. Before finalizing the interview schedule, a pretesting was conducted. The tool was developed after several rounds of interaction with a few informants, banking officials and other experts. A pretest was done before administering the interview schedule to the sample population, and the reliability and validity were checked. Moreover, the advice of experts was also considered for validation and identifying the dimensions of digital financial literacy in the study area. Several experts in the fields of banking and non-banking financial institutions and academics have been consulted, and their suggestions were also incorporated while preparing the questionnaire used for the study to ensure the face and content validity of the

instrument. Pretesting revealed certain deficiencies, and necessary corrections were made to the schedule. Based on the responses from the pretest, some questions were omitted, and a few questions were included. Thus, a pretested structured survey schedule was designed and administered to the respondents for collecting primary data. The field survey was conducted from June to December 2023.

ii. *The Locale of the Study*

The State of Kerala was selected as the locale of the study. The State of Kerala is generally divided into fourteen revenue districts. The fourteen districts are further divided into 21 revenue divisions, fourteen District Panchayats, 63 taluks, 152 CD blocks, 1466 revenue villages, 999 Gram panchayats, 5 corporations and 60 municipalities. Out of 14 districts, three districts, namely Wayanad, Malappuram, and Ernakulam, have been selected for the study based on the rural population.

iii. *Targeted Population and Sample Size Determination*

The targeted population of this study is rural people of Kerala, which includes all men and women aged 15 years or above. This is henceforth called the 'Study Domain.' That means it consists of all rural people who are the usual residents of the State. As per the Census of 2011, the total rural population in the State of Kerala is 17455506. Due to time, funds, and other procedural constraints, it is impractical to administer the survey over the entire State's rural population. Therefore, it is appropriate and feasible to consider some representative units from the given rural population called samples. For the determination size of the sample, the study used the formula developed by Yamane 1967 which is given as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where

n = number of samples

N = Total population

e = Margin of error

Accordingly, by considering a 5 per cent margin of error, the study determines the sample size as

$$n = \frac{17455506}{1 + 17455506 \times (0.05)^2} = 399.990 = 400$$

iv. Sampling Techniques

In tune with the research objectives, the samples were drawn from the rural people in the State of Kerala. A multi-stage sampling method was used to select the respondents for the study. An appropriate sampling method was followed at each stage to select respondents from the rural areas.

The State of Kerala is the locale of the study. A multi-stage sampling technique was used to choose the respondents for the study. Presently, there are 14 districts in the State of Kerala. Out of 14, three districts will be selected on the basis of the proportion of the rural population in the districts. The highest rural populated district, Wayanad, the moderately rural populated district, Malappuram and the lowest rural populated district, Ernakulam, have been selected accordingly. Two Taluks were chosen from each selected district based on the proportion of the rural population. Two Panchayats were selected from every taluk using the same criterion. A proportionate sampling technique randomly selects a sample (respondents) from each chosen Panchayat.

$$n_i = \frac{N_i}{N} \times n$$

Where

n_i = Sample from i^{th} Panchayat

N_i = Population of i^{th} Panchayat

N = Total Population of Selected Panchayats

n = Total Sample Size

Table: 3.1
Sample Framework

District	Taluk	Panchayat	No. of Respondent	Total
Wayanad	Sulthanbathery	Nenmeni	52	154
		Noolpuzha	31	
	Mananthavady	Thavinhal	45	
		Thondernadu	26	
Kerala Malappuram	Nilambur	Vazhikadavu	53	161
		Chungathara	40	
	Ponnani	Veliyankode	36	
		Nannamukku	32	
Ernakulam	Muvattupuzha	Paipra	38	85
		Kalloorkad	15	
	Kanayannur	Edakkattuvayal	20	
		Kunnathunadu	12	
			400	400

Source: Compiled by Author

3.1.2 Demographic Profiles of Respondents

This section analyses the socio-economic and demographic profile of the sample respondents drawn from the rural areas of Wayanad, Malappuram, and Ernakulam. This profile mainly includes gender, age, marital status, family system and status, education qualification, occupation, housing tenure, house type, number of earning members and family size of the respondent from sample districts. These variables are mainly used to analyze the influences and impact on various demand and supply dimensions of digital financial literacy.

Table: 3.2

Gender-wise Distribution of Respondent

District	Male	Female	Total
Wayanad	77	77	154
Malappuram	91	70	161
Ernakulam	39	46	85
Total	207	193	400
Per cent	51.75	48.25	100

Source: Field Survey

Table 3.2 shows the gender-wise distribution of the respondents from Wayanad, Malappuram, and Ernakulam districts of Kerala. The gender-wise classification shows that of all the respondents, 51.75 per cent were male, and 48.25 per cent were female. There were 77 male and 77 female respondents from Wayanad district, making the total number of respondents surveyed from Wayanad 154. There were 161 respondents from the Malappuram district, of which 91 were male respondents, and 70 were females. A total of 85 respondents were surveyed from Ernakulam district, comprising 39 males and 46 females.

Table: 3.3

Age-wise Distribution of Respondent

Age Groups	Male	Female	Total	Per cent
15-30	63	44	107	26.75
31-45	58	76	134	33.50
45-60	54	47	101	25.25
60 Above	32	26	58	14.50
Total	207	193	400	100.0

Source: Field Survey

The age distribution of the respondents who participated in the survey is provided in Table 3.3. The sample included only residents in the target area who were fifteen years and older. The age-wise classification of the 400 respondents demonstrates that, of the total respondents, 33.50 per cent belongs to the age group of 31 - 45, followed by 26.75 per cent belonging to 15 - 30 years of age and 25.25

per cent of the respondents aged in between 45 - 60. The remaining 14.50 per cent were above 60.

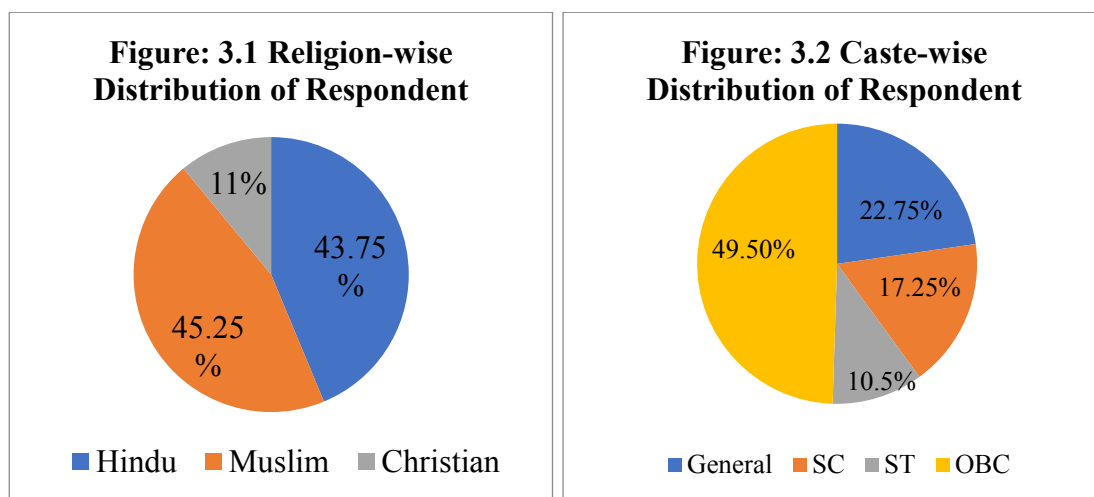
Table: 3.4

Family Size-wise Distribution of Respondent

Family Size	Total	Per cent
2	70	17.5
3	81	20.25
4	87	21.75
5	82	20.5
6	42	10.5
7	27	6.75
8	7	1.75
9	3	0.75
10	1	0.25
Total	400	100.0

Source: Field Survey

The family size indicates how many people make up a typical family. In India, a relationship exists between income, poverty and household size. Of the respondents, 21.75 per cent have four members in their family, 20.25 per cent have three-member families, 20.5 per cent have five-member families, and 17.5 per cent have two members. A very low percentage of the respondents have more than six members in their family.



The religious composition shows that among the total respondents, 43.75 per cent were Hindus, 45.25 per cent were Muslims, and 11 per cent were Christians. Regarding the social group of respondents, a majority of 49.50 per cent belongs to the OBC category, followed by 22.75 per cent general category, 17.25 per cent scheduled caste, and 10.5 per cent scheduled tribes. This is shown in Figure 3.2.

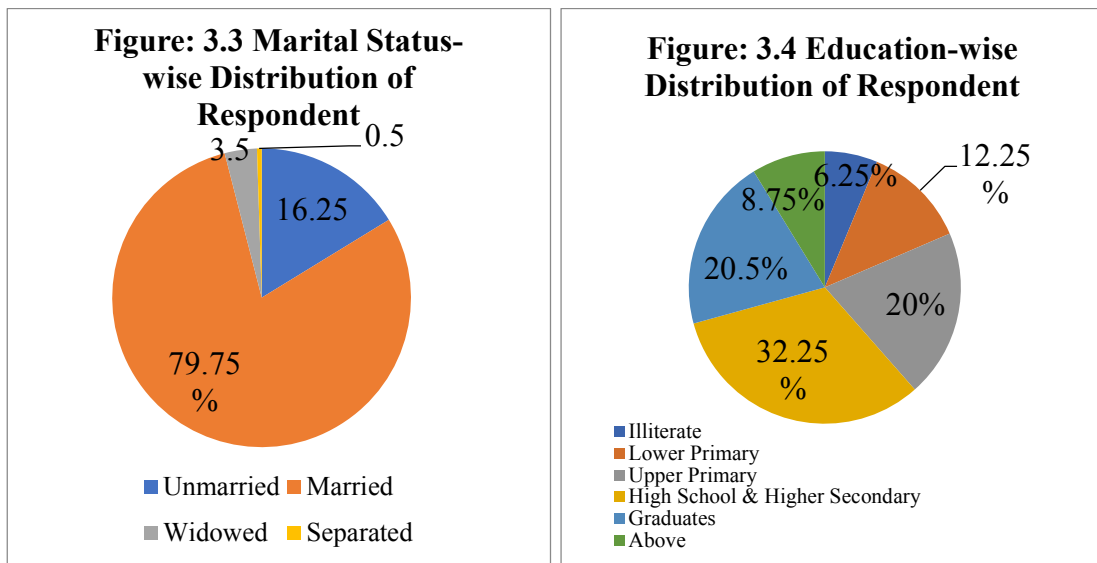
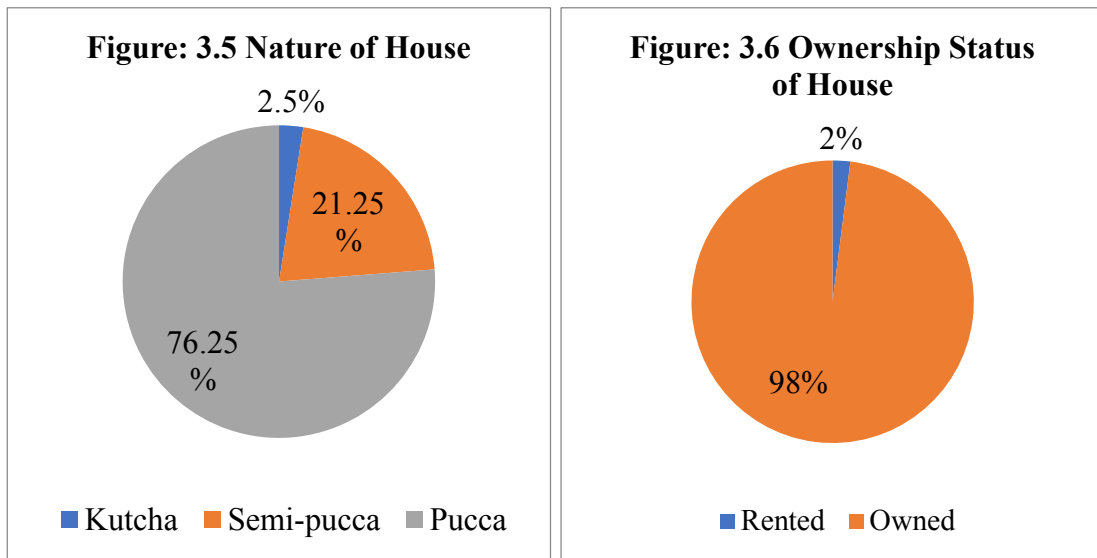
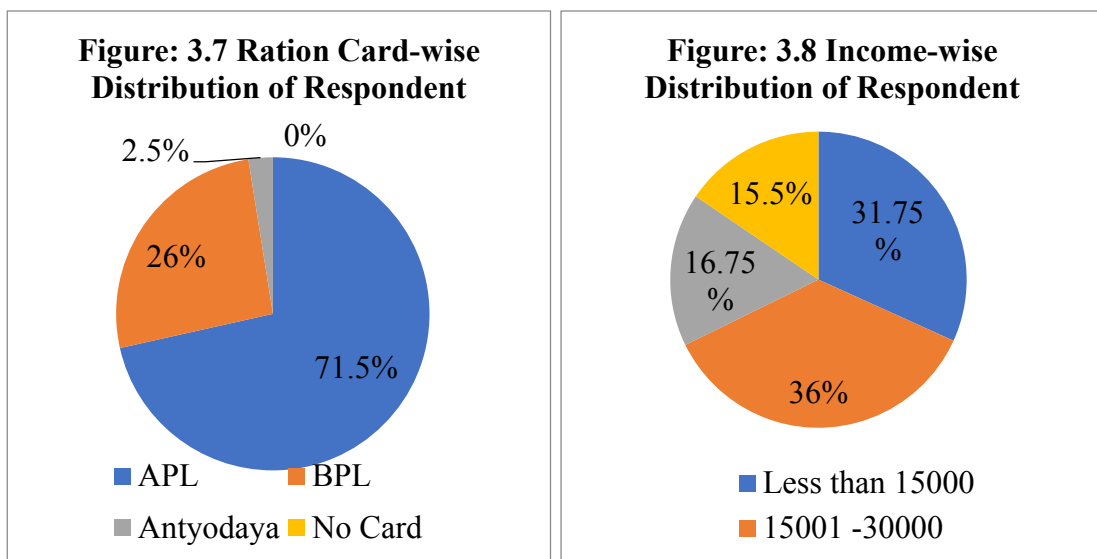


Figure 3.3 represents the marital status of the respondents. Of the 400 respondents, 79.75 per cent were married, 16.25 per cent were unmarried, 0.5 per cent were separated, and 3.5 per cent were widowed. Regarding the educational background of the respondents, Figure 3.4 indicates that among the total 400 sample respondents, 129 completed their high school and higher secondary education, 82 completed their graduation, and 80 completed upper primary schooling. About 12.25 per cent of the total respondents have only lower primary education, and 8.75 per cent have higher qualifications above graduation. Only 6.25 per cent were generally illiterate.



Among the total samples, 286 respondents are in the APL category, 104 are in the BPL category, and 10 respondents have Antyodaya cards. Considering the nature of the houses, Figure 3.5 shows that 76.25 per cent have a pucca house, 21.25 per cent have a semi pucca and only 2.5 per cent of respondents have a kutchha house. Among these, 98 per cent have their own home, and 2 per cent have rented house.



Regarding the nature of income, Figure 3.8 shows that 127 respondents earn a monthly income of less than 15000. One hundred and forty-four respondents are earning an income of 15001-30000. Sixty-seven respondents earn a monthly income

of 30000 to 45000, and 62 respondents are in a greater capacity to earn more than 45000.

Table: 3.5
Occupation-wise Distribution of Respondent

Nature of Job	Total	Per cent
No job	187	46.75
Agriculture	58	14.5
Casual Labour	97	24.25
Salaried	38	9.5
Self Employed	20	5
Total	400	100

Source: Field Survey

Considering the nature of the occupation of the respondents, Table 3.5 shows that 46.75 per cent of the total respondents are unemployed, 24.25 per cent of respondents are doing casual labour and 14.5 per cent are engaged in agriculture. Only 9.5 per cent are involved in government jobs and receive a salary. A meagre 5 per cent of the total respondents are self-employed.

3.1.3 Secondary Sources of Data

The secondary data has been collected from documented official records of lead banks and banks from various districts and other banking and non-banking financial institutions. Besides this, the relevant data has also been collected from economic reports by the Government of Kerala, Annual Reports of RBI, National Payment Corporation of India (NPCI), *National Center for Financial Education* (NCFE) and *National Institute of Securities Markets (NISM)* etc, National Statistical Survey Organization (NSSO), NITI Aayog /Planning Commission, Indian Banker's Association (IBA), National Institute of Bank Management (NIBM) and also from selected websites.

3.2 Theoretical Framework of Methodology

Digital financial literacy can be assessed and evaluated from the twin perspectives of demand and supply. The demand side aspects mainly focus on the utilization and demand for these services by the rural people. To measure the demand side of digital financial literacy, it is necessary to collect information from the perspective of rural people who are going to demand digital financial services (Klapper & Singer, 2017; Lyons & Kass-Hanna, 2021; Ozili, 2018; Upadhyay & Reddy, 2021). The supply side of digital financial literacy is comprised of aspects relating to the availability and accessibility of digital financial services to the population. It can be measured by using dimensions, namely the availability of the digital financial infrastructure and accessibility of digital financial services that are made available to the users (Klapper & Singer, 2017; P. J. Morgan & Long, 2020; OECD & IDB, 2016; Upadhyay & Reddy, 2021; OECD, 2018)

These two forces of demand and supply play a critical role in determining the digital financial literacy of the country. Theoretically, the demand for digital financial services should be equalized with the supply of the same for the success of digital financial inclusion. Still, generally, gaps are observed between the two, especially in rural areas of the country. Mostly, the supply of these services is present, but there might be little demand for these services due to various reasons. This would lead to an oversupply of digital financial services.

3.2.1 Demand-side of Digital Financial Literacy

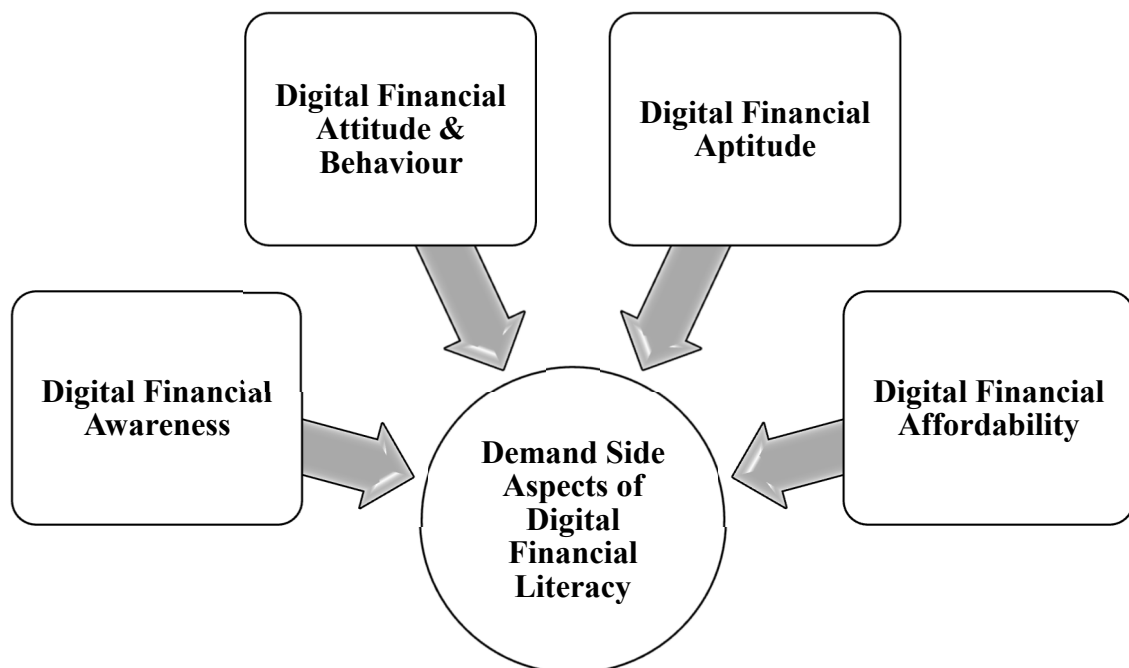
The demand side of digital financial literacy mainly focuses on many dimensions of demand factors required to absorb and use digital financial services from the perspective of rural people. On the demand side, some challenges affect the acceptance and safe use of digital financial services, such as low financial literacy, inadequate awareness of digital financial services, poor perception and lack of confidence in these services, complexity, and general illiteracy (low literacy and numeracy skills).

The following dimensions are considered when analyzing the demand side of digital financial literacy.

- a) Digital Financial Aptitude
- b) Digital Financial Awareness
- c) Digital Financial Attitude & Behaviour and
- d) Digital Financial Affordability

Figure: 3.9

Dimensions of Demand-side of Digital Financial Literacy



a) Digital Financial Aptitude

The basic understanding of financial and digital knowledge (Lyons & Kass-Hanna, 2021; Morgan et al., 2020; Lyons et al., 2019; Klapper et al., 2017; Mitchell & Lusardi, 2015) is the first dimension, which is named digital financial aptitude. It captures both financial knowledge and basic digital skills. The basic financial

concepts are numeracy, compound interest, inflation and risk diversification. Digitalization of the economy creates demand for digital literacy and skills, as well as for people who are competent in using various digital devices, understanding outputs, and developing programmes and applications (United Nations Development Program, 2019). Basic digital skills include knowledge of digital devices (computer, tablet, mobile phone, and Internet) and software. That is the ability to use software applications and hardware devices to transact digital financial products and services; one is said to have digital financial knowledge and skills. Individuals with a high level of digital financial aptitude can easily use digital banking platforms, mobile payment apps, and other digital financial services without significant difficulties. Thus, the digital financial aptitude captures both financial aptitude and basic digital skills or digital aptitude.

Financial Aptitude

Financial aptitude is a critical aspect of digital financial literacy, conveying knowledge, skills and understanding of various financial concepts and principles. The division of financial aptitude includes a wide range of fundamental financial concepts that individuals need to comprehend to make well-informed and efficient financial manners. The basic financial concepts are numerical skills, value of money, simple and compound interest rates, risk and return, understanding inflation, rate of discount, and diversification. By having such a decisive understanding of these concepts, individuals can enhance their financial literacy and make informed choices and financial decision to achieve their financial goals. It contains ten indicators regarding essential financial ability, and the financial aptitude score is computed as the sum of the respondent's answers to the ten such questions.

Digital Aptitude

Digital aptitude refers to an individual's capability or readiness to use and adapt effectively to digital technologies, tools and devices. It contains skills, knowledge, and attitudes that enable individuals to navigate and engage with digital tools, platforms, and applications with confidence and competence. Digital aptitude involves proficiency in digital devices such as computers, smartphones, laptops,

tablets, and other electronic gadgets and encloses the capacity to install and operate software applications, navigate operating systems, and troubleshoot technical issues. Being digitally competent means being skilled in digital communication, especially using email, messaging apps, online shopping, social media, online bill payments and other digital platforms to exchange information and interact effectively. It also includes the mastery to search for and access information efficiently on the Internet, using search engines and online databases to find relevant and reliable information. It also stresses comprehending the significance of data privacy and how to safeguard personal information and digital assets from cyber security threats and data breaches. It contains ten indicators regarding required digital ability given in Table 3.6 and the digital aptitude score is computed as the sum of the respondent's answers for the ten such questions.

Digital Financial Aptitude

The digital financial aptitude dimension concentrates on an individual's level of digital competence and understanding of financial services, digital financial tools, and platforms. It evaluates their technical skills and knowledge of various digital devices, internet usage, and mobile applications. Empowering people to access and utilize various digital tools to manage their personal finances more efficiently and securely is critical. It allows them to leverage digital platforms for banking, payments, transfers, and other financial activities, offering convenience, speed, and accessibility. The study estimates digital financial aptitude by using nine indicators comprising the knowledge about digital transfer techniques, debit and credit cards, mobile/digital wallets, internet banking transactions, ATM, direct benefit transfer/ABPS, Transfer money without internet data in mobile (USSD), point of sale (POS), aadhaar enabled payment system (AEPS).

Table: 3.6

Indicators of Digital Financial Aptitude

Dimensions	Indicators
Financial Aptitude	Division
	Time-value of money
	Interest paid on loan
	Interest plus principal
	Compound interest
	Risk and return
	Inflation
	Interest- inflation
	Discount
	Diversification
Digital Aptitude	Knowledge of mobile/Computer/Tablet/ Laptop
	Reading/writing/ Send mobile SMS
	Social media participation
	Searching the Internet for information (Browses or uses the Internet)
	Obtaining public service information through digital media
	Installation of software
	Online bill payment
	Online shopping
	Read and deduce information from visuals.
	Ability to protect devices, personal data, and privacy
Digital Financial Aptitude	Digital transfer techniques used by banks
	Debit and credit cards
	Mobile/digital wallets
	Internet banking transactions
	Use of ATM
	Direct benefit transfer/ ABPS?
	Transfer money without internet data in mobile (USSD)
	Point of Sale (POS)
Aadhaar Enabled Payment System (AEPS)	

Role of Financial and Digital Aptitudes in Determining Digital Financial Aptitude

Multiple regression analysis explain the relationship between digital financial aptitude and two predictor variables, namely financial aptitude and digital aptitude. The analysis examines how changes in the predictor variables impact the digital financial aptitude of the respondents. The main objective of this analysis is to estimate whether the combination of financial aptitude and digital aptitude can significantly predict the digital financial aptitude of the individuals participating in the study. The regression model estimates the impact of financial aptitude and digital aptitude on digital financial aptitude while controlling for each other's effects.

The multiple linear regression models are specified as follows:

$$\text{Digital Financial Aptitude (Y)} = \beta_0 + \beta_1 \text{Financial Aptitude} + \beta_2 \text{Digital Aptitude} + u_i$$

b) Digital Financial Attitude and Behaviour:

The second dimension of demand side aspects of digital financial literacy is attitude and behaviours toward digital financial services and technologies. It is the ability to make appropriate digital financial decisions by reflecting on the behaviours and attitudes of the respondents (Lyons & Kass Hanna, 2021; Morgan & Trinh, 2020; OECD, 2018). Digital financial practices have laid the basis on individual characteristics. It shows the tendency of a person and also his inclination to get along with behaviour. A vast array of attitudes, behaviours, experiences, and beliefs influence the adoption of and satisfaction with digital financial services. There is a great need to have positive financial behaviour and attitude and a proper understanding of the various risks related to digital financial services, like online fraud and cyber security, compared to traditional financial products and services. It is the perceptions, beliefs, and feelings about the transformative areas of financial innovations like digital financial products, services and infrastructures. It gives confidence when informed about traditional and new financial products and services.

Table: 3.7

Indicators of Digital Financial Attitude and Behaviour

Dimensions	Indicators
Financial Attitude & Behaviour	Preference of bank over DFS
	Convenient to use DFS
	Safety and security of DFS
	Difficulty in using DFS
	Trust in using DFS
	DFS are expensive

Digital financial attitude and behaviour contain seven indicators in this category. The Likert-type five-point scale was developed and used to examine the perception of various digital financial products and services provided by financial institutions and other stakeholders among rural people of Kerala. The digital financial attitude and behaviour score is computed as the sum of the values for the six statements and organized in a 5-point Likert scale model. This score ranges from 1 (strongly disagree) to 5 (strongly agree), and it aims to identify how people will evaluate their financial attitude. The digital financial attitude and behaviour indicators are first normalized using a minimum value and maximum value of the score and actual value achieved by the respondents. Digital Financial Attitude and Behavior Index (DFABI) is calculated using a minimum value of one and a maximum value of 30 points. The normalized value of the indicator ranges from zero to one.

c) Digital Financial Affordability

The concept of affordability refers to the extent to which an individual has enough income to pay for the service to receive it. Affordability is defined in terms of the relative burden of paying for financial services with a given income for a given set of benefits derived from access (Ahmad et al., 2021; OECD & IDB, 2016; OECD, 2016; Srivalli, 2023). It is a relative concept that should be measured against income and reflect the financial resources of an individual who is required to access digital financial services. These services need to be affordable, considering the

indirect costs and other expenses incurred by the individual, such as service charges, travelling a long distance to a bank branch, etc. Access to affordable digital financial services and products is essential for poverty reduction, inclusive financial system and economic growth. The success of sustainable digital financial inclusion requires providing affordable financial services that bring the poor into the formal economy (United Nations, 2016; Beck, Demirgüç-Kunt, & Levine, 2007; Bruhn & Love, 2014).

Affordability is connected to the costs of using digital financial services. If the respondent is affordable for all three indicators, namely, digital devices, digital financial services and internet services, then only he is considered affordable for digital financial services. The absence of anyone leads to the unaffordability of digital financial services.

Table: 3.8

Indicators of Digital Financial Affordability

Indicators
1. Prices for digital devices (Smartphone/Laptop)
2. Affordable Internet services
3. Prices for digital financial services (Fees & Other charges)

d) Digital Financial Awareness

Digital financial awareness is the ability to identify or *'know about'* the different types of digital financial products and services along with their benefits and risks (Lyons et al., 2019; Lyons & Kass Hanna, 2021; Morgan & Trinh, 2020; OECD, 2018; Ravikumar et al., 2022). It is knowing about existing providers of digital financial services and available digital solutions, applications and digital payment tools such as mobile money and digital mobile wallets, online banking, mobile payments, electronic fund transfer, POS, etc. (Lyons & Kass-Hanna, 2021). In addition to awareness of digital financial products and services, they should understand the additional risks and problems they may incur while using these financial services, which are more diverse and sometimes more challenging to spot

than those associated with conventional financial services. The potential online frauds and cyber security risks are phishing, pharming, spyware, SIM card swap, etc..." If individuals are worried about factors like awareness, privacy and security, some may abstain from using digital financial services in total, resulting in missing opportunities and lead to digital exclusion" (OECD, 2017). They should also be able to understand how to protect themselves from such types of risks. If there is a lack of knowledge and awareness related to financial products and services and their risks, it may lead to digital financial exclusion and may further decrease trust. Thus, awareness of digital technologies leads to the success of digital financial inclusion. Therefore, digital financial awareness mainly focuses on knowing about existing providers of digital financial services and knowing about the specific purpose and usage of available digital financial services (e.g., digital payments, savings, lending, and remittances) and associated financial risks.

For this study, the digital financial awareness dimension is measured by using two sub-dimensions: digital financial risks & their control and digital financial products and services. Digital financial risks & their control include the indicators used to understand the awareness of risks and problems that respondents may incur while using these financial services. It comprised seven indicators (Table 3.9), where respondents were asked to check whether they knew about various digital financial risks and problems. The digital financial risks & their control score are computed as the sum of the values for the seven indicators. This score ranges from zero to seven. Then, this score is normalized using a minimum value and maximum value of the score and the actual value achieved by the respondents.

Similarly, the Likert-type three-point scale was developed and used to examine the level of awareness about various digital financial products and services provided by banks and other financial institutions digitally. The questions were asked of rural people using a scale to indicate whether they are not aware, partially aware, or fully aware of nine digital financial products and services (Table 3.9) provided by various financial institutions. The digital financial products and services score is computed as the sum of the values for the nine products and services. This

score ranges from nine to twenty-seven. Then, this score is normalized using a minimum value and maximum value of the score and the actual value achieved by the respondents.

The Digital Financial Awareness Index (DFAI) is framed using two sub-dimensions, namely, digital financial risks & its control and digital financial products and services. It is calculated by taking the average of digital financial risks & its control and digital financial products and services standardized score. This normalized value ranges from zero to one.

Table: 3.9

Indicators of Digital Financial Awareness

Indicators	
Awareness of Digital Financial Risks & Its Control	Aware of cyber security risks (phishing, pharming, spyware, etc..)
	Mechanism to prevent data leakages
	Change password frequently
	Common Password for all Apps
	Updating Payment transaction Applications
	Grievance redressal/ Complaint mechanism
	Knowledge of compensation mechanisms
Awareness of Digital Financial Products & Services	Bank Account (Current/ Saving)/ Jan Dhan Account
	Mobile Wallets (Paytm, M-pesa, MobiKwik, PayU etc..)
	Internet Banking
	Banking Cards (Credit/Debit Card)
	Mobile Phone Payment (UPI, USSD, AEPS, JAM))
	Modes of Mobile banking (IVR, SMS, USSD, STK, Mobile Apps)
	Electronic fund transfers (NEFT, RTGS, IMPS)
	Direct Benefit Transfer (DBT)/ABPS
QR Code Banking	

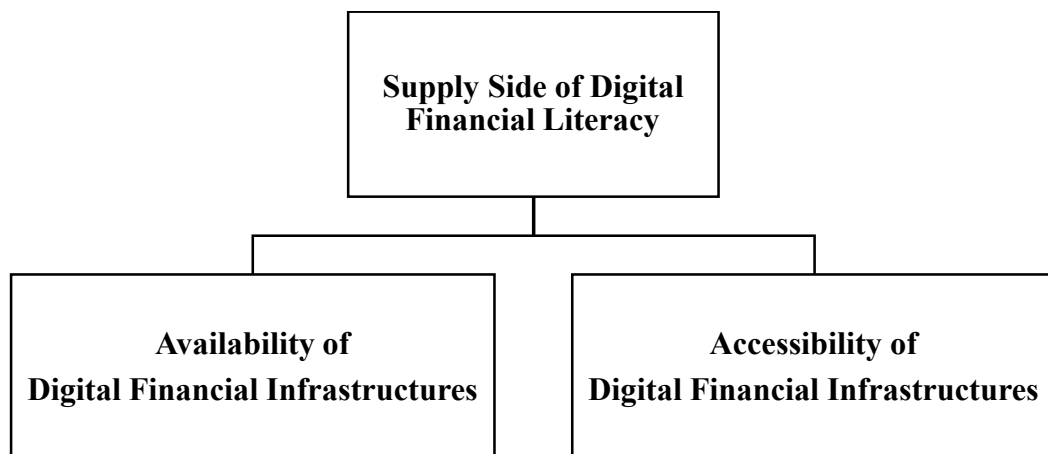
3.2.2 Supply-side of Digital Financial Literacy

The supply side of digital financial literacy tries to identify the circumstances or external factors that lead to digital financial literacy in the rural areas of Kerala.

These measures include the digital financial infrastructures and services that are made available to the users and could be assessed by parameters such as the number of bank accounts per capita, availability of cards, point of sale (PoS) machines, and other electronic payment acceptance infrastructure, such as wallets, fast payment systems, etc. (Upadhyay & Reddy, 2021). All these dimensions are from the 'financial service providers', namely the availability of digital financial infrastructures and accessibility of digital financial services.

Figure: 3.10

Dimensions of Supply-side of Digital Financial Literacy



a) Availability of Digital Financial Infrastructure

The existence and availability of infrastructure are essential components and are considered a prerequisite for the proper and efficient functioning of digital financial systems. It is a powerful platform for widening and expanding access to digital forms of financial services (Demirgüç-Kunt et al., 2022; OECD, 2019; Pazarbasioglu et al., 2020; Ravikumar et al., 2022). Digital Financial Infrastructure refers to the efficient digital payment delivery channels or access points, namely financial institution branches, Internet, mobile phones/smartphones, ATMs, point-of-sale (POS) terminals, etc., which facilitate and enable customer authentication and real-time transactions to promote digital financial inclusion (Morgan et al., 2020; OECD, 2019; Pazarbasioglu et al., 2020). A transactional digital platform connects people to the core banking systems to make and receive payments safely

and efficiently. It determines how efficiently and quickly digital financial services can be delivered using less cash and traditional bank branches. It is considered vital to enhance the use of digital financial services by improving convenience and efficiencies for users by enabling the sharing of different transaction channels for inclusion, especially for unbanked excluded people (Radcliffe et al., 2012). The financial infrastructure depends mainly on the smooth functioning of information and communication technology network with broad coverage throughout the country and a reliable power supply. High-speed internet connectivity facilitates the digital delivery channels to connect with the transactional platform (Pazarbasioglu et al., 2020).

Over recent years, a number of digital financial infrastructure providers (FinTechs) have developed. They offer and deliver various financial services to financial institutions, improving the end-user experience and some additional capabilities. These developments in the financial infrastructure allow increased digitalization of payments, with high-speed, safe, reliable and affordable digital financial services to all areas, especially underserved rural areas (GPFI, 2016). India has also made remarkable initiatives to enhance its digital financial infrastructure to access financial services.

For the purpose of the study, the various available and accessible digital financial infrastructures are identified (Table 3.10) and asked directly with the targeted population whether they are available/ access or not.

Table: 3.10

Indicator of Availability of Digital Financial Infrastructures

Sl. No.	Indicators
1	Bank Branch
2	Smartphone/ Laptop/ Desktop/ Tablet machine
3	Internet access
4	Smartphone with internet access
5	ATM
6	Point Of Sale (PoS) terminals

b) Accessibility of Digital Financial Infrastructures

Access to digital financial services has received more attention recently and has become a more critical part of the overall development of the finance sector. Access basically refers to supply-side aspects of people becoming digitally and financially literate. Accessibility refers to the ability to receive services in terms of immediacy or convenience in reaching digital financial services (Demirgüç-Kunt et al., 2022; ITU, 2016; Ravikumar et al., 2022). Inadequate access to financial services, especially in the digitalized era, is considered a serious instrument for creating persistent financial exclusion, income inequality, and slower economic growth (Pazarbasioglu et al., 2020). The inaccessibility of financial services is a major hindrance to the effective utilization of digital financial services in the rural areas of the State. Therefore, expanding access to digital financial services remains a major policy challenge in many developing countries, including India, with much for governments and policymakers to do.

Accessibility can be measured in terms of ‘reliability’, i.e., is finance available when needed/desired; convenience, i.e., what is the ease of access; continuity, i.e., can finance be accessed repeatedly; and flexibility, i.e., is the product tailored to the needs (Claessens, 2006; Morduch, 1999; Son & Son, 2013). One of the major difficulties while measuring access to digital financial services is to differentiate between access to and use of these services. Access to financial services means an absence of hurdles to the easy use of these services, whether the obstacles are price or non-price barriers to finance. People may prefer not to have a bank account or any other financial services due to various reasons, even though all these services are available. Exclusion can be voluntary, where a person has access to financial services, but they don't want to use them, or involuntary, where price barriers or discrimination (World Bank, 2008). Broad access to financial services indicate an absence of price and non-price barriers in the use of financial services and products; since, it is difficult to define and measure the concept because access has many dimensions. Services must be available when and where desired, and products must be tailored to specific needs (World Bank, 2008). The access and use

of these services can be explained by three categories of people. Category they have access to and use these digital financial services. Category-I they have access, but they don't want to use (voluntary exclusion), and Category-II they don't have access, and therefore, they are not using (involuntary exclusion). Access to digital financial services here includes both Category I and II (Claessens, 2006). Availability of these services is a necessary, i.e. access, but not sufficient, condition for use of these services. “An improved access to financial services through digital platforms requires higher levels of digital financial literacy to make efficient and effective utilization of them and to avoid miss-selling, frauds such phishing, hacking attacks, unauthorized use of data, discriminatory treatment and behavioural issues such as excessive borrowing” (Morgan et al., 2020).

The study used the physical distance between users and digital financial service providers or access points to access digital financial services and to afford internet, smartphone and service charges. Accordingly, the questions were asked of rural people whether they have access to digital financial infrastructure (Table 3.11).

Table: 3.11

Indicators of Access to Digital Financial Infrastructures

Sl. No.	Indicators
1	Bank Branch (KM)
2	ATM (KM)
3	Point Of Sale (PoS) terminals (KM)
4	Access to affordable internet services
5	Access to affordable digital devices (Smartphone/Laptop)
6	Access to affordable digital devices with Internet
7	Access to affordable digital financial services (Fees & Other charges)

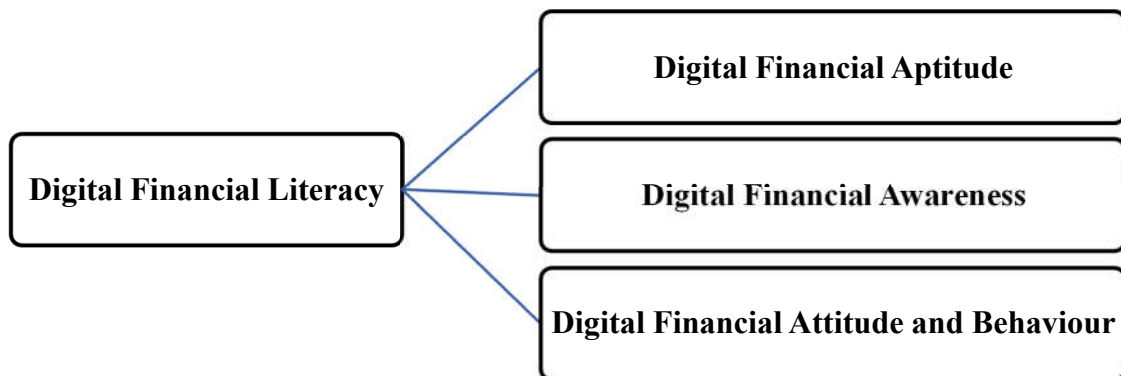
3.3 Methodology for Measuring Digital Financial Literacy

A composite index of digital financial literacy (Digital Financial Literacy Index) is constructed where several dimensions of digital financial literacy are used to assess the extent of its level. For estimating the Digital Financial Literacy Index

(DFLI), three core dimensions were used, namely Digital Financial Aptitude, Digital Financial Awareness and Digital Financial Attitude and Behaviour (Lyons et al., 2019; Lyons & Kass-Hanna, 2021; Morgan & Trinh, 2020; OECD, 2018; Saini, 2019).

Figure: 3.11

Dimensions of Digital Financial Literacy



Reliability and Validity

A number of robustness checks have been used to check the quality of the index, namely the validity and reliability of multidimensional indices. Reliability measures the extent of consistency towards what exactly the tool intends to measure. Cronbach's alpha has been used to measure the construct's reliability score. The general rule of thumb is that Cronbach's alpha values of between 0.60 and 0.70 indicate an acceptable level of reliability (Hair, J. F. Jr., Anderson, R. E., Tatham, R. L. and Black, 2009; M. Garver, J. Mentzer, 1999). The value obtained against Cronbach's alpha coefficient for each dimension of digital financial literacy is as follows.

Table: 3.12

Results of Reliability Test

Sl. No.	Dimension	Cronbach's alpha coefficient
1	Digital Financial Aptitude	0.895
2	Digital Financial Awareness	0.966
3	Digital Financial Attitude and Behaviour	0.986

These coefficient alpha values suggest that the indicators within each dimension of digital financial aptitude, awareness, and attitude & behaviour are highly reliable and can be considered internally consistent measures. It indicates that the items within each dimension consistently measure the same underlying construct. It provides confidence in the reliability of your measurement instrument or questionnaire for assessing digital financial literacy in these specific dimensions.

When the research measures what it intends to measure, then it is said to be valid. The study used content, face, and construct validity checks using expert judgments. Besides this, Pilot testing of the questionnaire acquainted with ideas on the face and content validity of the questionnaire. Expert opinion was also taken into consideration to analyze the suitability of the questions.

Assigning Weights to the Dimension

Several indicators vary across the dimensions used for aggregation; the weighting of dimensions is required to assign for proper evaluation. Based on the relevance and importance of each indicator and dimension, the researchers may also assign different weights with proper justification. The researchers assigned equal weight to each dimension and then divided that weight equally among the various indicators for that particular dimension.

Standardization- Min-max Method

The standardization of the indices has been made for easier and more meaningful interpretation and appropriate comparison purposes. The min-max method is used to standardize the indices. This method involves a normalization and aggregation process used by the UNDP to construct the Human Development Index (HDI) and the Sustainable Development Goals Index (SDGI) (OECD, 2008; Sachs et al., 2018; United Nations Development Program, 2019). It is normalized using a minimum value and maximum value of the score and actual value achieved by the respondents.

$$\text{Normalized Dimension Score } d_i = \frac{\text{Actual Score } d_i - \text{Minimum Score } d}{\text{Maximum Score } d - \text{Minimum Score } d}$$

Dd_i shows the total score for the d^{th} dimension for the i^{th} respondent for $d = \{1, 2\}$ and $i = \{1, \dots, I\}$. The maximum and minimum scores represent the respective values for the range of possible scores for the d^{th} dimension. The dimensions that are represented in various heterogeneous units and different numbers of indicators can be normalized and transformed into the homogenous dimensional score, which ranges from zero to one.

After calculating the indices of the three dimensions and their normalized scores, the scores are aggregated into a composite index using an arithmetic mean approach, giving equal weightage to each dimension to get a digital financial literacy index score.

$$DFL_i = \frac{D_{1i} + D_{2i} + D_{3i}}{3}$$

DFL_i - Digital financial literacy index score for each of the i^{th} respondent.

D_{1i} , D_{2i} , D_{3i} - normalized scores for the three dimensions

Digital Financial Literacy Index value lies between zero (the lowest level of digital financial literacy) and one (the highest level of digital financial literacy).

Category	Financial Literacy Score
Poor Digital Financial Literacy	0 - 0.25
Satisfactory Digital Financial Literacy	0.26 - 0.50
Good Digital Financial Literacy	0.51- 0.75
Excellent Digital Financial Literacy	0.76- 1.00

The respondent who scores zero will be considered digitally financially illiterate. The respondent who scores more than zero points on an aggregate basis will be technically considered digitally and financially literate. However, the study further segregates the digital financial literacy segment into four categories: poor digital financial literacy, satisfactory digital financial literacy, good digital financial literacy, and excellent digital financial literacy. The respondent who scores less than 0.25 points will be considered poor literate in digital finance literacy. The

respondent who scores more than 0.25 points but scores less or equal to 0.50 points will be regarded as satisfactory in digital financial literacy. The respondent who scores more than 0.5 points but scores less or equal to 0.75 points will be considered good in digital financial literacy. The respondent who scores more than 0.75 points will be regarded as excellent in digital financial literacy.

3.4 Methodology for Estimating the Statistical Significance

The independent t-test is used to determine the statistical significance of the differences between the value of different parameters, i.e. demographic and socio-economic and digital financial literacy among the two groups (male and female, married and unmarried, etc.). Similarly, a One-way ANOVA test is used to check the statistically significance differences between the values of different parameters among more than two groups.

3.5 Methodology for Identifying the Determinants of Digital Financial Literacy

The ordinal logistic regression model has been used to examine the factors contributing to variations in digital financial literacy. By analyzing a diverse set of variables, including age, gender, family size, employment status, education level, income, and more, this model seeks to identify key factors that impact an individual's likelihood of possessing adequate digital financial literacy. By identifying these factors, stakeholders can formulate targeted interventions, policies, and educational programs to bridge the digital financial literacy gap and empower individuals from all walks of life to harness the benefits of the digital economy.

Ordinal logistic regression (ordered logistic regression/ proportional odds model) is used when the dependent variable is ordinal in nature. The model estimates the probability that an observation falls into one of the ordered categories. The study used digital financial literacy as a dependent variable where it is categorised in an ordered manner such as poor, satisfactory, good and excellent digital financial literacy. Accordingly, this model estimates how independent variables influence the likelihood of someone falling into higher or lower categories

of digital financial literacy. The formula for ordinal logistic regression can be expressed as follows:

$$\log \left(\frac{P(Y \leq j / X)}{1 - P(Y \leq j / X)} \right) = \alpha_j - \beta^T X$$

For $j = 1, 2, \dots, J - 1$

- J is the total number of categories.
- j is the index for a specific category, ranging from 1 to $J-1$
- α_j is the threshold (or intercept) for the j th category.
- β is the vector of coefficients for the predictor variables X .
- $\beta^T X$ is the linear combination of the predictors.
- $P(Y \leq j / X)$ is the cumulative probability of the dependent variable Y being in category j or lower given predictor variable X .

Rearranging equation

$$\frac{P(Y \leq j / X)}{1 - P(Y \leq j / X)} = \exp(\alpha_j - \beta^T X)$$

$$P(Y \leq j / X) = \frac{\exp(\alpha_j - \beta^T X)}{1 + \exp(\alpha_j - \beta^T X)}$$

The probability of $P(Y \leq j / X)$ is derived as:

$$P(Y \leq j / X) = \frac{1}{1 + \exp(-(\alpha_j - \beta^T X))}$$

The probability of being in category j is:

$$P(Y = j / X) = P(Y \leq j / X) - P(Y \leq j - 1 / X)$$

For $j = 1, 2, \dots, J$ with $P(Y \leq 0 / X) = 0$ with $P(Y \leq j / X) = 1$

The coefficients β represent the effect of the predictor variables X on the log-odds of the outcome Y . The thresholds α_j are category-specific intercepts that separate the ordered categories of Y . They represent the cut points on the latent (unobserved) scale that determine the boundaries between categories.

This model assumes proportional odds, meaning that the relationship between each pair of outcome groups is the same. In other words, the coefficients β are the same for all categories, but the thresholds α_j differ. The proportional odds assumption means that the coefficients β are the same for all categories of Y . In other words, the effect of X on the log-odds of Y is consistent across all thresholds. Only the thresholds α_j differ between categories. These thresholds account for the differences in the baseline probabilities of being in each category.

The proportional odds assumption means that the same coefficients β apply to all comparisons between categories of Y . For example: The effect of a predictor like caste on the odds of being in a higher category is the same whether you are comparing low vs. satisfactory, satisfactory vs. good, or good vs. excellent. Only the thresholds α_j differ for each category, reflecting the baseline probabilities of being in each category. These thresholds represent the boundaries between the ordered categories. a_1 is the threshold between low and satisfactory; a_2 is the threshold between satisfactory and good and a_3 is the threshold between good and excellent. The thresholds α_j differ for each category, reflecting the baseline probabilities of being in low, satisfactory, good, or excellent.

Finally, the study uses the Odds Ratio, which is a transformation of the estimated coefficients β from the ordinal logistic regression model. It is calculated as

$$\text{Odds ratio} = \exp(\beta)$$

The odds ratio tells you how the odds of being in a higher category of the outcome Y change for a one-unit increase in predictor X , holding all other predictors constant. If $OR > 1$, the odds of being in a higher category increase as X increases.

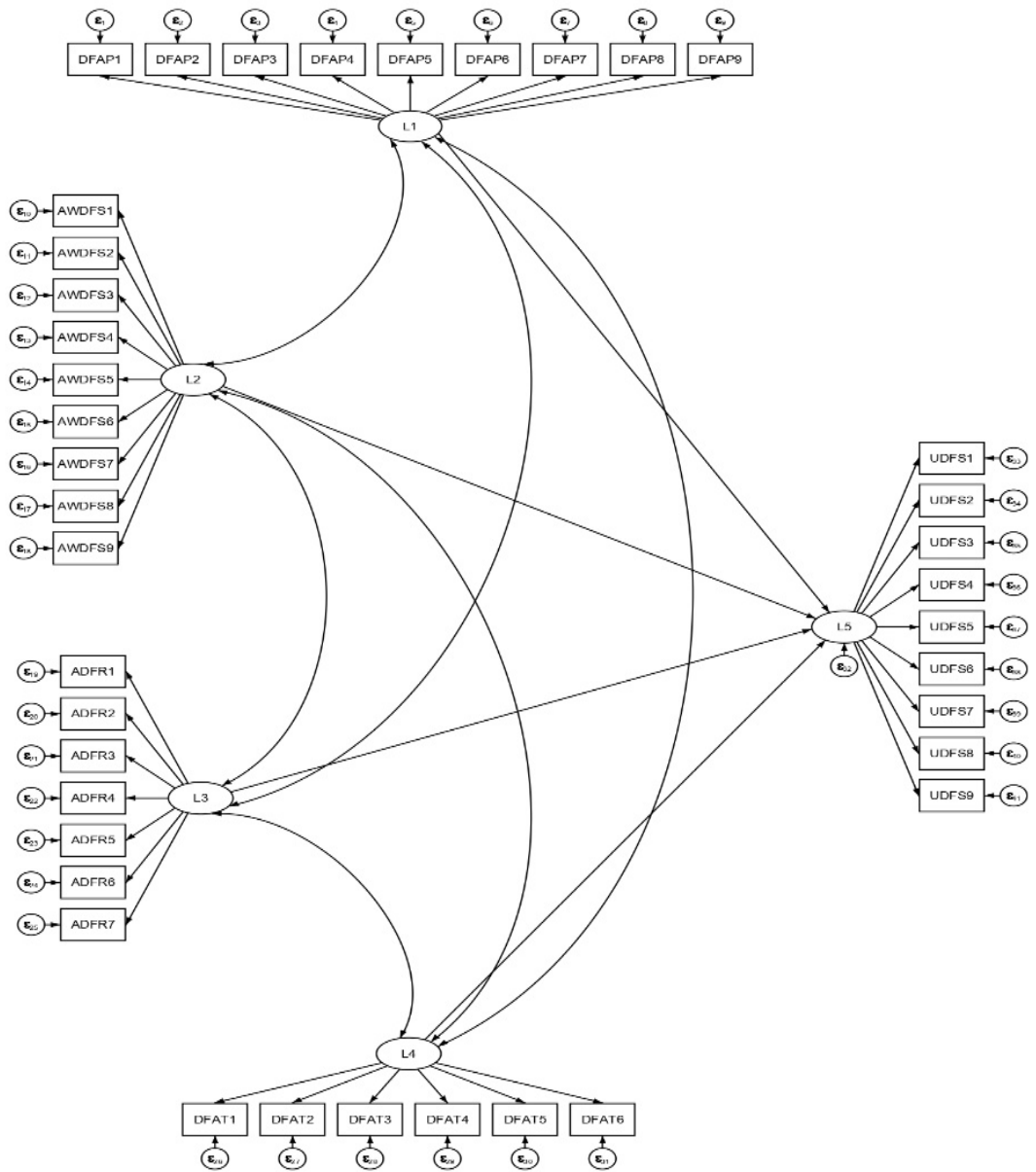
If $OR < 1$, the odds of being in a higher category decrease as X increases. And finally, the p-value is the probability of observing a z -statistic as extreme as the one calculated, assuming the null hypothesis ($\beta = 0$) is true. It is used to test the significance of the predictor X . If $p < 0.05$, the predictor variable is considered statistically significant at the conventional 5 per cent level.

3.6 Methodology for Finding the Impact of Digital Financial Literacy on Usages of Digital Financial Services

The study also investigates the role of digital financial literacy in enhancing the usage of digital financial services (DFS). The study employs a structural equation modelling (SEM) approach to examine the relationships between the latent variables and to explore the direct and indirect effects of these digital financials on the usages of digital financial services. By employing SEM, the study provides a robust framework for understanding the intricate relationships between the dimensions of digital financial literacy, namely digital financial aptitude, attitude and behaviour, and awareness of financial services and products and risks and their influence on the usage of digital financial services. The study utilizes primary data collected from rural households in the three selected districts of Kerala using a well-structured schedule on digital financial aptitude, attitude and behaviour, awareness of financial services and products and risks of respondents, and their usage of DFS. The following diagram represents a graphical representation of the SEM model used in this study to evaluate the role of digital financial literacy in terms of its various dimensions in the usage of digital financial services.

Figure 3.12

SEM of Role of Digital Financial Literacy on Usage of Digital Financial Services



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CHAPTER 4

INITIATIVES FOR DIGITAL FINANCIAL LITERACY

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- 4.1 *Importance of Digital Financial Literacy and Its Initiatives*
 - 4.2 *Digital Financial Literacy in India*
 - 4.3 *Digital Financial Literacy Initiatives in India*
 - 4.4 *Digital Financial Literacy in Kerala*
 - 4.5 *Digital Financial Literacy Initiatives in Kerala*
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4.1 Importance of Digital Financial Literacy and Its Initiatives

Digital financial literacy is the knowledge and abilities needed to comprehend and utilize digital financial services effectively and efficiently (Li & Meyer-Cirkel, 2021; Morgan & Trinh, 2020). It includes utilizing digital wallets, mobile banking, online transactions, UPI (Unified Payment Interface), and other financial technology (Golden & Cordie, 2022). Digital financial literacy is crucial for financial management and economic engagement in the digital world. As digital platforms have become popular, people's interactions with financial systems have changed, becoming quicker, more efficient, and frequently more secure (Dafri & Al-Qaruty, 2023; Nicholas & Kasekende, 2024). However, only those with the requisite financial and digital skills can fully reap the rewards of these improvements. People with digital financial literacy are more equipped to make safe and well-informed decisions about borrowing, investing, saving, and spending (Nahar et al., 2022; Ramachandran, 2012). At its core, digital financial literacy enables individuals to confidently use online banking, mobile payment apps, digital wallets, and other financial technologies while maintaining security and avoiding risks like fraud or data theft. It helps people to understand the various types of digital tools available and how these can be accessed and managed digitally. It makes them comfortable with digital financial technologies, transforming traditional banking into a real-time, seamless experience. It helps them to recognize online risks and understand the essential precautions to protect personal and financial information from fraud, scams, and cybercrime (Sharma, 2020). Digital financial literacy also involves making informed decisions about managing money based on access to real-time information and comparing different online financial options.

India has been undergoing rapid digital transformation, particularly in financial services (Agarwal et al., 2018; Modi & University, 2017; Najdawi et al., 2021). The government pushed toward a Digital India to improve accessibility, transparency, and efficiency in financial transactions (Prasad et al., 2018). Initiatives like the JAM (Jan Dhan-Aadhaar-Mobile) Trinity, Digital India, and the growth of UPI-based transactions have propelled the country toward a digital

economy. However, the successful adoption of financial transactions and services depends upon digital financial literacy, which is considered a basic requirement for the success of these transactions. As more people adopt and use digital infrastructures like smartphones and high speed internet connectivity, the ability to access and use digital financial platforms and services has increased. Several global trends have accelerated the shift towards digital financial systems. Digital transactions, including online banking and mobile payments, are becoming the norm. The rise of fintech companies offering digital financial services like UPI, mobile wallets (e.g., Paytm, Google Pay), and banks are revolutionizing how people interact with money. The widespread adoption of e-commerce has led to an increase in the adoption and use of digital payment platforms.

There's a growing trend in the post-COVID pandemic towards contactless and cashless payments, highlighting the need for digital financial literacy to navigate these systems safely and efficiently (Ravikumar et al., 2022). There is a growing trend towards contactless and digital payments, especially post-COVID pandemic, which emphasizes the requirement of digital financial literacy to navigate these systems safely and efficiently (Ravikumar et al., 2022). Thus, digital financial literacy is key to ensuring financial inclusion for a country like India. As financial institutions and government programs go digital, digital financial literacy bridges the gap between unbanked or under-banked populations and formal financial services, encouraging greater economic participation of people. Programs like Digital India and the promotion of digital transactions aim to make financial services more accessible. However, due to digital financial illiteracy, many people are unable to take full advantage of these opportunities and benefits of financial services, making digital financial literacy a vital focus of policymakers for sustainable development. The digital divide is at a peak, especially in rural areas of the country, where access to digital financial tools is low, and knowledge of these platforms remains inadequate (Philip et al., 2017). In order to guarantee proper financial inclusion and, accordingly, enable citizens to engage in the digital economy without fear of fraud or exploitation, digital financial literacy must be improved.

Digital financial literacy is no longer a luxury—it's a necessity for participation in this modern digital economy. As the world transitions to digital finance, people who lack this skill face many difficulties. From rural farmers trying to access subsidies online to small business owners managing digital payments, every segment of society requires basic digital financial literacy to flourish. Many governments and financial institutions worldwide are realizing the value and necessity of a range of programs and initiatives to enhance digital financial literacy, including public education campaigns, collaborations with tech companies, and specialized financial literacy platforms that offer resources. In an increasingly interconnected world, digital financial literacy is essential for making effective and efficient financial decisions and protecting personal financial information from new cybercrimes. By fostering digital financial literacy, societies can create more financially accountable and adaptable individuals better prepared for the digital future (Joesoef, 2020; Suresh, 2008).

With its high literacy rate and progressive approach to social development, Kerala stands at the forefront of adopting various digital technologies (Franke, 2015; Franke & Chasin, 1992; Rathore & Das, 2019; Tripathi, 2019). However, digital financial literacy continues to be a growing concern despite the social and technological advancements of the state, particularly among older adults, rural populations, and economically disadvantaged groups (Kuwar et al., 2022). Due to reliance on remittances and the growth of e-business and digital payments in Kerala, digital financial literacy is now crucial for safe and effective economic development. Targeted digital financial literacy programs are becoming increasingly necessary despite the notable efforts to promote digital platforms for financial transactions in the state. Through collaborations between the public and private sectors, Kerala has also implemented several digital literacy initiatives. Bridging the gap between digital access and practical usage is still difficult, especially when comprehending financial tools and removing digital risks like cyber fraud. Promoting digital financial literacy in Kerala involves giving people, particularly those in vulnerable groups, access to technology and making sure they can use it effectively and

efficiently to improve their financial well-being and support the expanding digital economy in the state.

Digital financial services are widely available in Kerala because the state has one of the highest internet and mobile penetration rates in India (IAMAI, 2019). With more people using UPI, mobile payment apps, and online banking, the state's economy which is largely reliant on remittances has witnessed a boom in digital transactions. Despite the strong and expanded digital infrastructure, there is a lack of practical knowledge regarding the safe and effective use of these financial services, especially among older generations and those living in rural areas. The necessity of digital financial literacy to guarantee safe use and avoid digital financial exclusion is highlighted by this expanding access. The risk of online fraud, data breaches, and phishing attacks rises with the volume of digital financial transactions. Many individuals in Kerala, especially those less familiar with digital platforms, may be vulnerable to financial risks. Building digital financial literacy will help people understand the basics of cyber security, such as recognizing scams, setting up secure passwords, and protecting personal financial information. In the absence of proper knowledge, people remain vulnerable to financial fraud, threatening to undo the progress made in financial inclusion.

Kerala has actively participated in national and state-level initiatives promoting digital transactions. Programs like Digital India and local e-governance initiatives have encouraged citizens to adopt digital financial systems, including public services, e-commerce, and bill payments. The cooperative banks and state regional financial institutions are also increasingly digitalizing their services. However, a significant portion of the population might struggle to adapt to these changes without corresponding digital financial literacy efforts. Providing digital financial education will ensure that these initiatives are utilized effectively and inclusively. Digital financial literacy can empower these groups by teaching them how to navigate digital payments, use online banking for business, and access government subsidies or schemes digitally. With the state's focus on tourism, agriculture, and remittances, a digitally literate population can significantly enhance economic output and stability. While urban regions in Kerala are quickly embracing

and adopting digital financial systems, rural areas face challenges in accessing and understanding these financial services. The rural population, especially women, senior citizens, vulnerable groups and the economically weaker sections, often lack the necessary skills to benefit from digital banking and payments. By promoting digital financial literacy in rural regions, Kerala can ensure that the benefits of digital finance are evenly distributed, reducing the rural-urban gap in financial inclusion. Kerala's large expatriate community regularly engages in cross-border digital remittances. Ensuring families receiving these funds are digitally literate can help them manage finances better and avoid potential financial fraud or high transaction or service charges. Additionally, the population of Kerala is ageing, and they may be less familiar with technology. They need special attention to ensure they aren't excluded from the digital economy. Tailored digital financial literacy programs can be instrumental in educating these demographics about digital financial safety and usability.

4.2 Digital Financial Literacy in India

In India, digital finance has become a crucial element of the country's wide financial inclusion schedule, especially with the government's emphasis on promoting digital payments, fintech innovations, and a cashless economy (Financial Inclusion Insights, 2017; Khanra et al., 2020; Modi & Universirty, 2017). The Reserve Bank of India (RBI) has been actively promoting digital financial literacy through initiatives like the Financial Literacy Centres (FLCs) and the National Strategy for Financial Education (2020-2025) (RBI, 2017). According to the reports of RBI, 63 per cent of adults in India still lack the financial knowledge and awareness to make informed decisions, highlighting that digital financial literacy needs considerable attention, especially in rural areas where access to digital financial services remains low (RBI, 2017). NITI Aayog's Digital India initiative underscores the relevance of digital financial literacy for attaining a digitally empowered society (NITI Aayog, 2020). The organization has reported that while digital payments in India rose by over 40 per cent from 2019 to 2021, there is still a significant knowledge gap, especially in tier-2 and tier-3 cities, where a lack of trust

and education around digital platforms hampers adoption of the digital financial services. NITI Aayog also supports the Pradhan Mantri Jan Dhan Yojana (PMJDY), which has carried millions of people into the banking system, allowing them to engage with digital finance. However, without proper digital literacy, many account holders face difficulties managing their finances digitally. The World Bank's Global Findex Database (2021) reveals that while India has made significant improvements in financial inclusion, with 80 per cent of Indian adults having access to a bank account, the usage of digital financial services remains asymmetrical. About 30 per cent of the Indian population still lacks internet access, making them unable to use digital financial services (Demirgüç-Kunt et al., 2022). In addition, the World Bank notes that rural women in India are disproportionately disadvantaged regarding digital financial literacy, which further extends the gender gap in financial inclusion (SAARGDNS, 2023). The National Digital Financial Literacy Survey conducted by the Indian School of Business (ISB) found that only 25 per cent of respondents were comfortable using digital financial platforms. Additionally, issues like the lack of smartphones, internet access, and low trust in digital systems were significant challenges to adoption. A survey conducted by Price Waterhouse Coopers (PwC) in 2021 reveals that despite the rapid growth of Fintech, 36 per cent of respondents in rural areas were still unaware of digital financial services, and 40 per cent lacked the confidence to use these services (PWC, 2021).

Since there is no specific agency and regular data regarding digital financial literacy in India, several individual research papers focused on digital financial literacy in different areas or regions of India, which cannot represent the country. Table 1 presents the Financial Literacy and Inclusion Survey (NFLIS) data results from 2013 and 2019 conducted by the National Centre for Financial Education (NCFE), which was promoted by RBI and SEBI. The survey highlights significant improvements in financial awareness and accessibility in India over the period of time.

Table: 4.1

Results of Financial Literacy and Inclusion Survey by NCFE- India

Indicator	2013	2019	Change (%)
National Financial Literacy Score	20.0	27.18	07.18
Financial Knowledge (Basic)	24.0	30.0	06.0
Financial Behaviour (Use of Financial Products)	53.0	57.0	04.0
Financial Attitude (Good Financial Practices)	30.0	37.0	07.0
Financial Inclusion	53.0	60.0	07.0
Mobile Banking Usage	06.0	15.0	09.0
Bank Account Ownership	60.0	80.0	20.0

Sources: Financial Literacy and Inclusion Survey (NFLIS) 2013 & 2019

The financial literacy of India has increased from 20 per cent to 27.18 per cent, showing an overall increase of 7.18 per cent and an overall rise in financial literacy. Similarly, the basic financial knowledge required by people to do financial transactions rose by 6 per cent, from 24 per cent to 30 per cent, demonstrating growing awareness of basic financial concepts. Another dimension of financial literacy is financial behaviour regarding the use of financial products, which has increased modestly by 4 per cent, from 53 per cent to 57 per cent, indicating that some more people are engaging with financial services, showing still potential for greater utilization. Similarly, the financial attitude also increased from 30 per cent to 37 per cent over the same period, showing that individuals increasingly embrace good financial practices like saving and budgeting. The survey also included information regarding financial inclusion in India, which grew from 53 per cent to 60 per cent, likely due to the results of initiatives taken by various stakeholders to bring more people into the formal financial system through several programmes. Mobile banking usage shows a noteworthy improvement from 6 per cent to 15 per cent, reflecting the growing acceptance of digital platforms and methods. However, it remains relatively low overall, possibly due to digital financial illiteracy or infrastructure challenges which are posed in many regions of the country. The most notable advancement was made in the ownership of the bank, which hiked from 60

per cent to 80 per cent (+20 per cent), which national campaigns like the Pradhan Mantri Jan Dhan Yojana may cause. In general, this survey showed significant improvement in financial literacy, financial inclusion, and digital adoption of services in India, showing potential growth in digital financial transactions. However, all these results show India is still backwards in all these dimensions.

4.3 Digital Financial Literacy Initiatives in India

In recent years, India has experienced a transformative shift towards a digital economy, stimulated by technological advancements, government reforms, and a rush in mobile and internet penetration (Azeez N.P, 2020). Therefore, digital financial literacy has emerged and is required as a critical component of this transition, enabling citizens to adopt the complexities of digital financial services confidently. Understanding and effectively utilizing digital financial tools is essential for financial inclusion, empowerment, and economic development as the nation moves towards a cashless society. The Government of India, through various schemes such as Digital Saksharta Abhiyan (DISHA) and PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan), etc... aims to enhance digital literacy across the country. The various financial and non-financial institutions in India conduct many such initiatives. These initiatives focus on educating people about digital banking, mobile payments, cybersecurity, and financial planning through digital platforms. These initiatives, especially in rural areas, target households to promote digital financial services, including the Unified Payments Interface (UPI), mobile wallets, and online banking. Despite significant progress, a large segment of the Indian population remains unbanked or underbanked, particularly in rural and semi-urban areas. India still faces challenges like limited digital infrastructure, low internet penetration in certain areas, and a lack of awareness about digital financial services. According to the World Bank's Global Findex Database, about 80 per cent of Indian adults have access to a bank account. However, many still lack the skills to utilize digital services efficiently (Demirgüç-Kunt et al., 2022). This gap not only hinders individual financial growth but also limits the overall economic development of the nation. Digital financial services, including mobile banking,

digital wallets, and the UPI, can bridge this gap by providing easier access to financial resources, promoting savings, and facilitating effortless transactions. However, the successful adoption of these services depends upon a digitally literate population capable of making informed financial decisions.

4.3.1 Digital Financial Literacy Initiatives by the Government of India

Here are some notable nationwide recent digital financial literacy programs adopted by the Government of India.

Pradhan Mantri Jan Dhan Yojana (PMJDY)

Pradhan Mantri Jan Dhan Yojana (PMJDY) is a flagship financial inclusion scheme launched by the Government of India on 28th August 2014. Its primary goal is to offer affordable access to financial services, including banking, savings, remittance, credit, insurance, and pension, to every household, especially in rural and underprivileged societies (Ministry of Finance, 2014). This scheme is considered one of the most motivating and high-reaching financial inclusion initiatives globally. One of the primary objectives of PMJDY is to guarantee that at least one household member has a bank account. The scheme made it easier for individuals without access to banking services to open zero-balance accounts (PIB, 2022). Financial literacy is an integral part of PMJDY, as it aims to create awareness about financial management and the benefits of banking (Nimbrayan et al., 2018). Under the scheme, financial literacy programs were initiated to educate people, particularly those in rural areas, about using various financial products. These include digital banking tools such as mobile banking, internet banking, RuPay debit cards, and mobile wallets, making the scheme a significant catalyst for digital financial literacy in India. Each account holder under PMJDY is given a RuPay debit card, which can be used for transactions at ATMs, Point-of-Sale (PoS) terminals, and online shopping. The RuPay card promotes cashless transactions and gives beneficiaries a digital tool to manage their finances. Account holders under PMJDY are also eligible for an overdraft facility of up to ₹10,000 (initially ₹5,000) and accidental insurance coverage of ₹1 lakh (increased to ₹2 lakh for accounts

opened after August 2018). These provisions promote financial stability and risk alleviation for economically weaker sections.

Every account holder is issued a RuPay debit card, which enables them to make digital transactions. The RuPay card also provides accidental insurance coverage, promoting people to adopt digital transactions and move toward a cashless economy. The scheme is linked to the government's Direct Benefit Transfer program, where subsidies (like LPG, scholarships, and pensions) are credited directly into the PMJDY accounts. It minimizes leakages in government subsidies and promotes transparency. The scheme facilitates linking bank accounts with mobile numbers and Aadhar to enhance digital identification and ease of transaction. It allows for seamless KYC compliance, making it easier for individuals to access formal financial services. Jan Dhan Darshak App is a Pradhan Mantri Jan Dhan Yojana (PMJDY) tool that helps users locate digital financial services and educates them about mobile banking, UPI, and other financial tools. It targets Citizens across India, especially those new to digital finance.

Opening accounts by banks through the PMJDY after the financial inclusion efforts by RBI has covered considerable ground in financial inclusion. As a part of it, financial literacy initiatives were also taken to enable consumers to understand the benefits of formal products and providers and choose to adopt training initiatives that fit their needs. RBI adopted guidelines and directed that Financial Literacy Centers and rural branches of concerned commercial and other banks adopt a conducive approach to tackle issues and challenges faced by different target groups, viz. farmers, micro and small entrepreneurs, school children, SHGs, senior citizens, etc. (RBI, 2016).

Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)

Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) is one of the flagship programs under the Digital India initiative, launched by the Government of India to make rural citizens digitally literate (MEIT, 2024b). This program is a significant move towards achieving a digitally empowered society and bridging the digital divide between urban and rural people. The primary goal of PMGDISHA is

to empower rural households by assuring that at least one person from each household becomes digitally literate (Ministry of Electronics and Information Technology Government of India, 2020). It includes operating computers or digital devices (such as tablets and smartphones), using the internet, and accessing various digital services. It provides basic digital literacy training, including knowledge about using digital devices (computers, smartphones, tablets), Internet access and browsing, and digital financial services like Internet banking, mobile banking, UPI, and digital wallets (e.g., Paytm, Google Pay, etc.). Understanding cyber security and safe practices for online financial transactions, learning how to pay utility bills (e.g., electricity, water) using online methods. The program focuses on rural areas where digital penetration and literacy rates are lower than urban ones. PMGDISHA aims to train six crore rural citizens, with special emphasis on marginalized communities, including women, Scheduled Castes (SC), Scheduled Tribes (ST), and Below Poverty Line (BPL) households.

The training under PMGDISHA is carried out through Certified Training Centres (CTCs), which are approved and accredited by the government. These centres ensure participants receive hands-on experience with digital devices and financial tools. The training is generally over 20 hours, which can be completed within 10 to 30 days. The course content is straightforward and practical, designed to meet the learning rate of individuals with minimal prior exposure to technology. One of the major components of PMGDISHA is to educate rural citizens on using digital financial services, which has become crucial in India's push towards a cashless economy. Trainees are taught to perform cashless transactions via mobile banking and digital payment systems like UPI. Use digital wallets and Internet banking for financial transactions such as transferring money, paying bills, and checking account balances. Safeguard against cyber fraud and practice safe online behaviour. Since its launch, PMGDISHA has trained millions of rural citizens across India. According to government reports, Over 5.75 crore candidates have been enrolled under the scheme, with 3.25 crore successfully certified as digitally literate (as of 2021). The program has significantly raised awareness of using digital

financial tools in rural areas, leading to greater involvement in e-governance services and digital banking.

National Digital Literacy Mission (NDLM)

The National Digital Literacy Mission (NDLM) is a key initiative under the Digital India program, launched by the Government of India, to make digital technology accessible to the great masses. Its primary objective is to improve digital literacy across the country, especially among marginalized sections, and to arrange for citizens to benefit from the digital revolution in India (ZenSar, 2020). NDLM focuses on urban and rural populations, empowering them to use digital platforms for personal and professional purposes. It emphasizes bridging the digital divide by delivering digital literacy to people with little or no access to modern technologies and ensuring that citizens, particularly from underserved and rural areas, have the skills to participate in the digital economy. NDLM is implemented through a wide network of training centers established across India in association with state governments, private companies, and non-governmental organizations (NGOs). To deliver to diverse populations, the program provides face-to-face training sessions in rural and urban centres, ensuring that even individuals with no prior exposure to technology can learn effectively. The training modules are available in multiple Indian languages, making them accessible to people who may not be familiar with English, thus broadening the reach of the program. The NDLM curriculum is designed with clear objectives, ensuring that participants can effectively operate digital devices such as computers and smartphones, understand the fundamentals of the internet, and conduct cashless transactions using various digital platforms like UPI, debit/credit cards, and mobile wallets. Furthermore, the training enables individuals to access government services through e-governance portals, including managing Aadhaar, paying utility bills online, and applying for government certificates. Participants are also educated on using social media and other internet tools for communication and information sharing, equipping them with essential skills for the digital era.

NDLM emphasizes several key areas to empower citizens with the required digital skills. One of the main components is basic digital literacy, where individuals are trained to perform fundamental computer operations such as using a mouse or keyboard, learning software applications, and browsing the internet. It ensures that participants, especially those without prior experience, can confidently use digital tools in their personal and professional lives. Another crucial aspect is digital financial literacy, which became particularly crucial after the demonetization in 2016. Citizens are taught how to use online banking services and digital payment systems like UPI, mobile wallets, and net banking. They also learn how to do secure online transactions, enabling them to participate in the digital economy securely. NDLM also focuses on e-governance services, teaching citizens how to use and access various government services online, such as managing Aadhaar details, applying for PAN cards, filing taxes, and utilizing government welfare schemes. It eases interactions with the government, making public services more straightforward and approachable.

Additionally, cyber security awareness is a critical area of the program, where individuals learn how to protect personal information, create strong passwords, avoid phishing scams, and identify fraudulent digital schemes. It ensures that citizens can navigate the digital world safely, minimizing the risks of online threats and fraud. NDLM aims to build a digitally inclusive and empowered society by focusing on these areas. Since its inception, NDLM has successfully trained millions of individuals, particularly those from rural areas, low-income families, and marginalized communities. The program has played a vital role in accelerating digital financial inclusion and enhancing access to digital governance. Notably, it has significantly benefitted women, small business owners, and senior citizens, enabling them to utilize digital platforms for a variety of services, ultimately contributing to a more digitally literate and empowered.

Digital India Campaign

The Digital India Campaign is a flagship program launched by the Government of India in 2015 to transform the country into a digitally empowered

society and knowledge economy. This initiative concentrates on improving digital infrastructure, enhancing online service delivery, and increasing digital literacy among citizens (MEIT, 2024a). The program is structured around three core pillars: Providing high-speed internet access as a utility to all citizens, delivering government services on demand and empowering citizens digitally to access and utilize these services effectively. As part of this, initiatives such as Bharat Net aim to give broadband connectivity in rural areas. At the same time, Digi Locker offers citizens a secure platform for storing and sharing important documents electronically. Additionally, the campaign has introduced mobile apps like UMANG, which provides a unified platform for government services, and initiatives like Aadhaar, a biometric-based unique identification system widely used for authentication and welfare schemes. The impact of Digital India is far-reaching, particularly in financial inclusion, where platforms like UPI (Unified Payments Interface) and mobile wallets have allowed rural and urban populations alike to access digital banking services and be involved in formal financial systems.

In education, healthcare, and governance, digital platforms are playing a prominent role in making services more accessible while improving the ease of doing business through initiatives like e-sign and online registrations, has rationalized bureaucratic processes. Moreover, the government's attempts to boost digital literacy through programs which aim to train millions of rural citizens in digital skills have also helped to increase the number of people who can access and benefit from these services. However, despite its successes, the campaign faces problems, particularly in overcoming the rural-urban digital divide, cyber security and the risk of online fraud. Many rural areas still face challenges like poor infrastructure, limited connectivity, and a lack of digital awareness, which restricts the campaign's effectiveness in reaching all corners of the country.

4.3.2 Digital Financial Literacy Initiatives by the Reserve Bank of India (RBI)

RBI has taken many policy and program initiatives to create and expand digital financial literacy, encompassing a diverse set of approaches to reach diverse audiences, including students, rural populations, senior citizens, and women. The

RBI is actively working to create an informed and financially literate population by maximum utilizing various media, including workshops, educational films, and social media campaigns; the RBI is committed to promoting digital financial literacy, reflecting a broader vision of fostering an inclusive, empowered, and financially secure society. The RBI aims to bridge the knowledge gap in digital financial services through sustained efforts, ensuring that all citizens can confidently and securely navigate this new banking era.

Financial Literacy Centres (FLCs)

Financial Literacy Centres (FLCs) are essential in enhancing financial literacy introduced by RBI, particularly in the context of increasing digital financial services. FLCs, established across India in connection with commercial banks, aim to educate and empower individuals, particularly in rural and semi-urban areas, about various financial products and services, emphasizing digital financial literacy (RBI, 2016). Their strategic placement guarantees accessibility to populations with limited access to formal financial education. FLCs serve diverse groups, including women, marginalized communities, farmers, rural entrepreneurs, youth, and senior citizens (RBI, 2024). They conduct various educational programs and activities such as workshops, seminars, interactive sessions, and one-on-one counselling to address specific financial complaints. These programs concentrate on general financial literacy and the responsible use of digital financial tools, including mobile banking apps, UPI, and e-wallets. Moreover, FLCs organize awareness campaigns to inform the public about safe banking practices, maintaining financial records, and recognizing and avoiding fraud. Collaboration is a crucial specialization of FLCs, as they often partner with local organizations, educational institutions, and NGOs to enhance their outreach and effectiveness. This approach allows them to customize content and methods based on community requirements. Moreover, FLCs develop and distribute various resource materials, such as brochures and guides, providing easy-to-understand information about financial products and digital services.

The impact of FLCs is significant; they have contributed to increasing financial literacy levels in communities, with many participants reporting greater

confidence in managing their finances and utilizing digital services. Furthermore, FLCs are essential in promoting the adoption of digital payment systems and banking services, supporting the transformation towards a cashless economy. By specifically aiming at marginalized and underprivileged populations, FLCs empower these groups to engage with the formal financial system, promoting greater financial inclusion. In conclusion, Financial Literacy Centres are instrumental in the RBI's strategy to improve digital financial literacy and inclusion across India. By providing education and resources, FLCs help individuals navigate the complexities of modern financial services, enabling them to make informed decisions and utilize digital platforms safely and effectively. Through their ongoing efforts, FLCs create a financially literate and empowered society better equipped to engage with the evolving financial landscape. As of 2023, around 1564 financial literacy centres were established across India sponsored by commercial banks under the guidance of RBI. In Kerala, there are 53 FLCs established as of 2023.

Financial Education Website

The Financial Education Website is a key initiative launched by the Reserve Bank of India (RBI) to promote financial literacy among the public (RBI, 2024). This platform is a comprehensive resource, offering a wealth of information on various aspects of financial education, including banking services, digital transactions, investment options, and personal finance management. Designed to be user-friendly, the website features a straightforward interface that makes it accessible to individuals with varying levels of digital literacy. It facilitates a variety of educational materials, such as videos, infographics, articles, and quizzes, covering essential topics like digital banking, safe online transactions, and understanding financial products. The website provides content in multiple regional languages to accommodate a diverse audience across India, ensuring that language barriers maintain access to financial education.

Additionally, it includes interactive learning tools and modules that allow users to test their knowledge and skills related to financial literacy and digital transactions. The website also features ongoing awareness campaigns to raise public

understanding of safe banking practices, financial fraud prevention, and the responsible use of digital financial services. Furthermore, it acts as a hub for the latest updates from the RBI regarding financial literacy programs, workshops, and other initiatives designed to enhance public understanding of financial matters.

The Financial Education Website has significantly increased awareness and understanding of financial concepts among the general public. By providing accessible and engaging content, it has empowered individuals to make informed financial decisions and navigate the digital financial landscape safely. As more people utilize the website, the RBI aims to foster a financially literate society capable of effectively engaging with modern financial services and tools. In summary, the Financial Education Website is an essential resource for a broader strategy to enhance financial literacy in India by RBI, particularly in digital finance. The website promotes financial inclusion and awareness nationwide through its diverse content and educational initiatives.

Project Financial Literacy

Project Financial Literacy is a significant scheme by the Reserve Bank of India (RBI) to foster financial awareness and education among the Indian population. The project promotes a culture of financial literacy that helps individuals make informed decisions regarding their finances, especially in increasing digital transactions and financial services. The primary objectives of project financial literacy include educating the public about the various financial products and services, enhancing understanding of banking practices and promoting responsible financial behaviour. The initiative concentrates on a wide range of audiences, including students, women, rural populations, senior citizens, and small entrepreneurs, ensuring that financial education reaches diverse segments of society. The project uses various methods to achieve its goals, such as organizing workshops, seminars, and community outreach programs. These events are organized to engage participants through interactive sessions that cover essential topics, including budgeting, savings, investments, insurance, and the safe use of digital financial services.

Additionally, Project Financial Literacy emphasizes the importance of awareness regarding potential financial scams and fraud, educating participants on identifying and avoiding such risks. A critical project component is the collaboration between the RBI and various stakeholders, including banks, financial institutions, educational organizations, and non-governmental organizations (NGOs). This collaboration enhances the reach and impact of the initiative, allowing for customized programs that address the specific needs of different communities. The project also leverages digital platforms to disseminate educational content, including online resources, videos, and e-learning modules. This approach ensures that financial education is accessible to a broader audience, particularly in the wake of the growing digital economy. Thus, Project Financial Literacy is the comprehensive strategy of RBI to promote financial literacy and inclusion across India. The project aims to empower citizens to confidently navigate the increasingly complex economic landscape by educating individuals about financial products, services, and responsible practices. Through its various programs and collaborative efforts, Project Financial Literacy seeks to create a financially aware and accountable society that can effectively engage with modern financial systems.

Campaign on Safe Digital Transactions (Digital Payment Suraksha)

It is an important initiative by the RBI designed to educate the public about secure practices when conducting digital financial transactions. With the increasing use of digital platforms for banking, payments, and financial services, this campaign addresses the growing demand to make individuals safe from fraud, scams, and cyber threats that have become prevalent in the digital era. The primary objective of this campaign is to increase awareness about potential risks in digital financial transactions and promote best practices for safeguarding personal and financial information. It educates users on safely navigating the digital space through mobile banking, internet banking, e-wallets, or other online payment platforms. The RBI focuses on helping individuals understand the importance of secure passwords, two-factor authentication, and the need to avoid sharing sensitive information, such as

PINs, OTPs, or account details, with unauthorized parties. Its broad reach through multiple media platforms, including television, radio, newspapers, and social media, is a significant factor in the campaign. Advertisements and educational content are designed in simple language, often including regional languages, to ensure broader accessibility. These highlight the importance of verifying transaction details, avoiding suspicious links, and recognizing phishing or fraudulent attempts.

The campaign also provides practical guidelines to users on reporting fraudulent activities and recovering from financial fraud incidents. It encourages the use of official banking and payment applications, alerts users about common scams, and promotes secure usage of digital financial services in day-to-day transactions. The campaign on safe digital transactions is vital to creating a safe and secure digital banking environment in India. The campaign is crucial in fostering trust in digital financial systems while mitigating fraud and enhancing security awareness nationwide by educating users about the risks involved in online transactions and equipping them with the tools and knowledge to protect them.

Educational Films

The Educational Films initiative is a significant part of the RBI to improve financial literacy and awareness among the public. These films serve as an engaging and informative medium to communicate essential financial concepts, particularly in the context of digital financial services and safe banking practices. The movie covers various topics related to financial literacy, including digital banking, mobile payments, e-wallets, investment options, savings, and credit management. They aim to demystify complex financial concepts and make them accessible to a broader audience. Using visual storytelling, educational films capture the audience's attention and enhance understanding. Using animations, graphics, and real-life scenarios helps illustrate critical points, making the content more relatable and accessible. The RBI produces these films in multiple regional languages to cater to India's diverse population. This approach guarantees that language barriers do not restrict access to vital financial education, allowing more individuals to benefit from the initiative. The films significantly emphasize promoting safe banking practices.

They educate viewers about the importance of securely protecting personal information, recognizing fraud, and using digital platforms. This focus is particularly relevant in light of the increasing incidence of cyber fraud and scams. The films are made available on various platforms, including the official website of RBI and social media channels, making them easily accessible to a broad audience. This multi-platform approach allows users to view and share the content, further extending its reach.

Educational Films have proven to be an effective tool for enhancing financial literacy among diverse segments of society. By using engaging visual content, the initiative has captured viewers' interest, fostering a better understanding of financial concepts and practices. The focus on safe digital transactions has particularly resonated with audiences, empowering them to navigate the financial landscape more confidently and securely. Overall, educational films are a vital component of the broader strategy of RBI to promote financial literacy and inclusion. Through this initiative, the RBI aims to create a more informed public that can effectively engage with modern financial services, thereby contributing to a more robust and secure digital economy.

Public Awareness Campaigns

The Public Awareness Campaigns launched by the RBI are essential to promoting financial literacy and ensuring the security of financial transactions across India. These campaigns aim to educate the general public on responsible financial behaviour, safe usage of digital financial services, and awareness of risks such as fraud and scams. They cover a broad area of topics, which include the responsible use of banking services, the importance of savings, sound investment strategies, and digital financial literacy, particularly as more people turn to online platforms for banking and payments. The RBI employs a multi-channel approach to reach a diverse audience, circulating campaign messages through television, radio, newspapers, billboards, and social media, thus ensuring extensive reach to urban and rural populations. Recognizing India's linguistic diversity, the RBI also provides these campaigns in multiple regional languages, breaking language barriers and

making the information accessible to people from various linguistic backgrounds. The campaigns use interactive and engaging content, such as quizzes, infographics, animations, and short films, to simplify complex financial concepts for people of all educational levels. A significant focus is placed on digital safety, with the campaigns guiding secure practices for digital transactions, such as avoiding phishing scams, not sharing personal information, and using multi-factor authentication.

Additionally, the RBI incorporates real-life examples and case studies of financial fraud in its campaigns to highlight the importance of vigilance and responsible financial practices. Regular updates are provided in response to emerging trends, such as new types of cyber fraud, ensuring that the public remains informed and cautious. These public awareness programs have significantly raised financial literacy, especially regarding cyber fraud prevention and secure online banking practices. They have also raised awareness of the importance of sound financial planning, encouraging people to make informed decisions on saving, investing, and using credit responsibly. Public awareness campaign programs became vital to improving financial literacy and security. By reaching millions across India, including rural and remote areas, these campaigns foster a more financially aware and secure society, building trust in digital financial services and empowering individuals with the knowledge to navigate the financial landscape confidently.

National Strategy for Financial Education (NSFE) 2020-2025

The National Strategy for Financial Education is a comprehensive plan developed by the RBI in collaboration with other financial sector regulators to improve financial literacy, financial inclusion, and financial well-being across India. Recognizing the need to build a financially aware and empowered society, the NSFE provides a structured approach for helping individuals with the knowledge and skills required to make informed financial decisions. It focuses on integrating financial education into various aspects of society, making financial literacy accessible and relevant to all sections of the population, especially underserved and vulnerable

groups. The strategy underlines several core objectives, including enhancing responsible financial behaviour, increasing consumer rights and financial products awareness, and fostering trust in digital financial systems. To achieve these goals, NSFE 2020-2025 concentrates on five key action pillars: financial education, financial inclusion, consumer protection, financial stability, and policy development. Each pillar includes specific initiatives, such as embedding financial education in school and college curricula, strengthening the role of Financial Literacy Centers (FLCs), and implementing nationwide campaigns on responsible financial behaviour and digital safety.

One notable feature of NSFE 2020-2025 is its emphasis on collaboration. It gives importance to cooperation among financial institutions, educational institutions, non-governmental organizations (NGOs), and community organizations to ensure widespread outreach and effectiveness. The plan promotes partnerships to implement programs for diverse audiences, such as rural communities, women, farmers, senior citizens, and the youth, thereby addressing the unique needs of different groups. Additionally, NSFE seeks to leverage digital platforms to deliver accessible, scalable, and engaging financial education matters. The NSFE also highlights the importance of measurable outcomes, establishing mechanisms for tracking the progress and impact of its initiatives. This approach involves regular monitoring, data collection, and analysis to identify gaps and refine strategies as needed, ensuring that the NSFE adapts to the evolving financial landscape. A significant aspect of the plan is its commitment to promoting safe digital financial practices. It concentrates on equipping individuals with the knowledge to protect themselves from fraud, cyber threats, and economic exploitation. In summary, the NSFE 2020-2025 is a crucial initiative to build a financially empowered society in India. The strategy seeks to promote financial literacy, inclusion, and stability through its comprehensive, multi-pronged approach, ultimately creating a foundation for responsible and informed financial decision-making nationwide.

National Centre for Financial Education (NCFE)

The National Centre for Financial Education (NCFE) is an organization led by the Reserve Bank of India (RBI) along with other financial sector regulators—the Securities and Exchange Board of India (SEBI), the Insurance Regulatory and

Development Authority of India (IRDAI), and the Pension Fund Regulatory and Development Authority (PFRDA) to promote financial literacy in India. As a non-profit, NCFE is critical in implementing national financial literacy programs and serves as a central body for coordinating and standardizing financial education efforts across the country. The primary objectives of NCFE are to provide awareness of basic financial concepts, promote financial knowledge, and encourage positive financial behaviour. To achieve these goals, NCFE provides various educational initiatives and resources designed to meet the needs of different sections of society, including students, rural populations, women, small entrepreneurs, and senior citizens. One of its revolutionary initiatives is the National Strategy for Financial Education (NSFE), which provides a guideline for financial education from 2020 to 2025, highlighting structured approaches for integrating financial literacy across various social and economic sectors. NCFE undertakes multiple initiatives to expand financial literacy, such as workshops, training programs, school and college financial literacy programs, and nationwide awareness campaigns. It teams up with schools to integrate financial education into the curriculum, preparing students to make informed financial decisions. Additionally, NCFE operates digital campaigns, provides online resources, and organizes financial literacy assessments, like the National Financial Literacy Assessment Test (NFLAT), to evaluate financial knowledge among students and promote healthy financial practices.

A noticeable mission of NCFE is to create and distribute financial education materials that are simple, relatable, and available in regional languages, ensuring accessibility for all. It also mixed up with financial institutions, educational bodies, and NGOs to extend its reach and effectiveness. Through its comprehensive approach, NCFE has helped to raise awareness about essential financial topics, such as budgeting, savings, credit management, insurance, retirement planning, and safe digital banking practices. Thus, NCFE is a vital institution that promotes financial literacy and inclusion. By availing resources, organizing educational programs, and fostering collaborations, NCFE enables individuals to make sound financial decisions and supports the country's transition towards a more financially aware and flexible society.

Booklets on Digital Transactions

The Booklets on Digital Transactions are educational materials by the RBI as part of its commitment to enhancing digital financial literacy and ensuring safe digital practices throughout India. These booklets are designed to simplify digital financial tools, making them accessible to individuals of all backgrounds, especially those new to digital finance. They cover many mandatory topics for safely understanding digital financial services, including mobile banking, internet banking, digital payments, and e-wallets. The primary purpose of these booklets is to provide users with a practical guide to engage in digital transactions safely. Each booklet describes the advantages of digital transactions, such as simplicity, convenience and efficiency, and emphasizes essential security practices. Users are educated about safeguarding personal information, creating strong passwords, using multi-factor authentication, and recognizing signs of phishing or fraud. The RBI also involves instructions on using popular digital payment systems, such as UPI, BHIM (Bharat Interface for Money), and NEFT, along with guidance on common transaction processes like sending money, bill payments, and balance checking. The booklets are often available in multiple regional languages to prevent language issues and to ensure that language does not present a barrier to accessing important information on digital transactions. Using simple language and illustrations, these resources are especially helpful for individuals in rural and semi-urban areas with limited digital experience. Through these booklets, the RBI aims to build public trust in digital financial services by equipping users with the knowledge to conduct transactions securely. By raising awareness about best practices and fraud prevention, the booklets are crucial in reducing the risks associated with digital finance, thereby contributing to India's larger financial inclusion goals.

Partnership with NABARD

The Partnership between RBI and NABARD is a significant collaboration to foster financial inclusion, improve financial literacy, and promote rural development in India. NABARD, which primarily focuses on agricultural and rural advancement, is prominent in implementing financial literacy initiatives and extending digital

financial services to rural communities throughout the country. The partnership uses NABARD's strong local presence and rural expertise to achieve financial literacy goals better. One of the main objectives of this partnership is to reach under-banked rural populations and improve their accessibility to financial services, especially digital financial services. NABARD, with support from the RBI, performs various educational programs, workshops, and campaigns to increase awareness about the benefits of digital transactions and safe digital banking practices. These initiatives include training sessions on digital payment systems, understanding banking products, and managing finances. The partnership also emphasizes educating rural communities about risk management in digital transactions and the importance of avoiding fraud.

In addition to enhancing financial literacy, the collaboration supports the expansion of Financial Literacy Centres (FLCs) in rural areas, often managed by NABARD in partnership with local banks. FLCs act as hubs for providing ongoing financial education and support, offering resources and advice tailored to the needs of rural individuals. NABARD also works with self-help groups (SHGs), microfinance institutions, and cooperatives to enhance financial awareness at the grassroots level, which aligns with the objectives of promoting financial literacy across India. Through joint efforts, the RBI and NABARD are working to bridge the financial literacy gap in rural India and facilitate the integration of rural populations into the formal financial system. Their partnership is crucial in empowering rural individuals, improving their access to financial resources, and enabling them to make informed financial decisions. By enhancing financial inclusion and supporting economic development, this collaboration between the RBI and NABARD contributes significantly to the overall goal of creating a financially literate and inclusive society in India.

4.4 Digital Financial Literacy in Kerala

Digital financial literacy in Kerala has been gaining significant attention as the state advances in digitization and financial inclusion. With one of the highest general literacy states in India, Kerala shows a significant advancement in digital

financial growth. However, some challenges exist, especially in rural areas with limited access to digital infrastructure and training. Digital financial services have increased significantly, especially after the COVID-19 pandemic, with widespread use of mobile banking, UPI-based payments and E-wallets. Yet, safe and efficient usage practices are still evolving. Rural areas face digital infrastructural challenges such as unreliable internet connectivity, limited training centres, and a lack of digital devices, contributing to a digital divide.

Additionally, elderly and low-income populations often exhibit lower digital engagement due to fear of fraud, lack of trust, and limited tech knowledge. The language barrier also plays a prominent role, as most digital financial platforms are available mainly in English and Hindi, limiting accessibility for many local users. To overcome these issues, government initiatives like financial literacy centres and the National Digital Literacy Mission (NDLM) have established training centres to support marginalized communities in improving basic digital skills. Local government bodies like panchayats collaborate with banks and tech companies to provide digital financial awareness through community programs. Compared to many Indian states, Kerala stands out in governmental support and digital adoption, especially with focused rural outreach. However, further development of rural digital infrastructure targeted financial literacy initiatives for women and older adults and customized training programs would improve digital financial inclusion. While Kerala has laid a strong foundation, continuous efforts are essential to achieve comprehensive digital financial literacy across the state.

4.5 Digital Financial Literacy Initiatives in Kerala

Kerala has been at the forefront of digital transformation with a significant focus on Digital Financial Literacy (DFL). Several digital financial literacy initiatives are explicitly framed for Kerala to enhance accessibility, educate digital financial practitioners and bridge the digital financial gaps. These initiatives focus primarily on the rural population, marginalized communities, adults and women, making them confident in accessing and using various digital financial products and services. Recently, Kerala has witnessed significant improvement in the digital

financial literacy Initiatives. These efforts emphasize safe, secure and informed usage of digital financial platforms. It also helps to understand the efficient usage of online banking, mobile wallets, and cashless transactions and cyber security awareness to protect users from fraudulent practices.

The Financial Literacy Centers (FLC) and the National Digital Literacy Mission (NDLM) by the RBI are significant initiatives that have led to greater improvements in the digital financial literacy of the residents of Kerala. FLCs aim to educate people about digital financial services, cyber security, and efficient transaction management. They organize workshops and distribute educational materials on digital finance. FLCs concentrate on providing knowledge about basic banking practices, online transactions, digital wallets, and secure Internet banking practices. NDLM provides several Kerala training centres that offer courses on essential digital skills, targeting rural and semi-urban populations. Through these centres, citizens receive hands-on training in digital transactions and mobile banking, often in regional languages, to improve accessibility for non-English speaking populations. Beyond these initiatives, some other initiatives are launched to digitally literate Kerala.

4.5.1 Kerala State IT Mission (KSITM) Initiatives

The Kerala State IT Mission (KSITM) significantly promotes digital financial literacy across Kerala. KSTM Initiatives aimed to bridge the digital divide and improve technological accessibility, especially for rural and marginalized society.

E-Jalakam

The e-Jalakam project is one of the critical initiatives of the KSITM. E-jalakam, which means e-window, is a pioneering government initiative to empower women and older adults by providing practical training in digital finance and enabling them to access essential government services online. The Department of Economics at St. Tera's College in Ernakulam developed the project in collaboration with the KSITM. It provides information on government services, user-friendly

guides, workshops, training modules, and hands-on training programs. It also includes training on accessing digital financial services such as managing taxes, applying for subsidies and receiving pensions. E-Jalakam also educates users on safe digital practices, identifying scams and phishing activities, securing passwords, and thus preventing fraud. It collaborates with educational institutions and involves students as trainees and e-facilitators. They guide the community participants in using digital governance tools. The training practices are offered in local languages to guarantee maximum success by reaching diverse demographics. The E-Jalakam initiative has increased digital financial literacy, boosted digital inclusion, and eliminated the participation of intermediary persons.

Cyber Security Awareness Programs

As the economy changes into a digital economy and more people move into digital financial services, the chance of cyber security issues also rises. So, cyber security awareness has become a significant concern. By considering this situation, KSITM has launched cyber security awareness programs to teach the public how to use digital financial tools safely and securely. These programs mainly target rural people less familiar with these cybersecurity practices. The primary motive behind this awareness program is to reduce the cyber fraud associated with digital financial transactions, such as phishing, hacking, and identity theft. These programs educate people about online safety, secure banking practices, and protecting sensitive information by creating strong passwords, regularly updating them, avoiding suspicious links or attachments, and closely authenticating messages claimed to be from financial institutions. Additionally, users are encouraged to be informed about emerging cyber threats, which help them protect their finances. These awareness programs help bridge the knowledge gap by making people aware of cyber threats and providing adequate security measures.

By providing cyber security awareness, KSITM is promoting safe digital financial practices and building confidence among users, especially those reluctant to adopt digital solutions. When people feel secure using digital financial services, they are more likely to take advantage of them, contributing to Kerala's overall

digital financial literacy landscape. Thus, the initiatives taken by the KSITM play a dual role: safeguarding individual users while supporting the broader goal of increasing digital financial literacy and inclusion across the state.

Direct Benefit Transfer (DBT) Facilitation

Direct Benefit Transfer (DBT) programs are being implemented throughout Kerala with the help of the Kerala State IT Mission (KSITM). DBT aimed to increase speed, efficiency, and transparency by directly depositing government rewards into citizens' bank accounts. The DBT method allows subsidies, pensions, scholarships, and other benefits to be disbursed more quickly by lowering reliance on intermediaries. KSITM is dedicated to simplifying government services for the benefit of the general people, which is consistent with this digital strategy. KSITM conducts awareness programs across the state to ensure people know DBT schemes and understand how to take advantage of them. These efforts aim to inform the public about the benefits of DBT, including its quicker access to government funding and subsidies. Furthermore, KSITM helps connect bank accounts and Aadhaar numbers, which is an essential step in obtaining DBT benefits. This assistance makes it easier for customers to get digital financial services, particularly those living in remote areas.

Additionally, KSITM is promoting financial inclusion in Kerala by facilitating DBT. Government benefits are delivered to the right people promptly and safely when Aadhaar is linked to bank accounts and digital channels are used for transactions. By closing accessibility gaps and providing financial services to all citizens, this project promotes an inclusive financial ecosystem. Through these initiatives, KSITM keeps improving the digital environment in the state and raising the effectiveness of public service delivery.

Citizen Empowerment through M-Governance

In order to empower individuals, KSITM has started m-Government projects that offer easy access to government services using mobile applications. The main goal of the programs is to make basic government services widely accessible so that

people may transact digitally from the comfort of their mobile devices. In addition to saving time and effort, this move to digital platforms streamlines procedures and encourages efficiency and openness in government transactions. Numerous elements are included in the m-Government programs to address the daily needs of the populace. Through these applications, people can use their mobile devices to pay their utility bills, apply for different certificates, access tax payment services, and even get government benefits. These services streamline formerly time-consuming activities by eliminating the need for in-person visits to government agencies. KSITM promotes financial inclusion and digital literacy among Keralans by including these digital services. In addition to boosting their confidence in utilizing digital financial tools, people who are more used to conducting transactions online also become more familiar with them, encouraging the state to adopt digital finance more widely.

Digital Inclusion Training for Panchayats and Local Officials

KSITM is committed to fostering digital financial literacy at the grassroots level through its Digital Inclusion Training programs for panchayat members and local government officials. The main goal of this program is to provide local leaders with the know-how and abilities needed to spearhead digital transformation in their areas. KSITM guarantees that even the most remote regions of the state can benefit from digital financial services by providing these authorities with knowledge of digital instruments. Using online payment systems, comprehending digital financial services, and maintaining cybersecurity are only a few of the topics covered in the training sessions on digital financial literacy. With the help of this strategy, officials can not only embrace digital financial practices themselves but also mentor and support their communities in doing so. These programs are essential in helping citizens develop trust and confidence in digital transactions by solving issues like ignorance or reluctance to use digital platforms. Through these initiatives, KSITM strengthens the role of panchayats and local officials as accelerators for digital inclusion. By empowering grassroots leaders, the mission ensures that the benefits

of a digitally connected economy are accessible to all, promoting a culture of digital literacy and financial inclusion across Kerala.

Kerala Fibre Optic Network (KFON) Project

KSITM has launched the historic Kerala Fibre Optic Network (KFON) project to enhance digital infrastructure throughout the state. Its primary goal is to offer high-speed internet connectivity across the state, with a particular focus on rural and underserved areas. KFON aims to promote inclusivity and bridge the digital divide by guaranteeing global and reasonably priced internet access. This program significantly improves financial and digital literacy, enabling people and communities to participate actively in the digital economy. It has the capacity to advance financial literacy, which is among its most important effects. Because of the affordable internet connectivity, rural households and small companies can use digital financial services like online banking, UPI-based payments, and e-commerce platforms. KFON promotes increased digital financial inclusion by facilitating access to these services, enabling previously underserved communities to engage with the formal financial system. Thanks to this empowerment, people and families can better handle their money and take advantage of government advantages made available online.

KFON not only makes financial services more accessible, but it also helps rural communities learn. People who have internet access can obtain financial literacy-focused educational materials and online courses. These tools support people's overall economic well-being by helping them make well-informed investing, saving, and budgeting decisions. Additionally, small enterprises in rural areas can use e-commerce platforms and digital tools to grow their functions, reach new markets, and improve their financial stability. KFON is essential to bridge the digital divide in Kerala since it connects isolated places and offers the infrastructure needed for digital engagement. It encourages digital literacy initiatives crucial for raising financial literacy among various demographic groups, such as older folks and low-income families. By doing this, KFON not only fortifies the digital ecosystem

of the state but also establishes Kerala as a leader in using technology to address socioeconomic issues and advance digital equity.

Digital Financial Literacy Workshops and Camps

KSITM regularly conducts awareness campaigns and workshops on digital financial literacy with nearby banks to encourage people to adopt digital financial services. These programs seek to increase knowledge and trust in digital platforms for financial transactions, especially in underprivileged and rural regions. These initiatives fulfil the fundamental goal of achieving digital and financial inclusion by promoting digital financial awareness among the people. The training offered in these courses covers a variety of subjects necessary for the use of digital financial services. To ensure that participants are familiar with various transaction methods, they are introduced to tools such as Internet banking, mobile wallets, and UPI payments. Additionally, much focus is put on raising users' understanding of cyber security and teaching them how to avoid online fraud and follow safe online practices. One of the major components of these workshops is hands-on demos, which allow participants to experience real-time transactions and get the confidence they need to include new technologies into their daily lives. These sessions are essential for encouraging people to use digital financial systems, increasing their level of economic independence, and helping in advancing the goal of an inclusive digital economy.

Capacity Building for Small Business Owners

To assist small business owners in modernizing their operations through the use of digital payment instruments, KSITM offers specific digital financial literacy classes. The economy of Kerala is strengthened through the empowerment of small company owners, particularly in rural and semi-urban areas. A wide range of subjects that are necessary for incorporating digital payments into regular business operations are covered in the training sessions. Owners of businesses acquire the skills required to operate point-of-sale (POS) devices, set up payment methods based on QR codes, and efficiently handle online transactions. With these tools, companies may offer their clients easy payment choices, increasing client happiness and

convenience. Additionally, introducing digital payment systems aids companies in maintaining accurate financial records, simplifying processes, and reducing dependence on cash transactions. In addition to supporting financial modernization, KSITM helps small company owners reach a more extensive client base by motivating the adoption of digital transactions. This program is essential for bringing local companies into the larger digital economy and keeping them flexible and competitive in a market that is becoming increasingly cashless.

4.5.2 Digital Kerala Initiative

The Kerala government started a game-changing initiative called the Digital Kerala Initiative to incorporate digital technology into several areas, such as financial services, healthcare, education, and governance. Promoting digital financial literacy is one of the main objectives of this initiative. This program gives consumers the information and abilities to use digital tools, including digital payment systems, mobile wallets, and Internet banking, with assurance. Rural and marginalized populations have significantly benefited from the program, ensuring they are included in Kerala's digital revolution. The growth of the state's IT infrastructure is a critical component of the project. A significant project under this effort is the KFON, which offers households, including those in distant areas, affordable and fast internet connectivity. By allowing people to utilize digital tools without technological restrictions, this infrastructure enhances access to online services and serves as the pillar for initiatives to promote digital financial literacy. Furthermore, the government has created user-friendly platforms and mobile applications that streamline processes, including e-governance, financial management, and online banking. These applications facilitate the wide adoption of digital behaviours by people, particularly those who are not familiar with the technology.

One of the most notable features of the digital Kerala initiative is establishing digital literacy training centres in partnership with community organizations and local institutions like Akshaya Centers. These facilities offer practical instruction in critical digital skills like utilizing mobile banking apps,

surfing the internet, and controlling smartphones. Practical subjects, including online utility bill payment, digital government service access, and online transaction security, are covered in training courses. The program also tackles the growing worry about online fraud by teaching participants cyber security techniques like making solid passwords, spotting phishing scams, and avoiding dubious websites. The program actively works to minimize dependency on traditional banking by encouraging mobile banking and cashless payment methods. These digital solutions allow residents to conveniently conduct transactions in their homes comfortably in rural areas, where physical bank branches are frequently inaccessible. This transition promotes financial inclusion and saves time and money, enabling more people to engage in the formal financial ecosystem. Additionally, the project guarantees transparency and minimizes delays by simplifying access to government welfare programs and subsidies via digital platforms, ensuring citizens get their entitlements free from administrative obstacles.

One of the main backbones of the digital Kerala initiative is community engagement. To guarantee that its outreach is thorough and suited to the requirements of specific demographics, the program collaborates closely with regional governments, non-governmental organizations, and educational establishments. The empowerment of women, the elderly and small business owners, who are frequently underrepresented in the digital sphere, is given particular attention. While senior citizens are taught how to use digital technologies to access pensions and other services, women's training programs concentrate on improving their financial independence. The effort advises small business owners on using digital platforms for customer engagement, product marketing, and financial management.

4.5.3 Akshaya Centers

The Government of Kerala's ground-breaking Akshaya Centers program aims to promote digital literacy and close the digital gap, especially in neglected and rural areas. Since its founding in 2002, these centres have developed into essential resources for promoting digital financial literacy and empowering people to

confidently traverse the digital world. Their emphasis on inclusivity and accessibility guarantees that the current digital revolution may benefit even underserved groups, like women, older persons, and those without personal access to digital technology. The main goal of Akshaya Centers is to provide residents with the information and abilities needed to use digital tools efficiently. These centres are essential for assisting people with online banking, cashless transactions, and navigating government e-services. The Akshaya Centers ensure that no one is left behind from the advantages of Kerala's digital revolution by focusing on rural areas with inadequate access to digital infrastructure and services. Training in digital financial literacy is one of the primary services offered by Akshaya centers. Through practical training, citizens are taught how to use mobile wallets, internet banking systems, and payment apps like UPI. Additionally, they receive education on cybersecurity, which covers topics like safeguarding private data, identifying online fraud, and guaranteeing secure transactions. These initiatives are especially helpful to senior folks, many of whom depend on Akshaya Centers for detailed instructions on managing funds, accessing pensions, and using digital tools for financial management.

Akshaya Centers also give individuals access to numerous government services. These include help with registering for programs like Aadhaar, applying for government programs, and completing tax returns. The centres facilitate citizens' access to government benefits by serving as middlemen and lowering administrative barriers. They also provide the option to pay utility bills online, including phone, water, and power bills, sparing residents the trouble of going to several offices. Akshaya Centers provide reasonably priced technology services for people without personal computer or internet access. These facilities are available to the public for online application completion, document scanning and printing, and internet browsing. Because digital infrastructure is less established in rural regions, this accessibility is especially beneficial. The centres also serve as community centres where people can get training in advanced digital competencies and fundamental computer skills, enabling them to participate more actively in the digital economy. Akshaya Centers have had a significant influence on underserved and rural

populations. They provide citizens access to essential services while saving them time and effort by decreasing their reliance on physical government offices and banking. Specialized programs help women become more financially independent, and self-help organizations and small company owners are trained in e-commerce and digital marketing to increase their economic potential.

4.5.4 Self-Help Group (SHG) and Kudumbashree Initiatives

The Kudumbashree Mission, one of the flagship poverty eradication programs of Kerala, has been instrumental in promoting digital financial literacy among women through its self-help group (SHG) network. Established in 1998, Kudumbashree aims to empower women and eradicate poverty through collective efforts. Integrating digital finance training into its activities, Kudumbashree has helped thousands of women gain the skills and confidence to be involved in the digital economy. Improving the financial independence of women is the main goal of Kudumbashree. The initiative gives women the skills they need to handle their money online by educating SHG members about mobile banking, UPI payments, and cashless purchases. It allows people to interact with banking institutions independently and lessens their dependency on middlemen for financial transactions. Additionally, the curriculum highlights the significance of safe financial practices, including preventing online fraud and properly maintaining passwords. Kudumbashree collaborates extensively with banks and financial institutions to implement its digital finance training programs. These partnerships enable women to receive hands-on guidance on opening and managing bank accounts, transferring money digitally, and accessing credit facilities online. Training sessions often include demonstrations on using mobile banking apps, paying bills online, and navigating government subsidy portals. This practical approach ensures that even women with minimal prior exposure to technology can adapt to digital platforms confidently.

Kudumbashree has used digital financial technologies within its own operational framework and provides financial instruction. Savings, loans, and repayments are among the many SHG operations that are now carried out digitally,

which reduces paperwork and increases transparency. Women have also been motivated by this transition to follow similar procedures in their personal and business lives. For example, to speed up transactions and lessen their reliance on cash, small company owners in SHGs have begun utilizing digital payment methods. The enforcement of women to make financial decisions in their homes and communities is one of the main effects of the Kudumbashree programs. Women who have acquired new skills are better able to invest, save, and create a budget. Additionally, their ability to access government subsidies and welfare programs has improved due to digital financial literacy, guaranteeing that they receive benefits on time and without bureaucratic delays.

The Kudumbashree Mission has promoted gender equality and aided in grassroots economic development by concentrating on women, who frequently encounter major obstacles when obtaining financial services. Its accomplishments demonstrate the revolutionary power of focused digital literacy initiatives in promoting equitable development. The SHG and Kudumbashree Initiatives are good examples of how community-based initiatives can encourage financial empowerment and close the digital divide. These programs produce a generation of economically independent women who are also engaged members of Kerala's digital and financial ecosystems by including digital financial literacy into their framework.

4.5.5 Community-Based Financial Literacy Programs in Kerala

Enhancing digital financial literacy, especially in rural regions, requires community-based financial literacy initiatives in Kerala, which banks like Kerala Gramin Bank and neighbourhood cooperative banks frequently start. These initiatives aim to fill the knowledge gaps in digital banking and guarantee that the digital economy can help even those living in far-flung areas. These initiatives promote financial inclusion throughout the state by making digital financial services available to everyone through partnerships with regional organizations such as Panchayats, Self-Help Groups (SHGs), and educational institutions. The primary goals of these community-based initiatives are to raise knowledge and comprehension of digital financial instruments and ensure that rural communities

stay caught up in the transition to cashless transactions. Banks in Kerala hope to provide people with the knowledge they need to use digital payment systems and online banking services safely and effectively by holding workshops and camps on digital literacy. It lessens reliance on physical and financial institutions and allows people to handle their money independently without intermediaries or extra travel.

These activities under workshops are intended to be instructive and valuable, giving participants the skills and assurance they need to use digital financial tools. Digital financial tool demonstrations are a significant part of these programs. Participants in these demonstrations get a first-hand look at Internet banking platforms, UPI-based payment methods, and mobile banking apps. Through detailed instructions, people can learn how to use computers or cell phones to carry out necessary chores, including checking account balances, paying utility bills, and transferring money. Participants become more independent and less reliant on conventional financial services by the conclusion of the sessions since they can complete these transactions on their own. Teaching learners how to avoid online fraud is another essential component of the workshops. There is a growing risk of financial fraud and cybercrime as digital financial services proliferate. Participants in these sessions learn how to spot phishing scams, steer clear of dubious links, and safeguard their data. In order to make sure they are using genuine services, attendees are also taught how to confirm the legitimacy of websites and mobile applications. By fostering confidence and trust in digital financial tools, this training ensures users feel safe while utilizing them.

Additionally, participants receive instructions on how to handle their private banking data safely. It includes establishing solid passwords, encryption for essential transactions, and implementing two-factor authentication. These security precautions are necessary to shield users from fraud and stop illegal access to bank accounts. The workshops increase the trust of participants in utilizing online financial services by educating them on the value of cybersecurity and how to incorporate these safeguards into their regular digital transactions. Cooperation with local institutions and leaders dramatically improves the success of these programs.

Banks collaborate closely with panchayats, SHG members, and local chiefs to plan and publicize the financial literacy camps. The initiatives guarantee increased engagement and relevance by collaborating with reliable local leaders, especially in remote and difficult-to-reach areas. The community is more likely to accept and comprehend the training if local organizations help guarantee that the material is presented in a culturally sensitive way.

These community-based initiatives have had a significant impact. People in rural areas who didn't have access to digital financial tools can now handle their money online. Their financial inclusion has significantly increased due to online transactions, applying for government assistance programs, and using other digital services. Furthermore, by raising awareness of the dangers of digital transactions, the emphasis on stopping online fraud has assisted these residents in safeguarding their financial and personal information from fraud. So, one of the most critical steps in promoting digital financial literacy in Kerala is the community-based financial literacy initiatives run by Kerala Gramin Bank, neighbourhood cooperative banks, and community organizations. These projects are assisting rural people in becoming more digitally empowered and financially independent by educating citizens on how to use digital banking services, identify fraud, and securely manage their personal information. Thanks to these initiatives, Kerala is getting closer to a safer and more inclusive digital financial ecosystem where all residents, wherever they may be, can confidently engage in the digital economy.

4.5.6 Local Language Digital Finance Workshops in Kerala

Local language digital finance workshops are a significant effort in Kerala to address the language barrier that frequently prevents individuals from using digital financial services efficiently. Since Malayalam is the primary language spoken by most people in Kerala, offering digital banking training in this regional tongue guarantees increased accessibility and inclusivity. Without the additional difficulty of language barriers, these courses are intended to help citizens, particularly those from rural areas and older generations, understand and use various digital financial tools. These workshops empower individuals by giving them the know-how and

abilities to use digital financial services with assurance. The program enables people who need help speaking Hindi or English to fully understand digital tools and technology by providing training sessions in Malayalam. This localized approach makes the material more relatable and understandable by ensuring that participants learn in a familiar language.

These workshops focus on financial management and digital safety. Participants receive instruction on guarding against online fraud, a serious issue as more people use digital financial services. It includes hands-on instruction on spot phishing efforts, spot phoney websites, and learning how to protect personal information. The emphasis of the sessions is digital safety, which aims to increase the confidence of participants in online financial platforms and guarantee their safe use. Teaching folks how to handle their digital accounts is another important area of concentration. Participants learn about using mobile banking apps, creating and maintaining online bank accounts, and digitally accessing government services. People who acquire these skills are better able to conduct transactions, make payments, send money, and obtain social benefits on their own. Focusing on practical, hands-on training, the courses equip participants with the necessary skills to regularly use digital financial instruments.

Local language digital finance workshops in Kerala significantly advance digital financial literacy. These workshops contribute to closing the digital divide by offering training in Malayalam, making it possible for those with little computer experience to access and use digital financial services. This program uniquely affects women, older people, and rural communities by empowering them to participate actively in the digital economy. Kerala promotes a more technologically literate society through these programs, where everyone can achieve financial security and independence.

Thus, in order to empower citizens in an increasingly digital economy, digital financial literacy efforts must be implemented effectively, as evidenced by India's changing digital finance scenario. The extensive initiatives made by the Indian government, financial institutions, and non-governmental organizations to

promote digital financial inclusion and awareness have been highlighted in this chapter. A strategic commitment to closing the digital divide is demonstrated by national initiatives like the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) and regional initiatives in Kerala like Akshaya Centers and digital training programs by the banks in Kerala. Kerala has become an expert in digital financial literacy initiatives due to its distinct socioeconomic dynamics and high literacy rates. The effective use of digital financial tools is frequently hampered by cultural opposition, poor technology accessibility, and infrastructure shortages, especially in rural and vulnerable regions. Although progress is apparent, examining projects shows that persistent and focused efforts are urgently needed to remove these obstacles. A more inclusive and resilient economy can be achieved in India and Kerala by promoting public-private partnerships, utilizing technology to provide accessible education, and customizing programs to meet the unique requirements of varied populations.

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CHAPTER 5

DEMAND AND SUPPLY SIDES OF DIGITAL FINANCIAL LITERACY

5.1. Demand-side of Digital Financial Literacy

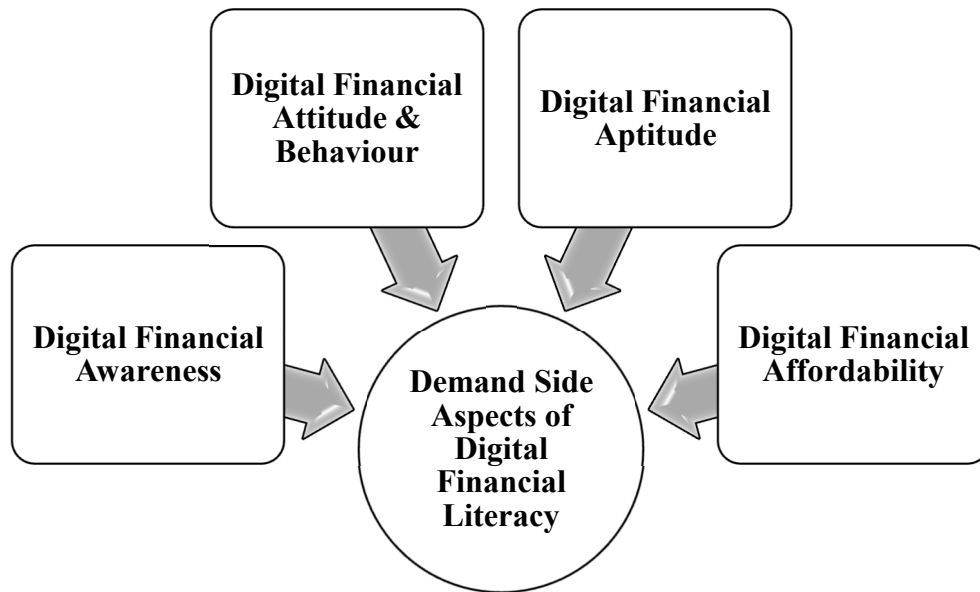
5.2. Supply-side of Digital Financial Literacy

5.1 Demand-side of Digital Financial Literacy

Financial services are undergoing a transformative shift in an era of rapidly advancing technology and digitization. The widespread acceptance and use of digital financial products, tools, platforms, and services have created a new landscape for financial interactions, offering more convenience and efficiency to people worldwide. However, in order to have more efficient and effective exploitation of these digital revolutions, people must be digitally savvy and financially literate to navigate the complex world of digital finance. Digital financial literacy refers to the knowledge, skills, and capabilities individuals require to make informed financial decisions and conduct safe and reliable financial transactions in the digital realm. It goes beyond conventional financial literacy, encompassing a broader understanding of digital platforms, knowledge of digital financial services, awareness of online security, and the use of technology to access and manage financial resources.

The demand side of digital financial literacy focuses on empowering people to effectively and confidently engage with digital financial services and products. It involves equipping people with the understanding, knowledge, skills, and awareness required to make informed financial decisions, access digital financial tools, and conduct secure transactions in the digital realm. It mainly focuses on empowering people to use digital financial tools and platforms to manage their finances, make transactions, and access various financial services safely and efficiently.

Analyzing the demand side of digital financial literacy involves considering several dimensions that collectively shape individuals' ability and willingness to engage with digital financial services. These dimensions help assess different aspects of an individual's digital financial literacy and readiness to adopt and use digital financial services and tools effectively and efficiently. The study considered four dimensions of the demand side of digital financial literacy. These are digital financial aptitude, digital financial awareness, digital financial attitude & behaviour and digital financial affordability.



Bank Account and Purpose of Using Bank Account

The primary purpose of opening and using a bank account is to save and manage money securely, systematically and organized. Bank accounts offer various benefits and financial services that can help customers manage and control their finances more efficiently. According to the survey, 386 out of 400 respondents (96.5 per cent) have a bank account. It indicates high financial inclusion because the vast majority of survey participants have a bank account for various uses. Without a doubt, having a bank account is necessary for managing money, gaining access to a wide range of traditional and digital financial services, and engaging in the contemporary economy. They can use it to conduct financial transactions, save and receive money, and access credit and other banking services. It allows them to save and receive payments, make transactions, and access credit and other banking facilities. The high percentage of people with bank accounts in the study area indicates the widespread adoption and importance of banking services.

Table: 5.1

Purpose of Using Bank Account

Sl. No.	Purpose	No. of Respondent	Per cent
1	LPG Subsidies	255	63.75
2	Savings	329	82.25
3	Pension Scheme	150	37.5
4	To Get Loans	241	60.25
5	MGNREGP Payments	137	34.25
6	Insurance	115	28.75
7	Salary	100	25
8	Others	55	13.75

Source: Field Survey

Table 5.1 shows the various purposes for which respondents open and use their bank accounts, along with the number and the percentage of respondents who use their accounts for each purpose. Most respondents have opened a bank account, but the reason for opening the bank account was different for different respondents. Among the respondent, 82.25 per cent (329 out of the total 400) opened their bank account to save or deposit their extra money income. Bank accounts provide a safe and secure place to keep their income, earn interest on deposits (in savings accounts), and manage and organize funds for various financial goals. Therefore, the high percentage of respondents using bank accounts for savings indicates that people recognize the importance of saving and trust banks as a reliable place to store their money. It also demonstrates that the majority of the respondents prioritize setting aside money for future needs or emergencies. The other 63.75 per cent of the respondents mentioned receiving LPG subsidies to open their bank account. Governments often use direct benefit transfer (DBT) methods to distribute these subsidies efficiently, where the subsidy amount is deposited directly to their bank account. Another 60.25 per cent of the respondents use their bank accounts to obtain loans to cover various personal expenses, business investments, education, and other related expenses. Having a bank account enables people to access credit and improves their creditworthiness by establishing a banking history. Pension payments are often disbursed through bank accounts to ensure timely and efficient delivery,

and 37.5 per cent mentioned receiving pension funds to open a bank account. The Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGP) is a revolutionary job security scheme that provides employment opportunities to rural people. Wages under this program are directly credited to beneficiaries' bank accounts, ensuring transparency, reducing corruption, and enhancing financial inclusion among rural populations. 34.25 per cent of the respondents mentioned MGNREGP as the reason for opening a bank account. A considerable portion of the respondents consider the importance of insurance coverage for protecting against risks and uncertainties (28.75 per cent). Bank accounts are the primary channel for receiving salaries for salaried individuals, and 25 per cent of the total opened their bank accounts to receive regular income from employment, such as salary.

5.1.1 Digital Financial Aptitude

The digital financial aptitude dimension concentrates on an individual's level of digital competence, ability to navigate digital platforms (digital aptitude), and understanding of financial services (financial aptitude) and digital financial tools and platforms (digital financial aptitude). It assesses their technical skills and knowledge of digital devices, internet usage, and mobile applications. A person with a high level of digital financial aptitude can comfortably use digital banking platforms, mobile payment apps, and other digital financial services without significant difficulties.

Financial Aptitude

The digital financial aptitude captures both financial aptitude and basic digital skills. Financial aptitude is critical to an individual's digital financial literacy, representing their knowledge and understanding of various financial concepts and principles. The division of financial aptitude includes a wide range of fundamental financial concepts that individuals need to comprehend to make well-informed financial decisions. The basic financial concepts are numeracy, simple and compound interest, inflation, discount and risk diversification. By having a strong understanding of these concepts, individuals can improve their financial literacy and make informed choices to achieve their financial goals. The financial aptitude score is computed as the sum of the respondent's answers to ten such questions.

Table: 5.2

District-wise Financial Aptitude Score

Sl. No.	Districts	Male	Female	Average Score
1	Wayanad	6.81	6.11	6.46
2	Malappuram	8.56	6.61	7.61
3	Ernakulam	8.66	6.86	7.69
	Overall Score	7.93	6.47	7.23

Source: Field Survey

Table 5.2 shows a district-wise analysis of the average financial aptitude score for both males and females in Ernakulum, Malappuram, and Wayanad districts. The financial aptitude score is based on responses to questions that measure numeracy skills and knowledge related to inflation, interest rates, risk diversification, and other financial concepts. Ernakulum district has the highest average financial aptitude score of 7.69, indicating that, on average, respondents demonstrate better numeracy skills and financial knowledge. Malappuram district follows with an average score of 7.18, and Wayanad district has the lowest average score of 6.46. The table shows that, on average, male respondents have higher financial aptitude scores than female respondents across all three districts. It suggests that males, on average, possess better financial knowledge and numeracy skills related to financial concepts. These analyses can be used to understand the regional variations and gender differences concerning the average financial aptitude.

Table: 5.3

Financial Aptitude Score- Wayanad District

Panchayat	Sulthanbathery Taluk			Mananthavady Taluk			
	Male	Female	Total	Panchayat	Male	Female	Total
Nenmeni	6.1	5.68	5.92	Thavinhal	6.50	6.07	6.28
Noolpuzha	7.43	6.80	7.12	Thondernadu	8.16	6.14	7.07
Total	6.56	6.13	6.37	Total	7.19	6.1	6.57

Source: Field Survey

Table 5.3 shows the average financial aptitude scores of Wayanad district, categorized by two taluks, namely Sulthanbathery and Mananthavady and two panchayats within each taluk. Based on the rural population, the highest and lowest rural populated taluk, namely Sulthanbathery and Mananthavady, were drawn, respectively. Likewise, two panchayats were drawn from each taluk. Nenmeni and Noolpuzha from Sulthanbathery and Thavinhal and Thondernad from Mananthavady taluk. The average financial aptitude score of Mananthavady Taluk (6.57) is slightly higher than that of Sulthanbathery Taluk (6.37). The average financial aptitude score of Mananthavady taluk (6.57) was greater than the Sulthanbathery taluk(6.37). At the same time, different panchayats may exhibit varying levels of financial aptitude within each taluk. When considering the panchayats within each taluk, Noolpuzha panchayat in Sulthanbathery taluk is performing better with a higher average financial aptitude score (7.12) compared to Nenmeni panchayat (6.37). Similarly, Thondernad panchayat from Mananthavady taluk has a higher average financial aptitude score (7.07) than Thavinhal panchayat (6.28).

Gender-wise financial aptitude analysis reveals that male respondents tend to have higher average financial aptitude scores in both taluks than female respondents. In all the panchayats from both taluks, male respondents have higher average financial aptitude scores than female respondents. However, it is essential to note that the differences between the average financial aptitude scores of males and females may be insignificant.

Table: 5.4

Financial Aptitude Score- Malappuram District

Panchayat	Nilambur Taluk			Ponnani Taluk			
	Male	Female	Total	Panchayat	Male	Female	Total
Vazhikadavu	9.37	6.61	8.01	Veliyankode	7.50	6.41	7.13
Chungathara	8.75	7.50	8.25	Nannamukku	8.50	5.87	7.18
Total	9.07	6.95	8.11	Total	7.90	6.10	7.16

Source: Field Survey

Table 5.4 represents the financial aptitude score of Malappuram district categorized by taluks and Panchayats. The panchayat with the highest average financial aptitude score in Nilambur Taluk is Chungathara, with a score of 8.25, followed by Vazhikadavu closely, with a score of 8.01. Among males, Vazhikadavu has the highest average financial aptitude score of 9.37 and among females, Chungathara has the highest average financial aptitude score of 7.50. The panchayat with the highest average financial aptitude score in Ponnani Taluk is Nannamukku, with a score of 7.18, followed by Veliyankode, with a score of 7.13. Among males, Nannamukku has the highest average financial aptitude score of 8.50; among females, Veliyankode has the highest average financial aptitude score of 6.41. In the overall analysis, the average financial aptitude score for the Nilambur Taluk is 8.11, and for the Ponnani Taluk is 7.16.

Table: 5.5

Financial Aptitude Score- Ernakulam District

Muvattupuzha Taluk				Kanayannur Taluk			
Panchayat	Male	Female	Total	Panchayat	Male	Female	Total
Paipra	8.94	7.30	8.07	Edakkattuvayal	8.7	7.6	8.15
Kalloorkad	8.00	6.37	7.13	Kunnathunadu	8.5	5.37	6.41
Total	8.68	7.03	7.81	Total	8.64	6.61	7.50

Source: Field Survey

Table 5.5 shows the average financial aptitude score of Muvattupuzha and Kanayannur taluks of Ernakulam district. It indicates that the average financial aptitude score of Muvattupuzha taluks is greater than that of Kanayannur taluks. In Muvattupuzha Taluk, Paipra Panchayat has a higher average financial aptitude score (8.07) than Kalloorkad Panchayat (7.13). In Kanayannur Taluk, Edakkattuvayal Panchayat has a higher average financial aptitude score (8.15) than Kunnathunadu Panchayat (6.41). Muvattupuzha Taluk has a slightly higher average financial aptitude score than Kanayannur Taluk. Similar to Malappuram and Wayanad, in Ernakulam, the average financial aptitude score of males is greater than that of females. In all three districts, males tend to have higher average scores than females,

indicating that males have higher knowledge and understanding about financial matters and mathematical skills than females. These results can be used to understand the regional variations and gender differences in measuring financial aptitude.

Table: 5.6

Number of Respondents Given Right Answers to Financial Aptitude Questions

Sl. No.	Indicators	Wayanad	Malappuram	Ernakulam	Total	Per cent
1	Division	137	161	85	383	95.75
2	Time-value of money	139	161	85	385	96.25
3	Interest paid on loan	133	148	85	366	91.50
4	Interest plus principal	104	148	85	337	84.25
5	Compound interest	96	143	75	314	78.50
6	Risk and return	100	126	71	297	74.25
7	Inflation	104	104	58	266	66.50
8	Interest- inflation	78	84	40	202	50.50
9	Discount	65	76	33	174	43.50
10	Diversification	40	91	37	168	42.00

Source: Field Survey

The financial aptitude of each respondent is measured by asking various questions about basic financial concepts using the given indicators in Table 5.6. The table represents the district-wise number of respondents who answered each indicator correctly, along with the total and percentage. There were a total of 10 questions based on various indicators. The questions based on division, time value of money and simple interest paid on loans were correctly answered by most respondents (95.7 per cent, 96.25 per cent, and 91.5 per cent, respectively). 84.25 per cent of the respondents gave the correct answers for the questions on interest plus principal and 78.5 per cent on compound interest. The questions on risk, return, and inflation were given correct answers by 74.25 per cent and 66.5 per cent,

respectively. The questions based on discounts and diversification were answered correctly only by less than half of the respondents (43.50 per cent and 42 per cent, respectively). It allows for an understanding of the knowledge level and performance of the respondents across different financial indicators.

Digital Aptitude

The second aspect of measuring digital financial aptitude is the concept of digital aptitude. It refers to an individual's capability or readiness to use and adapt effectively to digital technologies, tools and devices. It contains skills, knowledge, and attitudes that enable individuals to navigate and engage with digital tools, platforms, and applications with confidence and competence. Digital aptitude is also essential to digital financial literacy, which is becoming increasingly crucial in the digital age. Having digital aptitude is increasingly vital in various aspects of life, including education, work, social interactions, and accessing various online services, especially financial services and opportunities. It empowers individuals to stay connected, informed, communicate and productive in the digital age.

Digital aptitude involves proficiency in digital devices such as computers, laptops, smartphones, tablets, and other electronic or digital gadgets. It encloses the capacity to operate software applications, navigate operating systems, and troubleshoot technical issues. Being digitally competent means being skilled in digital communication, especially using email, messaging apps, social media, and other digital platforms to exchange information and interact effectively. It also includes the mastery to search for and access information efficiently on the internet, using search engines and online databases to find relevant and reliable information. It also stresses comprehending the significance of data privacy and how to safeguard personal information and digital assets from cyber security threats and data breaches.

Table: 5.7

District-wise Digital Aptitude Score

Sl. No.	Districts	Male	Female	Average Score
1	Wayanad	5.05	4.19	4.59
2	Malappuram	5.72	4.57	5.22
3	Ernakulam	5.59	5.05	5.32
4	Overall Score	5.55	4.67	5.13

Source: Field Survey

Table 5.7 provides information regarding the district-wise digital aptitude scores of male and female respondents from the Wayanad, Malappuram and Ernakulam districts. The table also provides insights into the variations in digital aptitude levels across districts and genders. Across all districts, the overall average digital aptitude score is 5.13, where the male score is 5.55, and for females, it is 4.67. On average, males tend to have higher digital aptitude scores than females in all three districts. However, it is important to note that the differences between the average scores for males and females are relatively small. The overall average digital aptitude score is found to be highest for Ernakulam, with 5.32, indicating a moderate level of digital literacy among the respondents in this district. Malappuram is reported to have an average score of 5.22, slightly lower than Ernakulam, showing a similar moderate trend. On the other hand, the district Wayanad has found the lowest average digital aptitude score, showing a lower level of digital literacy among respondents in this district. However, Ernakulam and Malappuram have slightly higher average digital aptitude scores, indicating a comparatively better level of digital literacy in these districts.

Table: 5.8

Number of Respondents Given Right Answers to Digital Aptitude Questions

Sl. No.	Districts Indicators	Wayanad		Malappuram		Ernakulam		Aggregate	
		No.	%	No.	%	No.	%	Total	%
1	Knowledge of mobile/Computer/Tablet/ Laptop	126	81.82	148	91.93	73	85.88	347	86.75
2	Reading/writing/ send mobile SMS	116	75.32	141	87.58	72	84.71	329	82.25
3	Social media participation	101	65.58	96	59.63	43	50.59	240	60
4	Searching the Internet for information (Browses or uses the Internet)	102	66.23	86	53.42	40	47.06	228	57
5	Obtaining public information in digital media	79	51.3	75	46.58	32	37.65	186	46.5
6	Installation of software	93	60.39	80	49.69	37	43.53	210	52.5
7	Online bill payment	55	35.71	70	43.48	32	37.65	157	39.25
8	Online shopping	54	35.06	74	45.96	29	34.12	157	39.25
9	Read and deduce information from visuals	51	33.12	48	29.81	18	21.18	117	29.25
10	Ability to protect devices, personal data, and privacy	43	27.92	23	14.29	14	16.47	80	20

Source: Field Survey

To measure the digital skills of the respondents, another ten questions were asked based on their knowledge of using mobile phones, computers, social media participation, internet browsing, software installation, online bill payment, personal data protection, etc. The first indicator measures individuals' knowledge of using mobile phones, computers, tablets, and laptops. Among the three regions, Malappuram (91.93 per cent) has the highest percentage of individuals with knowledge in this area, followed by Ernakulam (85.88 per cent) and Wayanad (81.82 per cent). The overall percentage indicates that a significant proportion of these regions' population possess mobile/Computer/Tablet/ Laptop knowledge. The second indicator assesses the ability of individuals to read, write, and send text

messages using mobile phones. Malappuram (87.58 per cent) has the highest percentage of individuals who can perform these tasks, followed by Ernakulam (84.71 per cent) and Wayanad (75.32 per cent). The overall percentage suggests a considerable level of proficiency in this area. The third indicator measures the participation of individuals in social media platforms. Wayanad (65.58 per cent) has the highest number of individuals engaged in social media, followed by Malappuram (59.63 per cent) and Ernakulam (50.59 per cent). The overall percentage indicates that a majority of the population in these regions actively participates in social media activities. More than 80 per cent of the respondents know how to use digital devices, especially mobile phones, and how to send, read and write SMS. Only 60 per cent of the respondents have active social media participation. Among these, most respondents know how to use WhatsApp but not Facebook. About 50 per cent of the respondents can browse the internet, obtain public information through digital media, and learn how to install software. Only 39.25 per cent of the respondents know online bill payments and online shopping. Only 29.25 per cent can read and deduce information from visuals, and only 20 per cent can protect devices and their personnel data.

Digital Financial Aptitude

The digital financial aptitude dimension is based on both basic financial knowledge and digital skills. It emphasizes the level of digital competence and understanding of financial services, digital financial tools, and platforms by an individual. It assesses their technical skills and knowledge of digital devices, internet usage, and mobile applications. Empowering people to access and utilize various digital tools to manage their finances efficiently, safely and securely is critical. It allows them to leverage digital platforms for banking, payments, transfers, and other financial activities, offering convenience, speed, and accessibility. The study estimates digital financial aptitude by using nine indicators comprising the knowledge about digital transfer techniques, debit and credit cards, mobile/digital wallets, internet banking transactions, ATM, direct benefit transfer/ ABPS, Transfer

money without internet data in mobile (USSD), point of sale (POS), aadhaar enabled payment system (AEPS).

Table: 5.9

District-wise Average Digital Financial Aptitude Score

Sl.No	District	Male	Female	Average Score
1	Wayanad	3.59	3.50	3.55
2	Malappuram	4.87	4.04	4.51
3	Ernakulam	4.17	3.50	3.81
	Total	4.27	3.69	3.99

Source: Field Survey

Table 5.9 shows a district-wise analysis of the average financial aptitude score for both males and females in the Wayanad, Malappuram, and Ernakulam districts. The average digital financial aptitude score of the Malappuram district (4.51) is much higher than Ernakulam (3.81) and Wayanad (3.55). In Wayanad, males and females have relatively similar scores for digital financial aptitude, with males scoring slightly higher. The average score for the district is 3.55, indicating a moderate level of digital financial aptitude. In Malappuram, males have a significantly higher score (4.87) compared to females (4.04) for digital financial aptitude. The average score for the district is 4.51, indicating a relatively high level of digital financial aptitude. In Ernakulam, males have a higher score (4.17) than females (3.50) for digital financial aptitude. The average score for the district is 3.81, indicating a moderate level of digital financial aptitude. When considering all three districts together, males have a higher average score (4.27) compared to females (3.69) for digital financial aptitude. The overall average score for digital financial aptitude is 3.99, indicating a moderate level of proficiency. Malappuram stands out as the district with the highest average digital financial aptitude score, showing a relatively strong understanding and proficiency. Wayanad and Ernakulam have relatively lower average scores than Malappuram district but still reveal a moderate digital financial aptitude. There is a gender disparity in digital financial aptitude across all districts, with males generally scoring higher than females. It

indicates a potential gap in knowledge and skills related to digital finance that needs to be addressed, particularly among females.

Table 5.10 provides the data for average digital financial aptitude scores in the district of Wayanad, specifically focusing on the Sulthanbathery and Mananthavady taluks. In Wayanad, the average digital financial aptitude score of Mananthavady taluk (3.57) is more than Sulthanbathery (3.53). Within Sulthanbathery taluk, there is variation in digital financial aptitude scores across the panchayats. Noolpuzha panchayat stands out with higher scores, particularly for males, indicating a stronger understanding and proficiency in digital financial matters than Nenmeni panchayat. In Sulthanbathery, males have a significantly higher score (4.50) compared to females (3.66) for digital financial aptitude. The total average score for the panchayat is 4.09. In Nenmeni panchayat, females have a higher score (3.50) compared to males (2.96) for digital financial aptitude. The total average score for the panchayat is 3.19. Considering all the panchayats in Sulthanbathery taluk, the average score for males is 3.50, while for females, it is slightly higher at 3.56. The total average score for digital financial aptitude in Sulthanbathery taluk is 3.53.

Table: 5.10

Average Digital Financial Aptitude Score- Wayanad District

	Sulthanbathery Taluk			Mananthavady Taluk			
Panchayat	Male	Female	Total	Panchayat	Male	Female	Total
Nenmeni	2.96	3.50	3.19	Thavinhal	3.57	2.73	3.08
Noolpuzha	4.50	3.66	4.09	Thondernadu	4.00	4.78	4.42
Total	3.50	3.56	3.53	Total	3.74	3.45	3.57

Source: Field Survey

Similarly, within Mananthavady taluk, there is variation in scores across the panchayats. Thondernadu panchayat has higher scores, particularly for females, suggesting a relatively higher level of digital financial aptitude compared to Thavinhal panchayat. In Mananthavady taluk, Thondernadu scores high in terms of digital financial aptitude. In Thondernadu panchayat, females have a significantly

higher score (4.78) compared to males (4.00) for digital financial aptitude. The total average score for the panchayat is 4.42. In Thavinhal panchayat, males have a higher score (3.57) compared to females (2.73) for digital financial aptitude. The total average score for the panchayat is 3.08. Considering all the panchayats in Mananthavady taluk, the average score for males is 3.74, while for females, it is slightly lower at 3.45. The total average score for digital financial aptitude in Mananthavady taluk is 3.57. In both taluks, the average score for males tends to be higher than for females, indicating a potential gender disparity in digital financial aptitude. It highlights the need to address gaps in knowledge and skills related to digital finance, particularly among females. Overall, Sulthanbathery taluk has a slightly higher average score (3.53) than Mananthavady taluk (3.57) for digital financial aptitudes.

Table: 5.11

Average Digital Financial Aptitude Score- Malappuram District

Panchayat	Nilambur Taluk			Ponnani Taluk			
	Male	Female	Total	Panchayat	Male	Female	Total
Vazhikadavu	5.25	4.11	4.69	Veliyankode	4.08	3.41	3.86
Chungathara	5.21	5.18	5.20	Nannamukku	4.93	3.25	4.09
Total	5.23	4.52	4.91	Total	4.42	3.32	3.97

Source: Field Survey

The average digital financial aptitude score of the Malappuram district is shown in Table 5.11, which shows that the score for males is greater than for females in both Nilambur and Ponnani taluks. The average digital financial aptitude score of Nilambur taluk is high (4.91), and Chungathara panchayath has a high score in Nilambur taluk (5.20). Ponnani taluk's average score is 3.97, and Nannamukku panchayat's score (4.09) is high in Ponnani taluk.

Table: 5.12

Average Digital Financial Aptitude Score- Ernakulam District

Muvattupuzha Taluk				Kanayannur Taluk			
Panchayat	Male	Female	Total	Panchayat	Male	Female	Total
Paipra	3.72	3.95	3.84	Edakkattuvayal	4.3	4.8	4.55
Kallookkad	4.14	2.25	3.13	Kunnathunadu	6.00	2.00	3.33
Total	3.84	3.46	3.64	Total	4.78	3.55	4.09

Source: Field Survey

The average digital financial aptitude score of district Ernakulum is presented in Table 5.12, which found that Kanayannur taluk has the highest average digital financial aptitude score (4.09) against Muvattupuzha taluk (3.64). From the Kanayannur taluk, Edakkattuvayal panchayath secured a score of 4.55, and Kunnathunadu scored 3.33. Muvattupuzha taluk scored 3.64 in total, Paipra panchayat scored 3.84, and Kallookkad scored 3.13 in particular. It was also found that the average digital financial aptitude score of males is greater than that of females in both Kanayannur and Muvattupuzha taluks.

Digital Financial Aptitude Index

The digital financial aptitude index (DFAI) typically comprises indicators or sub-indices representing different aspects of digital financial literacy and competency. The standardization of the index has been made for easier and more meaningful interpretation and appropriate comparison purposes. It is normalized using a minimum value and maximum value of the score and actual value achieved by the respondents. The digital financial aptitude index value lies between zero (the lowest level of digital financial aptitude) and one (the highest level of digital financial aptitude). A higher digital financial aptitude index score indicates a higher level of digital financial literacy and capability, while a lower index score shows a need for improvement in specific areas of digital financial aptitude.

Table: 5.13

District-wise Digital Financial Aptitude Index

Sl. No.	District	Aggregate	F.	Sign.
1	Wayanad	0.39		
2	Ernakulam	0.42	4.712	0.009
3	Malappuram	0.44		
4	Total	0.44		

Source: Calculated from Field Survey

The digital financial aptitude index of the Kerala state concerning the selected districts of Wayanad, Ernakulam and Malappuram is shown in Table 5.13. The survey found that the Malappuram district reported a high average index value of 0.44, followed by Ernakulam (0.42) and Wayanad (0.39). The respondents from the Malappuram district were more aware and skilled in using digital financial products and services such as mobile phones, ATMs, POS, internet banking, etc.... than those from other districts. The study used a statistical test called Analysis of Variance (ANOVA) to compare the financial aptitude index value across three districts and determine whether statistically significant differences exist between them.

Null Hypothesis (H0): There is no significant difference in the digital financial aptitude index value among the three districts.

Based on the ANOVA analysis, the F-Statistic is calculated as 4.712, indicating there is a statistically significant difference in digital financial aptitude among the three districts. The p-value of .009 is less than the chosen significance level of 0.05. Therefore, the study fails to accept the null hypothesis and concludes that there is a statistically significant difference in the digital financial aptitude index among the three districts.

Table: 5.14

Gender-wise Digital Financial Aptitude Index

Sl. No.	Gender	Wayanad	Ernakulam	Malappuram	Total	t.	Sign.
1	Male	0.39	0.46	0.54	0.47		
2	Female	0.38	0.38	0.50	0.41	1.980	0.048
	Total	0.39	0.42	0.44	0.44		

Source: Calculated from Field Survey

The gender-wise digital financial aptitude index of the Kerala state with respect to the selected districts of Wayanad, Malappuram and Ernakulam is shown in Table 5.14. It shows that male respondents' digital financial aptitude is higher than females in all selected districts. The male respondents from the Malappuram district reported a high digital financial aptitude index against Wayanad and Ernakulam. To compare the financial aptitude index value among the gender (e.g., male, and female) and check if there are statistically a significant differences between the male, and female, the study used an independent samples t-test.

Null Hypothesis (H0): There is no significant difference in the digital financial aptitude index value among the genders (Male and Female).

The Independent Samples t-test results provide evidence of gender-based differences in digital financial aptitude. It reflects a statistically significant difference in the financial aptitude index scores between male and female respondents. With a p-value of .048, which is less than .05, the study rejects the null hypothesis, indicating the observed difference in the mean index value of males and females and a significant variation in financial aptitude between the two gender groups. The mean difference of approximately 0.0634 indicates that, on average, male respondents have a slightly higher financial aptitude index score than female respondents.

Table: 5.15

Religious-wise Digital Financial Aptitude Index

Sl. No.	Religion	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Hindu	0.31	0.46	0.39	0.38		
2	Muslim	0.45	0.51	0.42	0.47	6.439	0.002
3	Christian	0.56	0.70	0.47	0.54		
	Total	0.39	0.44	0.42	0.44		

Source: Calculated from Field Survey

The religious-wise digital financial aptitude index is given in Table 5.15. It shows that Christians have more digital financial aptitude and scored high on the digital financial aptitude index (0.54), followed by Muslims (0.51) and Hindus (0.38). The educational improvements of the Christians are playing an important role in their digital financial aptitude. The study used Analysis of Variance (ANOVA) to compare the financial aptitude index value among the religious groups (e.g., Hindus, Muslims and Christians) and check the existence of statistically significant differences between these religious groups.

Null Hypothesis (H0): There is no significant difference in the digital financial aptitude index value among the three religious groups.

The F-Statistic is estimated as 6.439, and the significance (Sig.) value associated with the F-Statistic is .002. It indicates a statistically significant difference in digital financial aptitude among the three religious groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial aptitude index among the three religious groups.

Table: 5.16

Social Group-wise Digital Financial Aptitude Index

Sl. No.	Social Groups	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	General	0.39	0.72	0.48	0.47		
2	SC	0.33	0.47	0.22	0.41	5.523	0.001
3	ST	0.21	0.40	0.00	0.26		
4	OBC	0.47	0.51	0.39	0.47		
	Aggregate	0.39	0.44	0.42	0.44		

Source: Calculated from Field Survey

Table 5.16 provides the social group-wise Digital Financial Aptitude Index scores across three districts. Both the general and OBC categories have the highest Digital Financial Aptitude Index score (0.47), followed by SC (0.41) and ST (0.26). The general group scored 0.39 in Wayanad, 0.72 in Malappuram, and 0.48 in Ernakulam. The OBC's average index value is similar to the General group, with an aggregate score of 0.47. In Wayanad, the OBC's score is 0.47; in Malappuram, it is 0.51; and in Ernakulam, it is 0.39. The ST has the lowest average Digital Financial Aptitude Index score across all three districts, with an aggregate score of 0.26.

Null Hypothesis (H0): There is no significant difference in the digital financial aptitude index value among the social groups.

The F-Statistic is estimated as 5.523 and found to be statistically significant (.001). It shows a statistically significant difference in digital financial aptitude among the social groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial aptitude index among the social groups. Overall, the analysis among the social groups demonstrates differences in digital financial aptitude levels, highlighting the importance of considering social group-specific factors for policy making.

Table: 5.17

Marital Status-wise Digital Financial Aptitude Index

Sl. No.	District	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Married	0.63	0.73	0.79	0.69		
2	Unmarried	0.35	0.46	0.38	0.40	20.212	0.000
3	Widowed	0.25	0.17	0.33	0.24		
4	Separated	Nil	0.33	Nil	0.33		
	Aggregate	0.39	0.49	0.42	0.44		

Source: Calculated from Field Survey

The marital status-wise digital financial aptitude index is given in Table 5.17. It shows that married individuals' aggregate digital financial aptitude index is higher than that of other marital status groups, demonstrating their proficiency and skills in using digital tools and services. The married people from all three districts together scored 0.69, followed by unmarried (0.40), separated (0.33), and widowed (0.24). The study used Analysis of Variance (ANOVA) to compare the financial aptitude index value among the marital status groups (e.g., married, unmarried, widowed, separated) and determine the existence of statistically significant differences between these marital status groups.

Null Hypothesis (H0): There is no significant difference in the digital financial aptitude index value among the marital groups.

The F-Statistic is estimated as 20.212, and the significance (Sig.) value associated with the F-Statistic is 0.000. It indicates a statistically significant difference in digital financial aptitude among the marital status groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial aptitude index among the four marital groups.

Table: 5.18

Education-wise Digital Financial Aptitude Index

Sl. No.	Education	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Illiterate	0.05	0.00	0.00	0.04		
2	L.P	0.13	0.11	0.08	0.11		
3	U.P	0.32	0.42	0.27	0.35	80.788	0.000
4	SS/HSS	0.39	0.50	0.40	0.43		
5	Graduate	0.70	0.67	0.71	0.69		
6	Above	0.77	0.87	0.83	0.84		
7	Aggregate	0.39	0.49	0.42	0.44		

Source: Calculated from Field Survey

Table 5.18 provides the education level-wise digital financial aptitude index throughout three districts. The aggregate index of the individuals who are educated above graduation scored the highest (0.84) across all three districts, followed by graduate (0.69), SS/HSS (0.43) and UP (0.35). The digital financial aptitude index of the respondents, who are generally illiterate and educated only up to the primary level, is very poor. They scored 0.04 and 0.11, respectively. The score of the respondents who are educated above graduation is highest in Malappuram (0.87), followed by Ernakulam (0.83) and Wayanad (0.77).

Null Hypothesis (H0): There is no significant difference in the digital financial aptitude index value among the educational groups.

The F-Statistic is estimated as 80.788, and the significance (Sig.) value associated with the F-Statistic is 0.000. It shows a statistically significant difference in the digital financial aptitude of the respondents of different educated groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial aptitude index of individuals of different educated groups.

Table: 5.19

Income-wise Digital Financial Aptitude Index

Sl. No.	Income	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	< 15000	0.22	0.31	0.09	0.24		
2	15001 -30000	0.36	0.46	0.43	0.43	56.765	0.000
3	30001-45000	0.61	0.62	0.57	0.61		
4	> 45001	0.71	0.76	0.68	0.72		
4	Aggregate	0.39	0.49	0.42	0.44		

Source: Calculated from Field Survey

Table 5.19 shows the income-wise digital financial aptitude index values for different income groups of the Wayanad, Malappuram, and Ernakulam districts. The digital financial aptitude index for those who earn more than 45000 is the highest (0.72), followed by the income group 30001-45000 (0.61), 15001-30000 (0.61) and 15001-30000 (0.43). The index value is the lowest for those who earn less than 15000. It shows a progressive increase in the digital financial aptitude index with increasing income levels in all districts. For instance, higher income groups tend to have higher digital financial aptitude.

Null Hypothesis (H0): There is no significant difference in the digital financial aptitude index value among the various income groups.

The F-Statistic is estimated as 56.765, and the significance (Sig.) value associated with the F-Statistic is 0.000. It shows a statistically a significant difference in the digital financial aptitude of the respondents of different income groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial aptitude index of individuals of different income groups.

5.1.2 Role of Financial and Digital Aptitudes in Determining Digital Financial Aptitude

Multiple regression analysis model is used to explain the relationship between the dependent variable (digital financial aptitude) and two predictor variables (financial aptitude and digital aptitude). The analysis examines how changes in the predictor variables impact the digital financial aptitude of the respondents. The main purpose of this analysis is to assess whether the combination of financial aptitude and digital aptitude can significantly predict the digital financial aptitude of the individuals participating in the study. The regression model estimates the impact of financial and digital aptitude on digital financial aptitude while controlling for each other's effects.

Variance Inflation Factor (VIF) Analysis

VIF is a statistical estimate used to examine the problem of multicollinearity among predictor variables in a regression analysis. It is a measure that quantifies how much the variance of the estimated coefficients of the predictor variable increases due to multicollinearity. Typically, a VIF value of 1 indicates no multicollinearity, while higher values suggest increasing levels of multicollinearity. A common rule of thumb is that a VIF greater than 5 or 10 indicates a serious problem of multicollinearity. VIF values of 1.52 are relatively low (Table 5.20), which indicates that the multicollinearity problem may not be significant for the financial aptitude and digital aptitude predictor variables in the regression analysis.

Table: 5.20
Test of Multicollinearity

Variable	VIF	1/VIF
Financial Aptitude	1.52	0.659953
Digital Aptitude	1.52	0.659953
Mean VIF	1.52	

Breusch-Pagan/ Cook-Weisberg Test for Heteroskedasticity

Breusch-Pagan / Cook-Weisberg is a test for heteroskedasticity in a regression analysis. Heteroskedasticity refers to the situation where the variance of the residuals (errors) in a regression model is not constant across all levels of the predictor variables. This can affect the reliability of the statistical inference made from the regression analysis.

Ho (Null Hypothesis): The null hypothesis being tested is that the variance of the residuals (errors) in the regression model is constant across all levels of the predictor variables. In other words, there is no heteroskedasticity.

Table: 5.21
Test for Heteroskedasticity

Chi2(1)	2.60
Prob > chi2	0.1071

Variables: fitted values of dfaps

The p-value given Table 5.21 is 0.1071, representing the strength of evidence against the null hypothesis. Since the p-value (0.1071) is greater than the common significance level of 0.05, there is not enough evidence to reject the null hypothesis. This means that, based on the Breusch-Pagan/Cook-Weisberg test, there is no strong evidence to conclude that there is significant heteroskedasticity in the residuals of a given regression model.

Table: 5.22
Model Summary of Regression Analysis

Model	R	R-Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson Test
1	.846 ^a	.715	.714	1.5408	1.986

a. Predictors: (Constant), Financial Aptitude and Digital Aptitude

In the model summary, the regression analysis was conducted using two predictors: financial and digital aptitude scores. The performance of model is evaluated based on the multiple correlation coefficient (R) and coefficient of

determination (R Square) values. The value of R is 0.846 (Table 5.22), which represents the correlation between the predicted values (obtained from the regression model) and the actual observed values of the dependent variable. It shows the strength and direction of the linear relationship between the financial aptitude score, digital aptitude score, and the dependent variable, i.e., the digital financial aptitude score. The R Square value (Coefficient of Determination) is 0.715, which shows the proportion of the variance in the dependent variable that the predictors in the model can explain. It measures how well the predictors, i.e. financial aptitude score and digital aptitude score, account for the variability in the digital financial aptitude score. It indicates that approximately 71.5 per cent of the variance in digital financial aptitude can be explained by the linear combination of financial aptitude and digital aptitude included in the model. It reveals that the model best fits the data reasonably well, as it can explain a substantial proportion of the changes in the dependent variable. The Durbin-Watson test statistic of 1.986 indicates no significant autocorrelation in the residuals of your regression model since it is close to 2. It suggests that the residuals (errors) are independent and not correlated, which is one of the key assumptions in regression analysis.

Table: 5.23

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	2365.469	2	1182.734	498.180	.000 ^b
1	Residual	942.521	397	2.374		
	Total	3307.990	399			

a. Dependent Variable: DFAPS

b. Predictors: (Constant), FAS, DAS

The F-value is used to evaluate the significance of the given regression model. It is estimated as the ratio of the mean square for the regression model to the mean square for the residuals. The highly significant p-value ($p < 0.001$) indicates that the regression model, with the predictors' financial aptitude score and digital

aptitude score, is a good fit for the data and significantly influences predicting the dependent variable, digital financial aptitude. The F-value of 498.180 further confirms the model's significance, which is much higher than the critical value for the chosen significance level.

Table: 5.24

**Role of Financial and Digital Aptitudes
in Determining Digital Financial Aptitude**

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.631	.213		-2.958	.003
1 DAS	.544	.027	.677	20.534	.000
FAS	.254	.034	.247	7.501	.000

a. Dependent Variable: Digital Financial Aptitude Score

The constant term represents the estimated intercept of the regression model when all predictors are equal to zero. In this case, the constant is -0.631. The t-value of -2.958 indicates that the constant is statistically significant at a significance level of 0.05 ($p = 0.003$). The coefficient for digital aptitude is 0.544 (Table 5.24), indicating that for every one-unit increase in the digital aptitude predictor variable, the dependent variable, digital financial aptitude, is expected to increase by 0.544 units. The t-value of 20.534 indicates that the coefficient for digital aptitude is highly significant ($p < 0.001$). Similarly, the coefficient for financial aptitude is 0.254, showing that the dependent variable, digital financial aptitude, is expected to increase by 0.254 units for every one-unit increase in financial aptitude. The t-value of 7.501 indicates that the coefficient for financial aptitude is also highly significant ($p < 0.001$). Thus, both predictors have a positive value and statistically significant impact on digital financial aptitude, as indicated by their low p-values ($p < 0.001$).

5.1.3 Digital Financial Attitude:

The third dimension of the demand side of digital financial literacy is attitude and behaviours toward digital financial services and technologies. Digital financial perspective refers to the beliefs, mindset and behaviours towards using digital financial products, services and technologies. It includes their willingness to adopt digital financial tools, their confidentiality in using them, and their overall sensitivity towards digital banking, online payments, mobile wallets, and other fintech services. In this digitalized world, it is essential to have a positive attitude towards modern digital tools, services and fintech technologies. It will lead to better financial management, improved access to financial services provided through digital platforms, and, thereby, increased financial inclusion. The study estimates the digital financial attitude using six indicators, including the approach towards digital financial services, convenience in DFS, etc. Based on these indicators, questions were asked for responses with options –strongly agree, agree, disagree, and strongly disagree- and their answers were marked against each other. The Likert-type five-point scale was developed to examine the perception of various digital financial services provided by banks and other financial institutions. The district-wise digital financial attitude index is shown in Table .

Table: 5.25

District-wise Digital Financial Attitude Index

Sl. No.	District	Average Index	F.	Sign.
1	Wayanad	0.38		
2	Malappuram	0.52	4.146	0.017
3	Ernakulam	0.43		
	Total	0.44		

Source: Calculated from Field Survey

The survey found that the Malappuram district reported a high average index value of 0.52 (Table 5.25), followed by Ernakulam (0.43) and Wayanad (0.38). It shows that the respondents from the Malappuram district are more willing to adopt new digital tools and have confidentiality when using these tools and services, and

they have a more positive attitude and behaviour towards emerging digitalized tools and services. To compare the digital financial attitude index value across three and determine if there are statistically significant differences between the districts, the study used a statistical test called Analysis of Variance (ANOVA).

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the three districts.

Based on the ANOVA analysis, the F-Statistic is calculated as 4.146, indicating there is a statistically significant difference in digital financial attitude among the three districts. The p-value of 0.017 is less than the chosen significance level of 0.05. Therefore, the study rejects the null hypothesis and concludes that there is a statistically significant difference in the digital financial attitude index among the three districts.

Table: 5.26

Gender-wise Digital Financial Attitude Index

Sl. No.	Gender	Wayanad	Ernakulam	Malappuram	Total	t.	Sign.
1	Male	0.42	0.45	0.57	0.49		
2	Female	0.33	0.41	0.44	0.39	2.410	0.016
	Total	0.38	0.43	0.52	0.44		

Source: Calculated from Field Survey

Table 5.26 shows the gender-wise digital financial attitude index across three districts: Wayanad, Malappuram, and Ernakulam. It states that males have a higher digital financial attitude index (0.49) compared to females (0.39) across all districts, indicating that, on average, males have a more positive attitude towards digital financial tools and services. To compare the financial attitude index value among the gender (e.g., male, and female) and determine if there are statistically significant differences between the male, and female, the study used an independent samples t-test.

Null Hypothesis (H0): There is no significant difference in the financial attitude index value among the genders (Male and Female).

The Independent Samples t-test results provide evidence of gender-based differences in digital financial attitudes. It shows a statistically significant difference in the financial attitude index scores between male and female respondents. With a p-value of .016, which is less than .05, the study rejects the null hypothesis, indicating the observed difference in the mean index value of males and females and a significant variation in financial attitude between the two gender groups. The mean difference of approximately 0.105181 indicates that, on average, male respondents have a slightly higher financial attitude index score than female respondents.

Table: 5.27

Religious-wise Digital Financial Attitude Index

Sl. No.	Religion	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Hindu	0.32	0.53	0.42	0.42		
2	Muslim	0.40	0.50	0.43	0.45	0.877	0.417
3	Christian	0.55	0.61	0.44	0.51		
	Total	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

The religious-wise digital financial attitude index of Kerala for three districts, Malappuram, Wayanad and Ernakulam, is given in Table 5.27. It indicates the level of digital financial attitude among different religious communities (Hindu, Muslim, Christian) in each district. The average index values for Wayanad, Malappuram and Ernakulam are 0.38, 0.52 and 0.43, respectively. In each district, Christians have the highest digital financial attitude index (0.51), followed by Muslims (0.45) and then Hindus (0.42). It shows that Christians have a more positive attitude towards DFS. This positive attitude and behaviour from the Christian communities may be because of their better access to financial education and digital literacy programs, which enhance their overall financial attitude. Their

financial responsibility and management priority may also lead to their higher digital financial attitude.

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the religious groups.

Based on the ANOVA analysis, the F-Statistic is calculated as 0.877, indicating no statistically significant difference in digital financial attitude among the religious groups. The p-value of 0.417 is more significant than the chosen significance level of 0.05. Therefore, the study accepts the null hypothesis and concludes that no statistically significant difference exists in the digital financial attitude index among the three religious groups.

Table: 5.28

Social Group-wise Digital Financial Attitude Index

Sl. No.	Social Groups	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	General	0.41	0.70	0.52	0.49	3.437	0.017
2	SC	0.35	0.56	0.05	0.46		
3	ST	0.19	0.38	0.00	0.24		
4	OBC	0.44	0.50	0.39	0.46		
	Aggregate	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

Table 5.28 shows the caste-wise digital financial attitude index across three districts. It gives the average digital financial attitude index of the respondents belonging to different castes, such as general, OBC (other backward classes), SC (scheduled caste), and ST (scheduled tribe). It was found that the general community showed a highly positive digital financial attitude overall compared to SC and ST communities (0.49). ST community has the lowest digital financial attitude index (0.24).

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the social groups.

The F-Statistic is estimated as 3.437 and found to be statistically significant (.017). It shows a statistically significant difference in digital financial attitudes among the social groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial aptitude index among the social groups.

Table: 5.29

Marital Status-wise Digital Financial Attitude Index

Sl. No.	District	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Married	0.73	0.94	0.98	0.86	28.956	0.000
2	Unmarried	0.29	0.44	0.37	0.37		
3	Widowed	0.38	0.04	0.00	0.22		
4	Separated	Nil	0.08	Nil	0.08		
	Aggregate	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

The marital status-wise digital financial attitude index for the districts is given in Table 5.29. It shows that married individuals generally have the highest positive digital financial attitude (0.86) across all districts. Unmarried and widowed individuals tend to have moderate positive attitudes, while those who are separated show a lower positive digital financial attitude (0.08). It is found that married individuals have a more positive attitude towards digital financial tools and services. Better financial management is vital to family happiness because consumer debt is a major threat to marital satisfaction. Digital financial tools and services are more convenient and time-saving than conventional methods. Therefore, married individuals have a more digital financial attitude.

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the marital groups.

The F-Statistic is estimated as 28.956, and the significance (Sig.) value associated with the F-Statistic is 0.000. It indicates a statistically significant

difference in digital financial attitudes among the marital status groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial attitude index among the four marital groups.

Table: 5.30

Education-wise Digital Financial Attitude Index

Sl. No.	Education	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Illiterate	0.01	0.00	0.00	0.008		
2	L.P	0.06	0.02	0.02	0.03		
3	U.P	0.28	0.35	0.12	0.28	77.297	0.000
4	SS/HSS	0.29	0.46	0.41	0.39		
5	Graduate	0.80	0.86	0.91	0.84		
6	Above	0.89	0.99	0.96	0.96		
7	Aggregate	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

Table 5.30 shows the education-wise digital financial attitude index for the districts Wayanad, Malappuram and Ernakulam. The above graduation-educated respondents have a higher digital financial attitude (0.96) or more positive attitude towards digitalized tools and services, followed by the graduated (0.84). The illiterate have only a very meagre digital financial attitude index (0.008). The lower primary level educated have an average index of 0.03, upper primary level educated have an index of 0.28, and higher secondary educated respondents have an index of 0.39. Therefore, as people's educational level increases, so does the average index value, implying a positive correlation between education and digital financial attitude. The academic level of consumers affects the use of technology and also benefits from it. People with higher education have more knowledge of the use of modern technology. They affect the level of trust in the use of technology and its risks (Alafeef et al., Citation2011; Im et al., Citation2003).

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the educational groups.

The F-Statistic is estimated as 77.297, and the significance (Sig.) value associated with the F-Statistic is 0.000. It indicates a statistically significant difference in the digital financial attitude of the respondents of different educated groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial attitude index of individuals of different educated groups.

Table: 5.31

Age-wise Digital Financial Attitude Index

Sl. No.	Age Group	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	18-30	0.69	0.93	0.94	0.85	129.778	0.000
2	31-45	0.53	0.53	0.49	0.52		
3	46-60	0.09	0.21	0.14	0.14		
4	60 Above	0.007	0.00	0.002	0.002		
5	Aggregate	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

The age-wise digital financial attitude index is given in Table 5.31. The data was divided into four age groups: 18-30, 31-45, 4-60 and 60 above. The index values are computed based on the attitudes of people from different age groups towards digital financial activities in each district. It is found that the index value is much higher for the age group 18-30. This means that the youth have a more positive attitude and behaviour towards modern technology because they are generally more open and positive about adopting digital financial practices. The index value for the younger generation (0.85) followed by the age group 31-45 (0.52) and 46-60 (0.14). Therefore, as age increases, the digital financial attitude index decreases, showing a decline in the positive attitude towards digital financial matters. The index value for the age group 60 is only 0.002, showing a decline in their attitude towards the upcoming digitalization of financial practices. They are very reluctant to even deal with financial matters, and their behaviour towards digitalization in financial practices has worsened.

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the different age groups.

The F-statistic is estimated as 129.778, and the significance value associated with the F-statistic is 0.000. It indicates a statistically significant difference in the digital financial attitude of the respondents of different age groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial attitude index of individuals of different age groups.

Table: 5.32

Occupation-wise Digital Financial Attitude Index

Sl. No.	Social Groups	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	No Job	0.27	0.46	0.38	0.36		
2	Agriculture	0.14	0.10	0.05	0.11		
3	Casual Labour	0.63	0.55	0.54	0.58	29.773	0.000
4	Salaried	0.73	1.00	0.84	0.89		
5	Self Employed	0.78	0.66	0.50	0.65		
	Aggregate	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

Occupation and digital financial attitude are positively correlated with each other. It is shown in Table 5.32. Salaried individuals have the highest digital financial attitude index across all three districts, indicating a more positive attitude towards digital financial practices. Salaried individuals, especially those working in the professional or technology-oriented field, will have more exposure and familiarity with digital tools and technologies, better access to technologies like smartphones, a higher level of education, and peer influence. Salaried individuals often have busy schedules and may find digital tools more convenient, comfortable, and efficient for managing their financial tasks. Therefore, the average index of salaried individuals is greater (0.89) than that of other working groups. Similarly, self-employed people have varying levels of digital financial attitude, with relatively higher scores in Wayanad and lower scores in Malappuram districts. Self-employed individuals have an index value of 0.65. They often need digital financial tools to

manage their business income, expenses and taxation. They may experience fluctuating income levels, making it essential for them to monitor their finances closely. Digital financial tools can provide real-time insights into cash flow and help them make informed financial decisions. No job individuals tend to have lower digital financial attitude (0.36), which might be attributed to limited financial resources, lack of financial literacy, limited access to banking, unpredictable income, financial insecurity, fear of technology and the great digital divide. The agricultural workers often working in agrarian environments have the lowest digital financial attitude index shaped by their socio-economic conditions, access to technology and their condition of work. Due to a lack of income, limited access to technologies, limited digital financial tools such as smartphones or laptops, and fear of fraudulent online practices, they have lower positive attitudes towards digital financial tools and services.

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the different occupational groups.

The F-statistic is estimated as 29.773, and the significance value associated with the F-statistic is 0.000. the results reveal a statistically significant difference in the digital financial attitude of the respondents of different occupational groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial attitude index of individuals of different occupational groups.

Table: 5.33

Income-wise Digital Financial Attitude Index

Sl. No.	Income	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	< 15000	0.17	0.25	0.07	0.18	49.182	0.000
2	15001 - 30000	0.33	0.48	0.40	0.42		
3	30001- 45000	0.63	0.67	0.57	0.63		
4	> 45001	0.78	0.88	0.84	0.84		
5	Aggregate	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

Table 5.33 shows the digital financial attitude of the respondents in three districts based on their income levels. Each district's respondents are divided into four income segments: <15000, 15001-30000, 30001-45000 and >45001. The index value varies within each income segment, indicating how different segments perceive digital financial attitudes. The table shows that as the income increases, the index value increases. It indicates that higher levels of income groups tend to have a higher positive attitude towards digital financial tools and services. Across all districts, the higher income group (>45001) have the highest digital financial aptitude, having an average index of 0.84, followed by the income group 30001-45000 (0.63) and 15001-30000 (0.42). The lowest income group (>15000) reported a lower index value (0.18). So, when the income increases, the digital financial aptitude index decreases.

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the various income groups.

The F-statistic is estimated as 49.182, and the significance value associated with the F-statistic is 0.000. It indicates a statistically significant difference in the digital financial attitude of the respondents of different income groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial attitude index of individuals of different income groups.

Table: 5.34

Ration card-wise Digital Financial Attitude Index

Sl. No.	Ration Card	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	APL	0.46	0.55	0.51	0.51		
2	BPL	0.24	0.43	0.17	0.29	13.566	0.000
3	Antyodaya	0.00	0.21	0.00	0.11		
	Aggregate	0.38	0.52	0.43	0.44		

Source: Calculated from Field Survey

Table 5.34 shows the ration card-wise digital financial attitude index categorized by the Average poverty line (APL), below poverty line (BPL), and Antyodaya ration card holders. It indicates the standard of living and economic status of the individuals. In all three districts, the digital financial attitude index of the APL category is the highest (0.51), followed by the BPL category (0.29). The index for the Antyodaya category is the lowest. Therefore, from the data, it can be analyzed that the more standardized high-income respondents who belong to the APL category have a higher level of digital financial literacy, adoption of digital financial services, and attitudes towards digital financial transactions.

Null Hypothesis (H0): There is no significant difference in the digital financial attitude index value among the different types of ration card holders.

The F-statistic is estimated as 13.566, and the significance value associated with the F-statistic is 0.000. It indicates a statistically significant difference in the digital financial attitude of the respondents of different types of ration card holders. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial attitude index of individuals of different types of ration card holders.

5.1.4 Affordability of Digital Financial Services

The affordability of digital financial services is the third dimension of demand-side digital financial literacy. Affordability of digital financial assistance refers to the ability of individuals to access and utilize digital financial products and services without facing excessive financial burdens. It also means that a digital financial product or service is affordable to an individual if he has enough income to pay for it. It may be in the form of service charges or travelling charges and the affordability of digital financial tools and devices. It also encompasses the idea that these digital financial products and services should be reasonably priced and designed to make them accessible to a wide range of masses regardless of their income level or economic status. Affordability involves different aspects such as cost, accessibility, transparency and inclusivity. The affordability of digital financial

services is a crucial aspect of digital financial literacy. Because it promotes inclusivity, reduces financial exclusion, empowers individuals and promotes economic growth. So, digital financial services should not only be available but also should be accessible and beneficial to as many as possible, regardless of their financial status.

This study measures affordability by analyzing three indicators: the affordability of digital devices to use financial services, internet services, and service charges. If the respondent is affordable to the first two, he is treated as affordable for free financial services. If he is affordable for all three indicators, then he is affordable for all digital financial services.

Table 5.35

District-wise affordability of DFS

Sl. No.	Indicators	Wayanad		Malappuram		Ernakulam		Total	Per cent
		No.	%	No.	%	No.	%		
1.	Smartphone/laptop	108	70.13	134	83.23	66	77.65	311	77.00
2.	Internet services	98	63.64	125	77.64	61	71.76	284	71.00
	Affordable for free services	96	62.34	125	77.64	61	71.76	282	70.50
3.	Fees & other charges for DFS	85	55.19	94	58.39	49	57.65	228	57.00
	Affordable above all items	85	55.19	94	58.39	49	57.65	228	57.00

Source: Calculated from Field Survey

Table 5.35 provides data on the affordability of digital financial services among the respondents across the three districts (Wayanad, Malappuram, Ernakulam) regarding smartphone/laptop affordability, internet service access and fees or other charges for digital financial services. In Wayanad, 70.13 per cent are affordable smartphones/laptops, and 63.64 per cent of respondents have access to internet services without financial burden. The respondents who have the affordability of both the smartphone/laptop and the internet service have the affordability for the free services. In Wayanad, it is 62.34 per cent. Only 55.19 per cent have the affordability over fees and other charges. Therefore, 55.19 per cent of

the respondents have the affordability over all the items. In Malappuram, most respondents (83 per cent) are affordable to smartphones/laptops, 77.64 per cent have access to internet services, and 58.39 per cent are affordable over fees and other charges. In Ernakulam, 77.65 per cent of respondents have the affordability of smartphone/laptop, followed by 71.76 per cent having affordability over fees and additional charges. Therefore, 71.76 per cent of free services are affordable, and 57.65 per cent are charged for other payable services. Overall, Malappuram has the highest percentage (58.39) having the affordability over all the items and can be considered as affordable to the digital financial services, followed by Ernakulam (57.65) and Wayanad (55.19).

Table: 5.36

Gender-wise Affordability of Digital Financial Services

Sl. No.	Indicators	Male	Per cent	Female	Per cent
1.	Smartphone/laptop	170	82.13	138	71.50
2.	Internet services	159	76.81	125	64.77
	Affordable for free services	159	76.81	123	63.73
3.	Fees & other charges for DFS	128	61.84	100	51.81
	Affordable above all items	128	61.84	100	51.81

Source: Calculated from Field Survey

Table 5.36 provides the data related to the gender-wise affordability of digital financial services. Overall, males have more affordability to digital financial services (61.84) than females (51.81). Because a majority, 82.13 per cent, have affordability over smartphones/laptops, 76.81 per cent have affordability over internet services, and 61.84 per cent have affordability over other payable charges. But only 71.50 per cent have affordability over smartphones/laptops and 64.77 per cent over internet services. Fees and additional costs for DFS are affordable by only 51.81 per cent. Several factors are responsible for this gender disparity and male superiority in affordability, such as income, access to economic opportunities, ownership of assets, financial literacy and confidence. Males are powerful in these aspects, and females are weak. Females also have higher household responsibilities,

and cultural or social constraints may limit the female's access to and control over financial resources. It shows the gender gap in the affordability of digital financial services.

Table: 5.37

Caste-wise Affordability of Digital Financial Services

Sl. No.	Indicators	General	Per cent	SC	Per cent	ST	Per cent	OBC	Per cent
1.	Smartphone/laptop	75	83.33	56	77.78	19	46.34	158	80.20
2.	Internet services	71	78.89	45	62.50	13	31.71	155	78.68
	Affordable for free services	71	78.89	45	62.50	11	26.83	155	78.68
3.	Fees & other charges for DFS	69	76.67	37	51.39	03	7.32	119	60.41
	Affordable above all items	69	76.67	37	51.39	03	7.32	119	60.41

Source: Calculated from Field Survey

Caste-wise affordability of the digital financial services is given in Table 5.37. The table proves notable disparities in the affordability of digital financial products and services among different caste groups. General and OBC categories show more affordability than other caste groups, such as SC and ST. 83.33 per cent of the general category, 77.78 per cent of SC, 46.34 per cent of ST and 80.20 per cent of OBC can afford a smartphone/laptop. The data related to the affordability of internet services shows much decline. Only 78.89 per cent of the general category, 62.50 per cent of SC, 31.71 per cent of ST and 78.68 per cent of OBC can afford internet services. Among the respondents from the concerned category, only 76.67 per cent of the general category is affordable to all the items, followed by 60.41 per cent of the OBC and 51.39 per cent of the SC category. Only 7.32 per cent of the ST category has affordability over all items. Differences in income levels, access to education, socioeconomic factors, and cultural factors may cause these disparities in affordability.

Table: 5.38

Marital Status-wise Affordability of Digital Financial Service

Sl. No.	Indicators	Unmarried	Per cent	Married	Per cent	Widowed	Per cent
1.	Smartphone/laptop	60	92.31	243	76.18	05	35.71
2.	Internet services	59	90.77	220	68.97	05	35.71
	Affordable for free services	59	90.77	218	68.34	05	35.71
3.	Fees & other charges for DFS	59	90.77	164	51.41	05	35.71
	Affordable above all items	59	90.77	164	51.41	05	35.71

Source: Calculated from Field Survey

The affordability of different digital financial products and services among different marital status groups (married, unmarried, widowed, and separated) is provided in Table 5.38. From the table, it is clear that unmarried individuals have the higher affordability of digital financial products and services in all aspects, followed by the married respondents. 92.31 per cent of the unmarried respondents find smartphones/laptops affordable, internet services are affordable by 90.77 per cent, and the fees and other charges are affordable by 90.77 per cent. Only 76.18 per cent of married individuals can buy smartphones/laptops. Only 68.97 per cent can afford internet services, and only 51.41 per cent can pay fees and other charges for digital financial services. So, only 51.41 per cent can afford all the items that are considered affordable. Widowed respondents have the lowest affordability. Only 35.71 per cent of widowed individuals can buy a smartphone/laptop. The same proportion of individuals is affordable to internet services, free services, fees, and other charges. Overall, unmarried individuals tend to have the highest affordability for digital financial products and services. Married individuals generally have moderate affordability, while widowed individuals have the lowest. There are many factors that are responsible for the higher affordability of unmarried respondents. Unmarried individuals who have not yet taken any financial responsibilities associated with family might have higher disposable income. They will also be more educated and may have better incomes and jobs, and, therefore, will have higher

affordability for digital financial products and services. Their easier access to credit also leads to their higher affordability.

Table: 5.39

Religious-wise Affordability of Digital Financial Services

Sl. No.	Indicators	Hindu	Per cent	Muslim	Per cent	Christian	Per cent
1.	Smartphone/laptop	126	72	146	80.66	36	81.82
2.	Internet services	105	60	143	79.01	36	81.82
	Affordable for free services	103	58.86	143	79.01	36	81.82
3.	Fees & other charges for DFS	85	48.57	109	60.22	34	77.27
	Affordable above all items	85	48.57	109	60.22	34	77.27

Source: Calculated from Field Survey

Table 5.39 provides data on the affordability of digital financial services among religious groups such as Hindu, Muslim and Christian. Christians have the highest ownership of smartphones/laptops among the three religious groups, followed by Muslims and Hindus. Of the Christians, 81.82 per cent can afford internet services, followed by 79.01 per cent of Muslims and 60 per cent of Hindus. Therefore, 81.82 per cent of Christians, 79.01 per cent of Muslims and 58.86 per cent of Hindus can afford free digital financial services. But only 77.27 per cent of Christians are affordable for all items, including service charges, followed by 60.22 per cent of Muslims and 48.57 per cent of Hindus.

Table: 5.40

Income-wise Affordability of Digital Financial Services

Sl. No.	District	< 15000	%	15001 - 30000	%	30001-45000	%	> 45001	%
1	Smartphone/laptop	58	45.67	125	86.81	63	94.03	62	100.00
2	Internet services	46	36.22	121	84.03	56	83.58	61	98.39
	Affordable for free services	46	36.22	120	83.33	55	82.09	61	98.39
3	Fees & other charges for DFS	35	27.56	89	61.81	44	65.67	60	96.77
	Affordable above all items	35	27.56	89	61.81	44	65.67	60	96.77

Source: Calculated from Field Survey

Income-wise, the affordability of digital financial services are provided in Table 5.40. It shows a clear trend of increasing affordability and access to digital financial services (smartphones/laptops, internet access, and affordability of fees) as income levels rise. Higher-income groups are more likely to own devices, have internet access, and find DFS charges affordable than lower-income groups. It highlights the income disparity in digital financial services' access and affordability. Among the highest income group with an earning greater than 45000, 100 per cent of the respondents have the affordability of smartphone/laptop, 98 per cent have internet access and affordable to free services, and 96.77 per cent can afford fees and other charges and thus affordable above all items. Likewise, the moderate-income groups, such as the respondents earning an income greater than Rs.15000, have moderate affordability and accessibility. However, the lowest income group (>15000) have the lowest affordability and accessibility. Only 45.67 per cent have the affordability to own a smartphone/laptop, only 36.22 have internet accessibility, and 27.56 per cent can afford fees and other charges. So, when the earnings are reduced, the affordability and accessibility of digital financial services are reduced. Therefore, it is evident that there exists a positive correlation between income and affordability.

Table: 5.41

Education-wise Affordability of Digital Financial Services

Sl. No.	District	Illiterate	%	LP	%	UP	%	HS/HSS	%	Graduates	%	Above	%
1	Smartphone/laptop	5	20.00	23	46.94	52	65	112	86.82	81	98.78	35	100.00
2	Internet services	5	20.00	13	26.53	50	62.5	108	83.72	82	100.00	35	100.00
	Affordable for free services	5	20.00	13	26.53	50	62.5	106	82.17	73	89.02	35	100.00
3	Fees & other charges for DFS	4	16.00	9	18.37	36	45	74	57.36	70	85.37	35	100.00
	Affordable above all items	4	16.00	9	18.37	36	45	74	57.36	70	85.37	35	100.00

Source: Calculated from Field Survey

Table 5.41 provides the data related to the education-wise affordability of digital financial services and products. It is very clear from the table that a positive relationship exists between the respondents' level of education and the affordability of digital financial products and services. All the respondents who are educated above the graduation level have complete affordability over all items. Similarly, 98.78 per cent of the respondents who graduated can afford a smartphone/laptop, 100 per cent can access internet services, 89.02 per cent can afford free services, and 85 per cent can afford fees and other charges. This is the case for higher-educated people. When education qualifications decrease, the affordability of digital financial products and services also decreases. Only 45 per cent of UP-level educated respondents, 18.37 per cent among the LP-level educated, and 16 per cent of the illiterate respondents are affordable over all items.

5.1.5 Digital Financial Awareness

Digital financial awareness is the awareness and understanding of various digital financial technologies, tools, services and associated risks. It also encompasses the awareness of the provisions, benefits and risks associated with digital technologies and the ability to control and manage those risks. Digital financial awareness is very crucial in this cashless and digital era. It empowers individuals to make informed financial decisions and take advantage of digital financial products and services efficiently and securely. In this study, digital financial awareness is measured using two sub-dimensions, namely, awareness of digital financial products & services and awareness about digital financial risks & their control. Awareness about digital financial products and services includes knowledge about bank accounts, mobile wallets, internet banking, mobile phone payments, QR code banking, etc.... Awareness about digital financial risks and control includes awareness about cyber security risks, mechanisms to prevent data leakages, complaint mechanisms, and payment mechanisms.

Awareness of Digital Financial Products and Services

Awareness of digital financial products and services is essential in the digital world, shaping individuals to handle their financial matters efficiently and safely. It

encompasses knowledge about various digital tools such as online banking platforms, mobile wallet apps, contactless payments, peer-to-peer payment services, etc. Understanding these services allows people to transfer funds, pay bills, and handle investment risks from the convenience of digital devices. Moreover, being aware of the diverse range of online financial services, including loans, insurance, and investment platforms, empowers people to make informed decisions tailored to their requirements. This awareness promotes faster financial inclusion by delivering more access to banking and other financial services. Additionally, understanding the advantages and threats associated with digital financial services and products helps individuals to make confident transactions, safeguard their financial information, and avoid probable fraud.

The study mainly focussed this sub-dimension from the perception of rural individuals who are aware of the various digital financial products and services and various providers of these products and services, such as the awareness about bank accounts, mobile wallets, internet banking, banking cards, mobile phone payments, multiple modes of mobile banking, electronic fund transfers, direct benefit transfers and QR code banking. The Likert-type three-point scale was developed and used to examine the level of awareness about various digital financial products and services provided by banks and other financial institutions among rural people of Kerala. The questions were asked of rural people using a scale to indicate whether they are not aware, partially aware, or fully aware of nine digital financial products and services provided by various financial institutions.

Table: 5.42

Awareness of Digital Financial Products and Services (Aggregate)

Sl. No.	Digital Financial Products and Services	Level of Awareness					
		Not Aware		Partially Aware		Fully Aware	
		No.	%	No.	%	No.	%
1	Bank Account (Current/ Saving)/ Jan Dhan Account	48	12	102	25.5	250	62.5
2	Mobile Wallets (Paytm, M-pesa, MobiKwik, PayU etc..)	126	31.5	105	26.25	169	42.25
3	Internet Banking	210	52.5	20	5	170	42.5
4	Banking Cards (Credit/Debit Card)	128	32	64	16	208	52
5	Mobile Phone Payment (UPI, USSD, AEPS,JAM))	207	51.75	41	10.25	152	38
6	Modes of Mobile banking (IVR, SMS, WAP, USSD, STK, Mobile Apps)	341	85.25	51	12.75	08	2
7	Electronic fund transfers (NEFT, RTGS, IMPS)	244	61	135	33.75	21	5.25
8	Direct Benefit Transfer (DBT)/ABPS	237	59.25	106	26.5	57	14.25
9	QR Code Banking	259	64.75	20	5	121	30.25

Source: Calculated from Field Survey

The awareness of the digital financial products and services are depicted in Table 5.42. About 62 per cent of the respondents are fully aware, 25.5 per cent are partially conscious, and only 12 per cent are unaware of the bank accounts. This is likely because traditional bank accounts are well-established and widely used. Most people have bank accounts mainly because of the Pradhan Mantri Jan Dhan Yojana scheme and have their Jan Dhan Account. Therefore, most of the respondents are aware of their bank accounts. Mobile wallets such as Paytm, M-pesa, MobiKwik, and Pay U also have a substantial level of awareness, with 42.25 per cent of the respondents fully aware, 26.25 per cent partially conscious, and 31.5 per cent not aware. In the case of understanding the Internet banking system and its practices,

more than half (52.5) per cent are not mindful, 42.5 per cent are fully conscious, and 5 per cent are partially aware. Credit and debit cards are widely recognized, with 52 per cent being fully aware. However, 32 per cent still lack awareness, which could be a concern for financial inclusion efforts. Mobile phone payments such as UPI, USSD, AEPS, and JAM also need more attention. Most respondents (51.75 per cent) need to be made aware, and only 38 per cent are fully aware of the mobile phone payment systems. The remaining different financial payment methods, such as mobile banking, electronic fund transfers such as NEFT, RTGS, Direct Benefit Transfers, and QR code banking, need more awareness among the respondents. The majority of the respondents need to be made aware, and only a small portion is familiar, indicating a need for significant efforts to educate and raise awareness about these products and services and for their adoption.

Table: 5.43

Awareness of Digital Financial Products and Services (Wayanad)

Sl. No.	Digital Financial Products and Services	Level of Awareness					
		Not Aware		Partially Aware		Fully Aware	
		No.	%	No.	%	No.	%
1	Bank Account (Current/ Saving)/ Jan Dhan Account	14	9.091	49	31.82	91	59.09
2	Mobile Wallets (Paytm, M-pesa, MobiKwik, PayU etc..)	64	41.56	35	22.73	55	35.71
3	Internet Banking	79	51.3	18	11.69	57	37.01
4	Banking Cards (Credit/Debit Card)	27	17.53	36	23.38	91	59.09
5	Mobile Phone Payment (UPI, USSD, AEPS,JAM))	84	54.55	31	20.13	39	25.32
6	Modes of Mobile banking (IVR, SMS, WAP, USSD, STK, Mobile Apps)	121	78.57	30	19.48	03	1.948
7	Electronic fund transfers (NEFT, RTGS, IMPS)	103	66.88	44	28.57	07	4.545
8	Direct Benefit Transfer (DBT)/ABPS	102	66.23	38	24.68	14	9.091
9	QR Code Banking	95	61.69	15	9.74	44	28.57

Source: Calculated from Field Survey

Table 5.43 considers the awareness of digital financial products among the respondents from the Wayanad district. It is clear from the table that more than 50 per cent of the respondents are fully aware of their bank accounts and banking cards (59.09 per cent). The remaining products and services, such as mobile phone payments, electronic fund transfers, direct benefit transfers, etc, need more awareness, with more than 50 per cent being aware. The lack of awareness among Wayanad's respondents about certain digital financial products and services can be attributed to various factors such as geographical isolation, limited internet connectivity, language and literacy barriers, lack of financial education, and lack of trust. Wayanad has a diverse population, including economically disadvantaged communities. People in lower-income groups may have limited access to digital financial products such as smartphones or laptops, which leads to a need for more awareness. All these factors lead to the respondents' lack of digital financial awareness in the highly rural populated district of Wayanad.

Table: 5.44

Awareness of Digital Financial Products and Services (Malappuram)

Sl. No.	Digital Financial Products and Services	Level of Awareness					
		Not Aware		Partially Aware		Fully Aware	
		No.	%	No.	%	No.	%
1	Bank Account (Current/ Saving)/ Jan Dhan Account	20	12.42	33	20.5	108	67.08
2	Mobile Wallets (Paytm, M-pesa, MobiKwik, PayU etc..)	36	22.36	45	27.95	80	49.69
3	Internet Banking	81	50.31	0	0	80	49.69
4	Banking Cards (Credit/Debit Card)	63	39.13	18	11.18	80	49.69
5	Mobile Phone Payment (UPI, USSD, AEPS,JAM))	76	47.2	05	3.106	80	49.69
6	Modes of Mobile banking (IVR, SMS, WAP, USSD, STK, Mobile Apps)	144	89.44	13	8.075	04	2.484
7	Electronic fund transfers (NEFT, RTGS, IMPS)	87	54.04	62	38.51	12	7.453
8	Direct Benefit Transfer (DBT)/ABPS	82	50.93	46	28.57	33	20.5
9	QR Code Banking	110	68.32	01	0.621	50	31.06

Source: Calculated from Field Survey

Table 5.44 shows the digital financial awareness of the respondents from Malappuram region. The survey found that the respondents from the Malappuram district have more digital financial awareness than Ernakulam and Wayanad. The awareness about bank accounts is relatively high, with the majority fully aware of bank accounts (67.08 per cent). About 49 per cent of the respondents are fully aware of mobile wallets, internet banking and banking cards. Even though Malappuram has comparatively higher digital financial awareness than other districts, the respondents lack awareness about certain digital financial products and services, such as mobile banking and electronic banking. A majority of 89 per cent are unaware of the modes of mobile banking. More than half of the respondents were unaware of electronic fund transfers, direct benefit transfer systems, and QR code banking. This suggests opportunities to improve awareness about these digital financial services.

Table: 5.45

Awareness of Digital Financial Products and Services (Ernakulam)

Sl. No.	Digital Financial Products and Services	Level of Awareness					
		Not Aware		Partially Aware		Fully Aware	
		No.	%	No.	%	No.	%
1	Bank Account (Current/ Saving)/ Jan Dhan Account	14	16.47	20	23.53	51	60
2	Mobile Wallets (Paytm, M-pesa, MobiKwik, PayU etc..)	26	30.59	25	29.41	34	40
3	Internet Banking	50	58.82	02	2.353	33	38.82
4	Banking Cards (Credit/Debit Card)	38	44.71	10	11.76	37	43.53
5	Mobile Phone Payment (UPI, USSD, AEPS,JAM))	47	55.29	05	5.882	33	38.82
6	Modes of Mobile banking (IVR, SMS, WAP, USSD, STK, Mobile Apps)	76	89.41	08	9.412	01	1.176
7	Electronic fund transfers (NEFT, RTGS, IMPS)	54	63.53	29	34.12	02	2.353
8	Direct Benefit Transfer (DBT)/ABPS	53	62.35	22	25.88	10	11.76
9	QR Code Banking	54	63.53	04	4.706	27	31.76

Source: Calculated from Field Survey

Table 5.45 represents the awareness of digital financial products and services in Ernakulam district. Like other districts, 60 per cent of the respondents are aware of bank accounts, and 40 per cent are aware of mobile wallets. Respondents must be aware of these services in Internet banking, banking cards, mobile phone payment, electronic fund transfers, DBT and QR code banking systems. Even in a digitalized era, 89 per cent need to be made aware of various modes of mobile banking such as IVR, SMS, WAP, USSD and STK. Only 1.176 per cent is fully aware.

Table: 5.46

District-wise Awareness of Digital Financial Products and Services

Sl. No.	District	Aggregate	F.	Sign.
1	Wayanad	0.39		
2	Ernakulam	0.37	7.648	0.000
3	Malappuram	0.44		
	Total	0.41		

Source: Calculated from Field Survey

Overall awareness of the digital financial products and services of Kerala state in the selected districts of Malappuram, Wayanad, and Ernakulam is given in Table 5.46. The survey found that Malappuram district reported a high index value of 0.44, followed by Wayanad (0.39) and Ernakulam (0.37). The respondents from the Malappuram district are more aware and skilled in using digital financial products and services. The study used Analysis of Variance (ANOVA) to determine the statistically significant differences between the districts regarding awareness of digital financial products and services.

Null Hypothesis (H0): There is no significant difference in the digital financial products and services index value among the three districts

Based on the ANOVA analysis, the F-Statistic is calculated as 7.648, indicating a statistically significant difference in the awareness of digital financial products and services among the three districts. The p-value of 0.000 is less than the chosen significance level of 0.05; the study rejects the null hypothesis and concludes

that there is a statistically significant difference in the awareness of digital financial products and services among the respondents from Wayanad, Malappuram and Ernakulam.

Awareness of Digital Financial Risks& Its Control

In the digital era, awareness of digital financial risks and their control is critical to protecting an individual's financial well-being. Cyber security threats, data leaks, and online fraud pose significant dangers, potentially leading to financial loss and identity theft. Individuals should be aware of procedures and platforms for reporting digital financial fraud or issues with service providers. They need to be well aware of the associated risks, and knowing how to control and manage these risks is equally important.

Table: 5.47

Awareness of Digital Financial Risks& Its Control (Aggregate)

Sl. No.	Risks	No. of Respondent	Per cent
1	Cyber security risks (phishing, pharming, spyware etc...)	226	56.50
2	Mechanism to prevent data leakages	151	37.75
3	Change password frequently	148	37.00
4	Common Password for all Apps	129	32.25
5	Updating Payment transaction Applications	133	33.25
6	Grievance redressal/ Complaint mechanism	98	24.50
7	Knowledge of compensation mechanisms	43	10.75

Source: Calculated from Field Survey

Table 5.47 shows the aggregate level of awareness about digital financial risks and their control throughout the three districts: Malappuram, Wayanad and Ernakulam. Awareness about cyber security risks such as phishing, pharming, and spyware has the highest percentage of understanding among the listed stakeholders, with more than half of the respondents (56.5 per cent) indicating awareness of the cyber security risks. This is a positive sign, as cyber security is a critical aspect of

digital financial safety. About 37.75 per cent of the respondents know the mechanisms to prevent data leakages. While this awareness is below the awareness of cyber security risks, it still represents a significant portion of the respondents who understand the importance of safeguarding their data. About 37 per cent are aware of the need to change passwords frequently, and 33.25 per cent are knowledgeable about the issue of setting common passwords for all apps. This also shows a positive sign because regularly changing passwords can enhance security. Only 24.5 per cent of the respondents know the complaint mechanisms, and 10.75 per cent know about the compensation mechanisms. Therefore, more awareness programmes should be conducted to encounter issues with financial services and understand the compensation options in case of financial losses to enhance digital financial literacy and security.

Table: 5.48

Awareness of Digital Financial Risks& Its Control (Wayanad)

Sl. No.	Risks	No. of Respondent	Per cent
1	Cyber security risks (phishing, pharming, spyware etc.)	80	51.95
2	Mechanism to prevent data leakages	47	30.52
3	Change password frequently	50	32.47
4	Common Password for all Apps	39	25.32
5	Updating Payment transaction Applications	43	27.92
6	Grievance redressal/ Complaint mechanism	23	14.94
7	Knowledge of compensation mechanisms	14	9.091

Source: Calculated from Field Survey

The awareness level of the digital financial risks and its control of the respondents from Wayanad district is given in Table 5.48. Of the total respondents in Wayanad, 51.95 per cent are aware of the cyber security risks. It is the highest-rated concern among respondents, with over half expressing awareness about cyber security risks. It suggests a good level of understanding of common digital threats. Nearly one-third (30.52) of the respondents know how to prevent data leakages. About 32.47 per cent of the respondents see the importance of changing passwords

frequently, and 25.32 per cent know about the problems faced when using common passwords for all digital apps. About 27.92 per cent of the respondents know how to update payment transaction applications. Only a few respondents know the grievance redressal or complaint mechanism (14.94 per cent) and compensation mechanisms (9.091 per cent).

Table: 5.49

Awareness of Digital Financial Risks& Its Control (Malappuram)

Sl. No.	Risks	No. of Respondent	Per cent
1	Cyber security risks (phishing, pharming, spyware etc.)	98	60.87
2	Mechanism to prevent data leakages	74	45.96
3	Change password frequently	74	45.96
4	Common Password for all Apps	66	40.99
5	Updating Payment transaction Applications	71	44.1
6	Grievance redressal/ Complaint mechanism	58	36.02
7	Knowledge of compensation mechanisms	24	14.91

Source: Calculated from Field Survey

Table 5.49 presents information regarding the awareness of digital financial risks and their control of the district of Malappuram. The respondents from this district have a better understanding of digital risks than Wayanad. About 60.8 per cent are aware of the cyber security risks, 45.96 are knowledgeable about the mechanisms to prevent data leakages, and 45.96 per cent are aware of the need for changing passwords frequently. So, 40.99 per cent of the respondents know the risks associated with common passwords for all apps. About 44.1 per cent are aware of the need to update payment transaction applications, and 36.02 per cent are aware of the complaint mechanism. Only 14.91 per cent know compensation mechanisms.

Table: 5.50

Awareness of Digital Financial Risks& Its Control (Ernakulam)

Sl. No.	Risks	No. of Respondent	Per cent
1	Cyber security risks (phishing, pharming, spyware etc..)	48	56.47
2	Mechanism to prevent data leakages	30	35.29
3	Change password frequently	24	28.24
4	Common Password for all Apps	24	28.24
5	Updating Payment transaction Applications	19	22.35
6	Grievance redressal/ Complaint mechanism	17	20.00
7	Knowledge of compensation mechanisms	04	4.706

Source: Calculated from Field Survey

In the case of Ernakulam district, 56.47 per cent are aware of cyber security risks such as phishing, pharming, spyware, etc.... Like other districts, cyber security risks are the highest-rated concern among respondents in Ernakulam. About 35 per cent are aware of the mechanisms to prevent data leakages, 28.24 per cent are aware of the need for changing passwords frequently, and 28.24 per cent are aware of the problems with the setting of common passwords for all apps. About 22 per cent are aware of the importance of updating payment transaction applications. Only 20 per cent are aware of the complaint mechanisms, and 4.706 are aware of compensation mechanisms. Overall, cyber security risks are well recognized by a majority of the respondents in the study area. However, there is space for improvement in other aspects of digital financial security, such as using unique passwords for different apps and being aware of compensation mechanisms. So, there is a need for increased awareness regarding these aspects through various training programmes and education.

Table: 5.51

District-wise Awareness of Digital Financial Risks& Its Control

Sl. No.	District	Aggregate	F.	Sign.
1	Wayanad	0.27		
2	Ernakulam	0.27	7.126	0.000
3	Malappuram	0.41		
4	Total	0.33		

Source: Calculated from Field Survey

Awareness about the digital financial risks & their control of Kerala through the selected districts of Malappuram, Wayanad and Ernakulam is given in Table 5.51. The survey found that Malappuram district reported a high aggregate value of 0.41, followed by Ernakulam and Wayanad, both said a value of 0.27. The respondents from the Malappuram district were more aware and skilled in using digital financial products and services, and they were more conscious of the risks and controls associated with digital financial products and services. The study used Analysis of Variance (ANOVA) to determine the statistically significant differences between the districts in terms of awareness about digital financial risks & their control.

Null Hypothesis (H0): There is no significant difference in the Digital Financial Risks & Its Control index value among the three districts.

Based on the ANOVA analysis, the F-Statistic is calculated as 7.126, indicating a statistically significant difference in digital financial awareness about risk management among the three districts. The p-value of 0.000 is less than the chosen significance level of 0.05. Therefore, the study rejects the null hypothesis and concludes that there is a statistically significant difference in digital financial awareness about the risks associated with digital financial products and services and their control among the three districts.

Combined Digital Financial Awareness Analysis

Digital financial awareness encompasses two sub-dimensions: understanding digital financial products and services and knowing the associated risks and their

control measures. By integrating these two sub-dimensions, the study developed an overall digital financial awareness index.

Table: 5.52
District-wise Digital Financial Awareness Index

Sl. No.	District	Aggregate	F.	Sign.
1	Wayanad	0.33		
2	Ernakulam	0.34	5.918	0.000
3	Malappuram	0.42		
4	Total	0.37		

Source: Calculated from Field Survey

Table 5.52 represents the district-wise digital financial awareness index value of the respondents. Malappuram has the highest index value of 0.42, followed by Ernakulam (0.34) and Wayanad (0.33). The study used ANOVA to determine the statistically significant differences between the districts regarding digital financial awareness.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the three districts.

Based on the ANOVA analysis, the F-Statistic is calculated as 5.918, indicating a statistically significant difference in digital financial awareness among the three districts. The p-value of 0.000 is less than the chosen significance level of 0.05; the study rejects the null hypothesis and concludes that there are statistically significant differences in digital financial awareness among the respondents from Wayanad, Malappuram and Ernakulam.

Table: 5.53

Gender-wise Digital Financial Awareness Index

Sl. No.	Gender	Wayanad	Ernakulam	Malappuram	Total	t.	Sign.
1	Male	0.38	0.37	0.48	0.42		
2	Female	0.29	0.30	0.34	0.31	3.276	0.002
	Total	0.33	0.34	0.42	0.37		

Source: Calculated from Field Survey

The gender-wise digital financial awareness index of the Kerala state concerning the selected districts of Wayanad, Ernakulam and Malappuram is shown in Table 5.53. It shows that male respondents' digital financial awareness (0.42) is higher than females (0.31) overall. Additionally, it appears that digital financial awareness varies by region, with the highest index in Malappuram (0.48), followed by Wayanad (0.38) and Ernakulam (0.37). The study used an independent samples t-test to compare and determine the statistically significant differences between the males and females regarding digital financial awareness index value.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the genders (Male and Female).

The Independent Samples t-test results provide evidence of gender-based differences in digital financial awareness. It shows a statistically significant difference in the digital financial awareness index scores between male and female respondents. With a p-value of .002, which is less than .05, the study rejects the null hypothesis, indicating the observed difference in the mean index value of males and females, and there is a significant variation in digital financial awareness between the two gender groups. The mean difference of approximately 0.11 indicates that, on average, male respondents have a slightly higher digital financial awareness index score than female respondents.

Table: 5.54

Religious-wise Digital Financial Awareness Index

Sl. No.	Religion	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Hindu	0.26	0.41	0.33	0.33		
2	Muslim	0.37	0.43	0.32	0.38	2.368	0.095
3	Christian	0.54	0.58	0.33	0.44		
	Total	0.33	0.42	0.34	0.37		

Source: Calculated from Field Survey

The religious-wise digital financial awareness index of the selected districts is provided in Table 5.54. Hindus, Muslims and Christians have different index values in other regions. The table shows that among the three religious groups, Christians reported a high digital financial awareness (0.44), followed by Muslims (0.38) and Hindus (0.33). Christians have increased access to education, and this may be the reason for their higher digital financial awareness. Better access to economic conditions and resources also leads to higher digital financial awareness levels of Christians. The study used ANOVA to compare the digital financial awareness index value among the religious groups (e.g., Hindus, Muslims and Christians) and determine the existence of statistically significant differences between these religious groups.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the three religious groups.

The F-Statistic is estimated at 2.368, and the significance (Sig.) value associated with the F-Statistic is .095. It indicates a statistically significant difference in digital financial awareness among the three religious groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial awareness index among the three religious groups.

Table: 5.55

Age-wise Digital Financial Awareness Index

Sl. No.	Age Group	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	18-30	0.55	0.78	0.64	0.67		
2	31-45	0.46	0.45	0.39	0.44	113.871	0.000
3	46-60	0.13	0.19	0.15	0.15		
4	60 Above	0.07	0.02	0.04	0.04		
5	Aggregate	0.33	0.42	0.34	0.37		

Source: Calculated from Field Survey

Table 5.55 furnishes the age-wise digital financial awareness index. The age is divided into four groups: 18-30, 31-45, 46-60 and 60 above. The data indicates that digital financial awareness varies significantly by age group, with the highest awareness among the 18-30 age group (0.67), followed by decreasing awareness in older age groups. The digital financial awareness level is at its lowest level for the respondents above 60 (0.04). Younger generations, particularly those in the 18-30 age group, have grown up with digital technology and the internet as an integral part of their lives. They are more comfortable with the new digitalized financial tools and services and more adaptive to the latest technology. Younger individuals have received more formal education and training in digital literacy and financial technology. They are more interested in exploring various digital opportunities and learning new skills. However, aged people are reluctant to adopt new technologies due to a lack of education and the fear of loss. These factors may lead to a higher digital financial awareness index for the younger generations and a lower index for the aged respondents. It's also evident that there are regional variations, with Malappuram generally having higher awareness levels across age groups. The study used Analysis of Variance (ANOVA) to compare the digital financial awareness index value among the various age groups (e.g., 18-30, 31-45, 46-60 and 60 above) and determine the existence of statistically significant differences between these age groups.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the different age groups.

The F-Statistic is estimated at 113.871, and the significance (Sig.) value associated with the F-Statistic is .000. It indicates a statistically significant difference in digital financial awareness among the four age groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial awareness index among these age groups.

Table: 5.56

Social Group-wise Digital Financial Awareness Index

Sl. No.	Social Groups	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	General	0.34	0.66	0.39	0.40	4.921	0.002
2	SC	0.28	0.45	0.07	0.37		
3	ST	0.16	0.22	0.02	0.18		
4	OBC	0.41	0.42	0.30	0.39		
	Aggregate	0.33	0.42	0.34	0.37		

Source: Calculated from Field Survey

The social group-wise digital financial awareness index of the three selected districts is given in Table 5.56. The data is segmented into different social groups such as general category, scheduled caste (SC), scheduled tribes (ST) and other backward classes (OBC). From the data provided, it is clear that the digital financial awareness index of the general category is comparatively higher than SC, ST and OBC. The index value for the general category is 0.40, followed by OBC (0.39) and SC (0.37). There are only mere differences between these groups. However, the ST category has the lowest awareness index, with an index value of only 0.18. The study used Analysis of Variance (ANOVA) to compare the digital financial awareness index value among the various social groups (e.g., SC, ST, OBC) and determine the existence of statistically significant differences between these social groups.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the social groups.

The F-Statistic is estimated at 4.921, and the significance (Sig.) value associated with the F-Statistic is .002. It indicates a statistically significant difference in digital financial awareness among these social groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial awareness index among these social groups.

Table: 5.57

Marital Status-wise Digital Financial Awareness Index

Sl. No.	District	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Married	0.58	0.82	0.73	0.71	32.321	0.000
2	Unmarried	0.28	0.35	0.28	0.31		
3	Widowed	0.29	0.03	0.08	0.19		
4	Separated	Nil	0.05	Nil	0.06		
	Aggregate	0.33	0.42	0.34	0.37		

Source: Calculated from Field Survey

The digital financial awareness indexes of the respondents who are married, unmarried, widowed and separated are given in Table 5.57. It is crystal clear from the data provided that the married respondents reported a high index value (0.71), followed by unmarried respondents with an index value of 0.31. The respondents who are widowed or separated reported lower index values of 0.19 and 0.06, respectively. The study found significant differences in digital financial awareness among various social groups, such as married, unmarried, widowed and separated respondents. Also, the study rejected the null hypothesis, because the p-value 0.00 is less than the level of significance 0.05.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the marital groups.

Marriage is a leading factor in enhancing digital financial awareness. The shared financial responsibilities, communication and collaboration, long-term planning and access to combined resources may cause increasing digital financial awareness. The lack of financial support, security, stability, and higher financial burden caused a lack of understanding of digital financial concepts by the other categories, such as widowed and separated.

Table: 5.58

Education-wise Digital Financial Awareness Index

Sl. No.	Education	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	Illiterate	0.08	0.01	0.00	0.06	73.258	0.000
2	L.P	0.08	0.04	0.03	0.07		
3	U.P	0.26	0.29	0.13	0.25		
4	SS/HSS	0.28	0.37	0.31	0.33		
5	Graduate	0.64	0.71	0.64	0.67		
6	Above	0.80	0.82	0.69	0.79		
7	Aggregate	0.33	0.42	0.34	0.37		

Source: Calculated from Field Survey

Table 5.58 indicates the data collected on education-wise digital financial awareness of the respondents from the selected districts. It is found from the survey that as educational qualification increases, the digital financial awareness of the people also increases. The index value for the respondents who are qualified above graduation is 0.79. It is 0.67 for those who have graduated, 0.33 for those who have studied up to higher secondary level, 0.25 for those who have schooling up to UP level and only 0.07 for those who have education up to LP level. The illiterate respondents reported an index of only 0.06. From the data analyzed, it is clear that there is a positive correlation between education and digital financial awareness because educated people will be familiar with the new digital financial products and

services and will be aware of the risks and issues related to these digitalized tools and services.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the educational groups.

The F-Statistic is estimated at 73.258, and the significance (Sig.) value associated with it is .000. It indicates a statistically significant difference in digital financial awareness among these educational groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial awareness index among these educational groups.

Table: 5.59

Income-wise Digital Financial Awareness Index

Sl. No.	Income	Wayanad	Malappuram	Ernakulam	Aggregate	F.	Sign.
1	< 15000	0.14	0.19	0.08	0.15		
2	15001 - 30000	0.33	0.39	0.30	0.36	58.070	0.000
3	30001-45000	0.55	0.56	0.44	0.54		
4	> 45001	0.67	0.73	0.63	0.69		
5	Aggregate	0.33	0.42	0.34	0.37		

Source: Calculated from Field Survey

Table 5.59 represents an income-wise digital financial awareness index for different income groups (<1500, 15001-30000, 30001-45000, >45001). The respondents earning over forty-five thousand reported a high digital financial awareness index of 0.69. The respondents who had incomes of less than 15,000 reported a lower index value of 0.15. As the respondents' payment decreases, their digital financial awareness level also decreases. Higher-income groups have higher index values than the lower-income groups. Higher-income groups have more access to technology, improved financial status, economic stability, and higher digital financial literacy and due to increased digital transactions, they are more

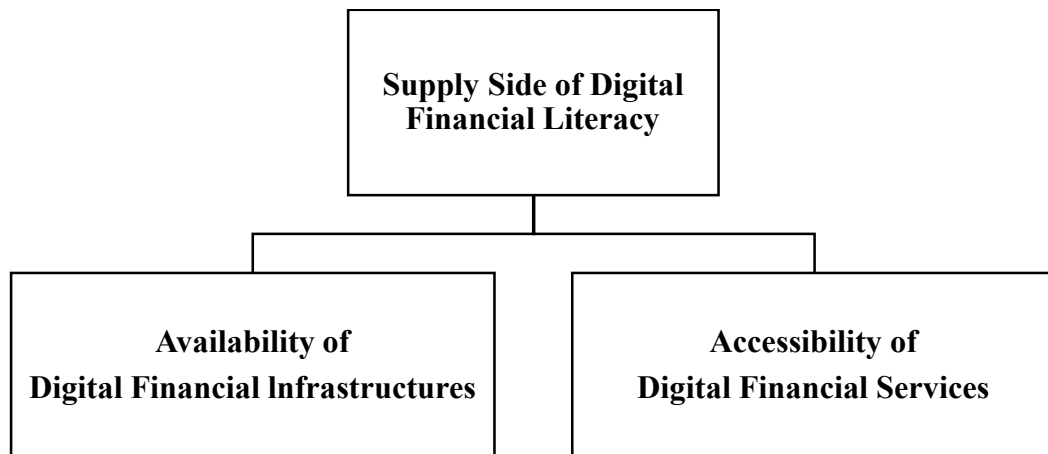
aware of the digital financial tools and services and also the risks and losses associated with these products and services.

Null Hypothesis (H0): There is no significant difference in the digital financial awareness index value among the various income groups.

The F statistic is estimated at 58.070, and the significance (Sig.) value associated with the F-Statistic is 0.000. It indicates a statistically significant difference in digital financial awareness among the different income groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial awareness index among these income groups.

5.2 Supply-Side of Digital Financial Literacy

Digital financial literacy refers to the knowledge and skills needed to effectively manage one's finances in the digital age. It includes a variety of skills and knowledge pertaining to the use of digital tools, platforms, and technology for financial gain. The efforts and resources made available by financial institutions, governmental organizations, academic institutions, and other organizations to advance and enhance the comprehension of and proficiency of people with digital financial services and technologies are referred to as the supply-side component of digital financial literacy. The businesses and institutions that offer the materials, equipment, and training required for people to become digitally financially educated are included in the supply side of digital financial literacy, which makes it vital. These organizations and institutions include governments, banks, schools, fin-tech firms, and other groups. This aspect focuses on the tools that may be used to help communities, businesses, and individuals become more financially literate through digital channels. The supply side aspect of digital financial literacy includes the digital financial infrastructures and services that are made available to the users and the accessibility of these products and services. It can be measured by analyzing the number of bank accounts, availability of cards, point of sale (PoS) machines, and other electronic payment infrastructures, such as wallets, fast payment systems etc...



5.2.1 Availability of Digital Financial Infrastructure

The underlying organizational and technological elements that make it possible to supply different financial services and transactions in a digital format are referred to as digital financial infrastructure. It refers to the systems and technologies that enable electronic or online financial transactions, including mobile banking, online payment platforms, digital wallets, and more. The availability of these infrastructures depends on various factors, including economic development, regulatory frameworks, and technological adoption. It consists of the networks, processes, and technological advancements that facilitate the safe and effective transfer of funds, information, and financial data in digital and electronic formats. The operation of contemporary financial services depends on digital financial infrastructure, which is a crucial part of the larger financial ecosystem. Nowadays, there is a tremendous increase in the number of digital financial infrastructure providers. They provide a variety of digital financial services that enhance the capabilities and skills of users. These improvements in the financial infrastructure allow increased digitalization of payments, with high-speed, safe, reliable and affordable digital financial services to all areas, especially the rural areas. India has also made remarkable initiatives to enhance its digital financial infrastructure to access financial services. For the purpose of the study, the various digital financial infrastructures such as bank branches, smartphones/laptops/desktops, internet access/, ATM counters, and Point of sale machines are identified and asked directly with the targeted population whether these infrastructures are available or not.

Table: 5.60

Availability of Digital Financial Infrastructures

Sl. No.	Digital Financial Infrastructures	Wayanad		Malappuram		Ernakulam		Total	Per Cent
		No.	%	No.	%	No.	%		
1	Bank Branch	154	100.0	161	100.0	85	100.0	400	100
2	Smartphone/ Laptop/ Desktop/ Tablet	110	71.43	141	87.58	70	82.35	321	80.25
3	Internet access	132	85.71	141	87.58	70	82.35	343	85.75
4	Smartphone with internet access	109	70.78	139	86.34	70	82.35	318	79.50
5	ATM	116	75.32	130	80.75	79	92.94	325	81.25
6	Point-of-sale terminal	100	64.93	105	65.22	68	80.00	273	68.25

Source: Calculated from Field Survey

Table 5.60 provides data related to the availability of digital financial infrastructures that are used for digital financial transactions. Bank branches are 100 per cent available for all the respondents. There were 154 respondents from Wayanad, 161 from Malappuram and 85 from Ernakulam. The bank branches are available to 100 per cent of the respondents from all three districts. Availability and access to traditional banking services are still crucial for many individuals, and the distribution of bank branches may impact financial inclusion. About 85 per cent have the availability over internet access, 81 per cent have the availability of ATM counters, 80 per cent have smartphones/laptops/desktops, 79 per cent have smartphones with internet access, and 68 per cent have the availability of Point of sale terminals. The respondents from the Malappuram district have the highest availability of smartphones and internet access, along with required internet access. Ernakulam has the highest availability of ATMs and point-of-sale terminals. Compared to Malappuram and Ernakulam, Wayanad lacks the availability of all these digital financial infrastructures. The presence of a strong traditional banking infrastructure alongside a growing digital infrastructure suggests a diverse financial landscape catering to various preferences. Higher percentages of internet access and

smartphone ownership indicate a potential shift towards digital financial services, which can enhance financial inclusion and efficiency. Regions with higher ATM and POS terminal percentages are likely to experience increased digital transactions, contributing to a cashless economy.

5.2.2 Accessibility of the Digital Financial Infrastructure

The second dimension of the supply side of digital financial literacy is the accessibility of digital financial infrastructure. The accessibility of digital financial infrastructure refers to the ease with which individuals, businesses, and communities can avail themselves of and utilize digital financial services. This encompasses various aspects determining how easily people can access, adopt, and benefit from digital financial tools. The physical distance between users and digital financial service providers, or access points, is critical. Accessibility often involves including individuals traditionally underserved or excluded from the formal financial system. This includes unbanked or underbanked populations, and accessibility measures may apply to initiatives to bring them into the digital financial ecosystem. For that, adequate digital financial infrastructure and services that are convenient for users and easy to access should be provided. Accordingly, the study used the physical distance between users and digital financial service providers or access points to access digital financial services and to afford internet, smartphone and service charges.

Distance of Physical Digital Financial Infrastructure

The distance of the digital financial infrastructure affects accessibility in several ways. Individuals closer to digital financial infrastructures may interact more frequently with these services, leading to higher usage patterns and increased familiarity. Physical distance may impact individuals' trust and confidence in digital financial services. Those with easier access and frequent interactions may develop higher trust and confidence in using these services. Individuals may need help accessing and becoming aware of digital financial services if these infrastructures are located far away. Limited physical access can result in lower awareness and

understanding of available digital financial tools, hindering the development of digital financial literacy.

Table: 5.61

Distance of Physical Digital Financial Infrastructure in KM

Digital Financial Infrastructures	1-3 KM		3-5 KM		5 Above		Total
	No.	%	No.	%	No.	%	
Bank Branch	320	80.00	73	18.25	07	1.75	400
ATM	326	81.50	67	16.75	07	1.75	400
Point-of-sale terminal	353	88.25	46	11.50	01	0.25	400

Source: Calculated from Field Survey

Table 5.61 shows the data related to the distance of the physical, and digital financial infrastructures. Among the total 400 respondents, 320 respondents (80 per cent) have easy access to the bank branches. Because, for them, the bank branches are available within 1 to 3 km. Bank branches are available within 3 to 5 km for 73 respondents (18.25 per cent) and more than 5 km for seven respondents (1.75 per cent). ATM counters are available within 1 to 3 km for 326 respondents (81.50 per cent), 3 to 5 km for 67 respondents (16.75 per cent) and more than 5 km for 7 respondents (1.75 per cent). Likewise, Point of sale terminals are available within 1 to 3 km for 353 respondents (88.25 per cent), 3 to 5 km for 46 respondents (11.50 per cent) and more than 5 km for 1 respondent (0.25 per cent). The majority of the respondents have easy access to the main physical and digital financial infrastructures. Shorter distances to these infrastructures can contribute to financial inclusion and convenience for daily transactions. The decrease in the number of infrastructures with increasing distance may pose challenges for residents living farther away, highlighting potential areas for improvement in financial accessibility.

Table: 5.62

Distance of Bank Branch (Kilometre)

Sl. No.	District	1-3 KM		3-5 KM		5 Above		Total
		No.	%	No.	%	No.	%	
1	Wayanad	106	68.83	41	26.62	7	4.55	154
2	Malappuram	141	87.58	20	12.42	0	0.00	161
3	Ernakulam	73	85.88	12	14.12	0	0.00	85
	Total	320	80.00	73	18.25	07	1.75	400

Source: Calculated from Field Survey

Suppose each district and each digital financial infrastructure are considered separately. In that case, it is clear from the data that the majority of the respondents have the availability of bank branches within 3 km for all three selected districts. In Wayanad, accessibility is lower than in other districts. Only 68.83 per cent of the respondents have accessibility within 3 km. About 26.62 per cent have the availability of banks within 3 to 5 km, and 4.55 per cent have the availability of banks for more than 5 km. However, Malappuram and Ernakulam have higher accessibility compared to Wayanad. About 87 per cent of respondents in Malappuram and 85.88 per cent in Ernakulam have easy access to banks. Nobody reported that the banks are located above 5 km. This is because Wayand is more highly rural-populated than Malappuram and Ernakulam. As a hilly and forested region, Wayanad lacks infrastructure like roads and transportation networks. This can impede the establishment and maintenance of bank branches. Wayanad is also known for its biodiversity, and environmental regulations might restrict infrastructure construction in certain areas. Compliance with such laws can limit the establishment of bank branches in environmentally sensitive zones.

Table: 5.63

Distance of ATM (Kilometre)

Sl. No.	District	1-3 KM		3-5 KM		5 Above		Total
		No.	%	No.	%	No.	%	
1	Wayanad	112	72.73	35	22.73	7	4.55	154
2	Malappuram	141	87.58	20	12.42	0	0.00	161
3	Ernakulam	73	85.88	12	14.12	0	0.00	85
	Total	326	81.50	67	16.75	7	1.75	400

Source: Calculated from Field Survey

Similar to the case of bank branches, ATM counters are also more easily accessible in both Malappuram and Ernakulam than in Wayanad. About 87 per cent of the respondents of Malappuram and 85 per cent of Ernakulam have the availability of ATM within 3 km. Only 72 per cent of the respondents of Wayanad have the availability of ATM within 3 km. About 22 per cent of the respondents have to approach ATM counters for 3 to 5 km.

Table: 5.64

Distance of Point-of-sale Terminal (Kilometre)

Sl. No.	District	1-3 KM		3-5 KM		5 Above		Total
		No.	%	No.	%	No.	%	
1	Wayanad	132	85.71	14	9.09	1	0.65	154
2	Malappuram	141	87.58	20	12.42	0	0.00	161
3	Ernakulam	77	90.58	12	14.12	0	0.00	85
	Total	350	87.5	46	11.50	1	0.25	400

Source: Calculated from Field Survey

The distance of point-of-sale terminals in different districts of Wayanad, Malappuram and Ernakulam is given in Table 5.64. It is reported that the majority of the respondents have the availability of point-of-sale terminals within a range of 1 to 3 km in all chosen districts (87.5 per cent). In Ernakulam, 90.58 per cent of the respondents have easy accessibility. About 57.58 of the respondents from Malappuram also have the availability of the POS within a range of 3 km. Compared to these two districts, Wayanad has the lowest accessibility (85.71 per cent).

CHAPTER 6

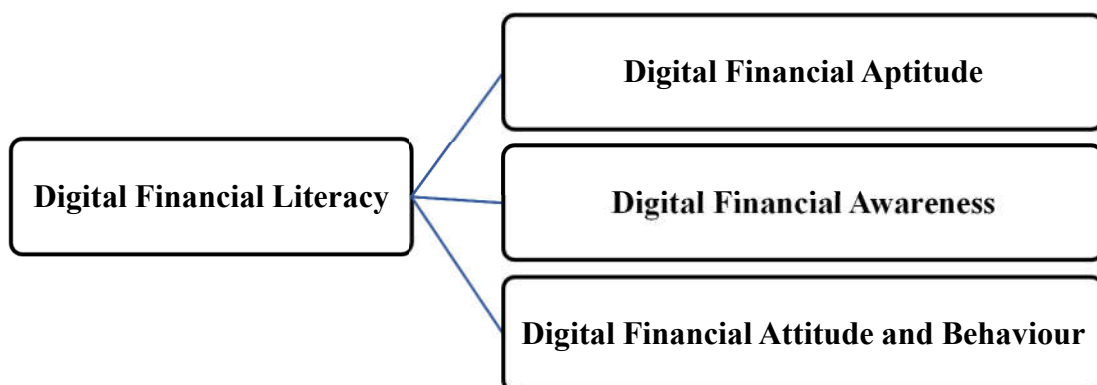
ESTIMATION OF DIGITAL FINANCIAL LITERACY & ITS DETERMINANTS

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- 6.1. *Estimation of Digital Financial Literacy*
 - 6.2. *Determinants of Digital Financial Literacy*
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Digital financial literacy is the "ability and skill of individuals required to use digital tools and technologies to manage their financial resources efficiently and effectively". It comprises understanding and using digital devices, applications, and services like online banking and digital apps for financial activities, such as saving, borrowing, budgeting, investing, and digital transactions and financial decisions. Promoting digital financial literacy is critical to empower people to make informed and reliable financial decisions in the digital age. This chapter mainly focuses on measuring the digital financial literacy of the respondents in the rural areas of Kerala. It also tries to identify the determinants and challenges of digital financial literacy and specify reasons for digital financial illiteracy.

6.1 Estimation of Digital Financial Literacy

A composite index of digital financial literacy named the Digital Financial Literacy Index (DFLI) is constructed to assess its extent using several dimensions of digital financial literacy. For estimating the DFLI, the study used three core dimensions, namely Digital Financial Aptitude, Digital Financial Awareness and Digital Financial Attitude and Behaviour (Lyons & Kass-Hanna, 2021; Lyons et al., 2019; Morgan & Trinh, 2020; OECD, 2018; Saini, 2019). By estimating each dimension separately, each individual's aggregate digital financial literacy index is calculated using a simple arithmetic mean calculation. DFLI value lies between zero and one, where a value close to zero shows the lowest level of digital financial literacy, and a close to one shows the highest level of digital financial literacy.



6.1.1 District-wise Digital Financial Literacy

The district-wise digital financial literacy index of Kerala with respect to the selected districts of Wayanad, Malappuram, and Ernakulam is presented in Table 6.1. The survey found an overall digital financial literacy index of 0.39, showing a just satisfactory level of digital financial literacy in the rural areas of the state. Malappuram has the highest digital financial literacy index (0.45) compared to other districts, followed by Ernakulam (0.39). The differences in digital financial literacy among districts could be attributed to various factors, such as income and educational levels, rural and urban factors, access to technologies, and inadequate awareness. It shows that the respondents from the Malappuram district have comparatively higher knowledge, skills, and usage of various digital financial tools and technologies, which may be because of higher levels of income, better access to technologies, and more financial inclusion. Wayanad lags behind with a comparatively lower index (0.34), showing the respondents' lower understanding and usage of these tools. The remote and rural nature of Wayanad compared to Malappuram and Ernakulam can contribute significantly to the lower digital financial literacy in Wayanad. Remote areas often face many challenges like infrastructure development, including limited access to reliable electricity, internet connectivity and mobile network coverage, and banking facilities.

Table: 6.1

District-wise Digital Financial Literacy Index (DFLI)

Sl. No.	District	DFLI	F	Sig.
1	Wayanad	0.34		
2	Malappuram	0.45	3.930	0.020
3	Ernakulam	0.39		
	Overall	0.39		

Source: Calculated from Field Survey Data

The study used a statistical test called Analysis of Variance (ANOVA) to compare the digital financial literacy index value and determine statistically significant differences across the districts.

Null Hypothesis (H0): There is no significant difference in the digital financial literacy index value among the three districts.

Based on the ANOVA analysis, the F-Statistic is calculated as 3.930, indicating a statistically significant difference in the digital financial literacy index among the three districts. The p-value of 0.020 is less than the chosen significance level of 0.05. Therefore, the study fails to accept the null hypothesis and concludes that there exists a statistically significant difference in the digital financial literacy index among the three districts.

Table: 6.2

Digital Financial Literacy Index (DFLI) - Wayanad

Sulthanbathery Taluk				Mananthavady Taluk			
Panchayat	Male	Female	Total	Panchayat	Male	Female	Total
Nenmeni	0.28	0.32	0.30	Thavinhal	0.38	0.19	0.27
Noolpuzha	0.42	0.36	0.39	Thondernadu	0.42	0.44	0.43
Total	0.33	0.34	0.33	Total	0.40	0.28	0.33

Source: Calculated from Field Survey Data

Wayanad is the most rurally populated district in Kerala. Among the select districts, the respondents from Wayanad district have the lowest digital financial literacy index compared to Malappuram and Ernakulam. The rural backwardness, comparatively lower standard of living, and the approach to modern technology cause the respondents to lack awareness and usage. Thus, there is a lower digital financial literacy in the district. Various factors, including economic conditions, infrastructure, education, healthcare, and overall development can influence it. Sultanbathery taluk is the most rural populated, and Mananthavady is the least rural populated taluk from Wayanad district. Both taluks reported an index of 0.33. Noolpuzha has the highest index from Sulthanbathery taluk (0.39) and Thondernad from the Mananthavady taluk (0.43).

Table: 6.3

Digital Financial Literacy Index (DFLI) - Malappuram

Panchayat	Nilambur Taluk			Panchayat	Ponnani Taluk		
	Male	Female	Total		Male	Female	Total
Vazhikadavu	0.58	0.47	0.53	Veliyankode	0.50	0.28	0.43
Chungathara	0.39	0.36	0.38	Nannamukku	0.53	0.32	0.42
Total	0.49	0.43	0.46	Total	0.51	0.31	0.43

Source: Calculated from Field Survey Data

Malappuram is a moderately rural populated district, but the study found the highest digital financial literacy index. Table 6.3 gives the taluk and panchayat-wise data related to the digital financial literacy index of the Malappuram district. The respondents from the Malappuram district are more interested in using modern digital technologies and tools and more aware of digitalized financial tools and services. Malappuram is often recognized for its high access to technology, the internet, digital devices and the tech-savvy population. The most rural populated taluk of Malappuram district, Nilambur, reported the highest digital financial literacy index (0.46), and Ponnani, the least rural populated, has a comparatively low index (0.43). Vazhikadavu panchayat from Nilambur taluk (0.53) and Veliyankod panchayat from Ponnani taluk (0.43) obtained a high digital financial literacy index.

Table: 6.4

Digital Financial Literacy Index (DFLI) - Ernakulam

Panchayat	Muvattupuzha Taluk			Panchayat	Kanayannur Taluk		
	Male	Female	Total		Male	Female	Total
Paipra	0.39	0.41	0.40	Edakkattuvayal	0.45	0.49	0.48
Kalloorkad	0.30	0.14	0.21	Kunnathunadu	0.65	0.23	0.36
Total	0.35	0.32	0.34	Total	0.52	0.38	0.44

Source: Calculated from Field Survey Data

Table 6.4 shows the taluk-panchayat-wise digital financial literacy index of the least rurally populated district, Ernakulam. Like the other two districts, two taluks were selected based on rural population. They were Muvattupuzha and Kanayannur. Kanayannur's digital financial literacy index (0.44) was higher than

Muvattupuzha's (0.34). Two panchayats were selected from these two taluks each. From these four panchayats, Edakkattuvayal panchayat (0.48) of Kanayannur taluk was reported to have the highest DFLI index, even more than the aggregate of the Kanayannur taluk (0.44). Paipra scored more from Muvattupuzha taluk.

6.1.2 Age-wise Digital Financial Literacy Index

Age and digital financial literacy have inverse relationships. It is expected that digital financial literacy decreases with an increase in age. Compared to youngsters, the ability to understand and use modernized digital tools and services could be less for older people. They may be less familiar, and using digital technologies, especially payment methods and devices, is inconvenient. Young people are more technically savvy, comfortable, and convenient when using digital financial services. Table 6.5 provides the best explanation for this trend.

Table: 6.5

Age-wise Digital Financial Literacy Index (DFLI)

Age Groups	Wayanad	Malappuram	Ernakulam	DFLI	F	Sig.
18-30	0.605	0.798	0.778	0.729	130.078	0.000
31-45	0.486	0.501	0.442	0.483		
46-60	0.079	0.152	0.123	0.112		
60 Above	0.015	0.001	0.001	0.004		
DFLI	0.33	0.45	0.36	0.39		

Source: Calculated from Field Survey Data

The age-wise distribution of the digital financial literacy index is given in Table 6.5. When the overall and district-wise indexes are considered for analysis, young individuals aged 18-30 have the highest digital financial literacy index compared to other groups. When the aggregate index for the three districts is considered, it is 0.729 for the age group of 18-30. The age group of 31-45 reported an index of 0.483, followed by the age group of 46-60 (0.112). The lowest digital financial literacy index was reported by the old age respondents above 60 (0.004). Malappuram district has reported the highest index for all age groups. The study

used the analysis of variance (ANOVA) test to compare the digital financial literacy index value among the different age groups.

Null Hypothesis (H0): There is no significant difference in the digital financial literacy index value among the age groups.

The F-Statistic is estimated at 130.078, and the significance (Sig.) value associated with it is 0.000. It indicates a statistically significant difference in digital financial literacy among these age groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial literacy index value among these age groups.

6.1.3 Gender-wise Digital Financial Literacy

The gender-wise digital financial literacy index is given in Table 6.6. The male respondents from Malappuram have recorded the highest digital financial literacy index (0.5), followed by the male respondents from Ernakulam (0.43) and Wayanad (0.35). Therefore, it is clear that the male respondents have a higher index than females across three districts (0.43). The greater opportunities for higher education, better affordability, accessibility, and acceptance of modern technologies, as well as more financial freedom and higher financial inclusion, all lead to a higher digital financial literacy index of the male population.

Table: 6.6

Gender-wise Digital Financial Literacy Index (DFLI)

District	Wayanad	Malappuram	Ernakulam	DFLI	t.	Sig.
Male	0.35	0.5	0.42	0.43	2.288	0.023
Female	0.31	0.38	0.36	0.34		
DFLI	0.34	0.45	0.39	0.39		

Source: Calculated from Field Survey Data

The study used an independent samples t-test to compare the digital financial literacy index value among the genders (e.g., male and female) and determine if there are statistically significant differences between males and females.

Null Hypothesis (H0): There is no significant difference in the digital financial literacy index value among genders (Male and Female).

The Independent Samples t-test results provide evidence of gender-based differences in digital financial literacy. It shows a statistically significant difference in the financial literacy index scores between male and female respondents. The p-value of .023 is less than 0.05; therefore, the study rejects the null hypothesis, indicating the observed difference in the mean index value of males and females, and there is a significant variation in the digital financial literacy index between the two gender groups. The mean difference of approximately 0.09 indicates that, on average, male respondents have a slightly higher financial aptitude index score than female respondents.

6.1.4 Religion-wise Digital Financial Literacy

Religion-wise, the Digital Financial Literacy Index (DFLI) for the selected districts of Wayanad, Malappuram, and Ernakulam in Kerala is presented in Table 6.7. The survey analysis found that, on aggregate, Christians have scored the highest digital financial literacy index (0.47). They scored an index of 0.52 in the district of Wayanad, 0.56 in Malappuram, and 0.39 in Ernakulam districts. Muslims have scored 0.41 on aggregate. Compared to the Christians of Malappuram and Ernakulam, the Christians from Wayanad scored the lowest DFL index (0.34). Educational improvements, a positive attitude towards financial matters, and better acceptance and usage of digitalized tools and services have led to a better increase in the digital financial literacy of Christians.

Table: 6.7

Religion-wise Digital Financial Literacy Index (DFLI)

Religion	Wayanad	Malappuram	Ernakulam	DFLI	F	Sig.
Hindu	0.27	0.43	0.36	0.34		
Muslim	0.36	0.45	0.35	0.41	2.101	0.124
Christian	0.52	0.56	0.39	0.47		
DFLI	0.33	0.45	0.36	0.39		

Source: Calculated from Field Survey Data

The study used an ANOVA test to compare the digital financial literacy index value of the three religious groups and determine if they have statistically significant differences.

Null Hypothesis (H₀): There is no significant difference in the digital financial literacy index value among the three religious groups (Hindus, Muslims and Christians).

Based on the ANOVA analysis, the F-Statistic is calculated as 2.101, indicating a statistically significant difference in the digital financial literacy index among the three religious groups. The p-value of 0.124 is less than the chosen significance level of 0.05. Therefore, the study rejects the null hypothesis and concludes that there is a statistically significant difference in the digital financial literacy index among the three religious groups.

6.1.5 Caste-wise Digital Financial Literacy

The caste-wise digital financial literacy index of the selected districts is given in Table 6.8. The respondents belonged to the General, SC, ST, or OBC categories. From the data, it is clear that the General category scored the highest index (0.43), followed by OBC (0.41) and SC (0.39). Scheduled tribes have reported the lowest index of 0.19. The General and OBC communities are generally well-educated and financially sound. Their standard of living is much better than that of other groups. Also, they have a positive attitude towards financial management and better saving behaviours. Therefore, they are too far ahead in digital financial literacy, and they accept the digitalized tools and services and use these products and services effectively. Nowadays, the Scheduled caste groups are also not far behind. Currently, they are getting a lot of reservations, leading to improvements in their education, financial status, and standard of living. These caused them to have a better attitude towards modern digitalized tools and technologies and better usage of them.

Table: 6.8

Caste-wise Digital Financial Literacy Index (DFLI)

Caste	Wayanad	Malappuram	Ernakulam	DFLI	F	Sig.
General	0.34	0.64	0.45	0.43	4.135	0.007
SC	0.31	0.46	0.06	0.39		
ST	0.16	0.27	0.001	0.19		
OBC	0.39	0.45	0.32	0.41		
DFLI	0.33	0.45	0.36	0.39		

Source: Calculated from Field Survey Data

The study used a statistical test ANOVA to compare these caste groups' digital financial literacy index values and determine whether statistically significant differences exist.

Null Hypothesis (H0): There is no significant difference in the digital financial literacy index value among the various caste groups (General, OBC, SC, ST).

Based on the ANOVA analysis, the F-Statistic is calculated as 4.135, indicating a statistically significant difference in the digital financial literacy index among the caste groups. The p-value of 0.007 is less than the chosen significance level of 0.05. Therefore, the study rejects the null hypothesis and concludes that there is a statistically significant difference in the digital financial literacy index among the four caste groups.

6.1.6 Marital Status-wise Digital Financial Literacy

The marital status-wise distribution of the digital financial literacy index is given in Table 6.9. Among the surveyed respondents were married, unmarried, widowed and separated individuals. The survey reports show that the digital financial literacy index of married individuals is the highest. They reported an index of 0.75, much higher than other marital groups. The positive attitude, financial independence, and better financial management led to higher digital financial literacy of the married respondents. There is a wide gap between each group in their scores. Unmarried individuals scored an index of 0.32, widowed scored 0.19,

followed by the separated respondents. Separated individuals reported the lowest DFL index (0.07).

Table: 6.9

Marital Status-wise Digital Financial Literacy Index (DFLI)

Marital Status	Wayanad	Malappuram	Ernakulam	DFLI	F	Sig.
Married	0.64	0.82	0.85	0.75	29.521	0.000
Unmarried	0.26	0.38	0.32	0.32		
Widowed	0.31	0.03	0	0.19		
Separated	Nil	0.07	Nil	0.07		
DFLI	0.33	0.45	0.36	0.39		

Source: Calculated from Field Survey Data

Null Hypothesis (H0): There is no significant difference in the financial literacy index value among the marital groups.

The F-Statistic is estimated as 29.521, and the significance (Sig.) value associated with the F-Statistic is 0.000. It indicates a statistically significant difference in digital financial literacy among the marital status groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial literacy index among the four marital groups.

6.1.7 Level of Education-wise Digital Financial Literacy

Education plays a crucial role in enhancing the digital financial literacy of individuals. The literature shows a positive correlation between educational level and digital financial literacy. Education provides the foundational knowledge to understand financial and digital concepts, terminology, aptitude and principles. A well-educated individual can use and utilize various digital financial tools and technologies. It helps to become proficient at using digital tools and platforms. Education allows individuals to create the digital literacy skills required for online banking, investment platforms, and other financial technologies.

Table: 6.10

Educational Level-wise Digital Financial Literacy Index (DFLI)

Educational Level	Wayanad	Malappuram	Ernakulam	DFLI	F	Sig.
Illiterate (0)	0.02	0.01	0	0.016		
L.P (1);	0.011	0.033	0.02	0.023		
U.P (2);	0.239	0.302	0.117	0.243	83.813	0.000
SS/HSS (3)	0.271	0.4	0.351	0.345		
Graduate (4);	0.708	0.748	0.745	0.731		
Above (5)	0.829	0.906	0.857	0.879		
Over all DFLI	0.33	0.45	0.36	0.39		

Source: Calculated from Field Survey Data

Table 6.10 shows the education-wise digital financial literacy index. The table separately provides data related to the respondents' digital financial literacy index with various educational qualifications from the three chosen districts and an aggregate score for all communities. The digital financial literacy index increases with higher levels of education, showing a positive correlation between digital financial literacy and education. Illiterate respondents have much lower indexes than higher-educated respondents. It is 0.02 for Wayanad, 0.01 for Malappuram, and 0 for Ernakulam, and it scored an aggregate average index of 0.016. The respondents with schooling up to a lower primary level had an index higher than illiterate respondents. They have achieved an index of 0.011 for Wayanad, 0.033 for Malappuram, 0.02 for Ernakulam, and 0.023 in aggregate. When the educational level increases, the index value also increases. The graduated and above-graduated respondents scored much higher indexes (0.731 for graduated and 0.879 for above-graduated in aggregate). Education is the basic tool to improve digital financial literacy by providing the knowledge, skills, and confidence needed to handle the digital economic system. It encourages and empowers people to make informed decisions in financial matters, be aware of risks, and contribute to their financial well-being. The study used the analysis of variance test to compare the digital financial literacy index value among the different educational groups.

Null Hypothesis (H0): There is no significant difference in the digital financial literacy index value among the educational groups.

The F-Statistic is estimated at 83.813, and the significance (Sig.) value associated with it is 0.000. It indicates a statistically significant difference in digital financial literacy among these educational groups. The p-value is less than the selected significance level of 0.05; therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial literacy index among these educational groups.

6.1.8 Occupation-wise Digital Financial Literacy

Generally, occupation and digital financial literacy are positively related. Individuals who are well-occupied tend to have higher digital financial literacy. Occupations with higher income levels and more stable employment, like government jobs, may provide individuals with increased access to digital banking and financial services. Well-occupied individuals will have higher education or will be skilled with any knowledge, so automatically, they will have a positive attitude and behaviour toward the modernized digital tools and services, and it will be more convenient to use the digitalized tools to minimize the time and cost. Therefore, these individuals will have higher digital financial literacy than casual labourers or no-job individuals. This positive correlation between occupation and digital financial literacy is very precisely exhibited in the survey report of this study.

Table: 6.11

Occupation-wise Digital Financial Literacy Index (DFLI)

Occupation	Wayanad	Malappuram	Ernakulam	DFLI	F	Sig.
No Job	0.235	0.402	0.313	0.315		
Agri.	0.105	0.11	0.058	0.099		
Casual Labour	0.571	0.462	0.467	0.498	32.007	0.000
Salaried	0.662	0.901	0.755	0.807		
Self Employed	0.717	0.613	0.427	0.585		
DFLI	0.33	0.45	0.36	0.39		

Source: Calculated from Field Survey Data

Table 6.11 shows the occupation-wise digital financial literacy index for Malappuram, Ernakulam, and Wayanad districts. For the purpose of the study, the occupation was classified into five categories: agriculture, casual labour, salaried, self-employed, and no job. The survey results show that the salaried respondents from all districts have the highest DFL index, and the agricultural workers from all three districts have the lowest DFL index. Individuals with no job are either students, retired, or seeking better jobs. Some jobless respondents are highly literate digitally, and some could be better at digital financial literacy. The self-employed respondents also have higher digital financial literacy in all districts. It is 0.717 in Wayanad, 0.613 in Malappuram, and 0.427 in Wayanad. Casual labourers also have a moderate index, with an overall index of 0.498. An ANOVA test is used to compare the digital financial literacy of the different occupational groups.

Null Hypothesis (H₀): There is no significant difference in the digital financial literacy index value among the occupational groups.

The F-Statistic is estimated at 32.007, and the significance (Sig.) value associated with it is 0.000. It indicates a statistically significant difference in digital financial literacy among these educational groups. The p-value is less than the selected significance level of 0.05. Therefore, the study rejects the null hypothesis and concludes that a statistically significant difference exists in the digital financial literacy index among these occupational groups.

6.2 Determinants of Digital Financial Literacy

Financial literacy has taken on a new dimension in the digital landscape with the emergence of digital financial tools and platforms. Digital financial literacy is the ability of a person to engage and effectively utilize digital financial services to make informed financial decisions, access financial services and products, and manage their economic well-being. Recognizing the importance of this skill, researchers and policymakers are keenly interested in understanding the factors that influence an individual's digital financial literacy.

The ordered logistic regression model has been used to examine the factors contributing to variations in digital financial literacy. By analyzing a diverse set of variables, including age, gender, family size, employment status, education level, income, and more, this model seeks to identify key factors that impact the likelihood of possessing adequate digital financial literacy among the respondents. By finding these determinants, policymakers and other stakeholders can formulate appropriately targeted interventions, policies, and educational programs to bridge the digital financial literacy gap and empower people from all walks of life to reap the benefits of the digital economy. The dependent variable considered here is ordinal in nature, where an index value between zero to 0.25 is taken low digital financial literacy, followed by 0.26 to 0.5 as a satisfactory level of digital financial literacy, 0.51 to 0.75 as good digital financial literacy, and finally, 0.76 to 1 is taken as excellent digital financial literacy.

Null Hypothesis (H0): There is no association between socio-economic and demographic variables and digital financial literacy.

Table: 6.12

Socio-economic and Demographic Determinants of Digital Financial Literacy

		Number of obs = 400					
		LR chi2(30) = 357.22					
		Prob > chi2 = 0.0000					
		Pseudo R2 = 0.6830					
Log-likelihood = -238.72905							
DFL							
		Odds ratio	Std. err.	z	P> z	[95% conf. interval]	
Age		.8693701	.0173051	-7.03	0.000	.8361059	.9039577
Gender	Female	1 (base)					
	Male	1.5638027	.1868665	-1.73	0.044	.9144458	1.979566
Family Size		.6800594	.071337	-3.68	0.000	.5536781	.8352882
MNREGA	No	1 (base)					
	Yes	3.700498	1.572899	3.08	0.002	1.608631	8.512632
Land Holding		1.618091	1.405024	2.94	0.003	1.664068	2.481604
Religion	Hindu	1 (base)					
	Muslim	3.907596	1.823885	1.39	0.164	1.574041	5.599671

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	Christian	2.175195	1.082471	2.75	0.006	1.690108	2.562483
	General	1 (base)					
Caste	SC	.7326253	.3905188	-0.58	0.559	.2577254	2.082603
	ST	.8000882	.4881149	-0.37	0.015	.2420137	2.645062
	OBC	.2681927	.2496364	-1.41	0.157	.0432654	1.662469
	Unmarried	1 (base)					
Marital Status	Married	.4610367	.2419597	-1.48	0.040	.1648204	1.289615
	Widowed	.2922875	.3375144	-1.07	0.287	.0304018	2.810101
	Separated	.9474929	.0000333	-0.00	0.997	.2375179	1.5937211
	Illiterate	1 (base)					
Education	LP	2.038343	2.434627	0.01	0.092	.42910401	4.8602104
	UP	1.402893	1.672949	0.01	0.011	.14693048	3.7592001
	HS/HSS	2.646460	1.093646	0.01	0.021	1.5920502	4.3050261
	Graduate	3.305881	1.941034	0.01	0.010	1.7892648	5.7320118
	Above	3.005861	1.073041	0.01	0.045	.90488103	6.1590020
Occupation	No Job	1 (base)					
	Agriculture	.8561887	.4990845	-0.27	0.790	.2731442	2.683782
	Casual Labour	1.934982	.487885	1.62	0.000	.9875377	3.656518
	Salaried	4.140255	2.015742	2.01	0.000	2.515421	8.081356
	Self Employed	4.56323	2.762382	1.38	0.001	3.249977	6.141282
Ration	APL	1 (base)					
	BPL	.7061923	.2732844	-0.90	0.039	.3307672	1.507737
	Andyodaya	.6682084	.842659	-0.810	0.218	.188522	1.423623
House	Kutchha	1 (base)					
	Semi-Pacca	2.589508	1.408612	0.01	0.591	.0936401	4.046930
	Pacca	3.761238	1.803012	0.01	0.991	.16029396	5.389401
Ownership	Rented	1 (base)					
	Owned	4.529766	2.334808	0.01	0.094	1.5720275	7.7920212
Income	<15000	1 (base)					
	15001-30000	2.775976	1.220184	2.32	0.020	1.172922	6.569955
	30001-45000	4.085003	2.25852	2.55	0.011	1.382227	9.107273
	>45000	4.222072	2.458801	2.47	0.013	1.348382	8.122021

Source: Calculated from Field Survey Data

Four hundred observations were used for ordinal logistic regression analysis. LR chi2(30) is the likelihood ratio chi-square statistic for the given model, indicating goodness of fit and used to test the overall significance of the model. A larger LR chi-squared value (357.22) generally implies that the model is the best fit for the given data. The p-value is associated with the chi-squared statistic, indicating the overall significance of the model. The associated p-value (Prob>chi2) is 0.0000,

which signifies that the LR chi-squared statistic is statistically significant. In other words, the overall model, with all the included predictor variables, provides a significantly better fit to the data. Pseudo R-squared, a goodness-of-fit measure or a pseudo-coefficient of determination, is used in ordinal logistic regression to examine how well the model appropriate the observed data. The Pseudo R-squared value in this model is approximately 0.6830, which means that the independent variables included in the model collectively explain about 68.30 per cent of the changes in digital financial literacy.

Age

The variable age of the respondent has a significant impact on digital financial literacy. The odds ratio for the factor Age is .8693701, which means that for every one-year increase in age, the odds of having a higher level of digital financial literacy decrease by approximately 13.1 (1-0.8693701) per cent. The p-value (0.000) suggests this relationship is a statistically significant effect. This negative relationship between age and digital financial literacy is justified in different manners. Youngsters are more likely to have digital financial literacy than middle and old-age people. In other words, older individuals are less likely to be digitally financially literate. They may be less familiar and inconvenient to use digital technologies, especially payment methods and devices, than younger individuals. Young people are more technically savvy, comfortable, and convenient when using digital financial services. Older individuals may find adapting to digital financial technologies challenging due to limited exposure, cognitive inertia, and resistance to change. Digital financial services require familiarity with smartphones, internet banking, and fintech applications. While older people frequently use traditional banking methods and may find digital interfaces challenging to use, younger people grew up with technology. Because they worry about fraud, scams, and privacy violations, older people are typically less trusting of digital financial services and more risk averse. They might favour cash transactions and in-person banking over mobile or Internet financial platforms. In addition, younger people are more likely to have completed formal education incorporating digital skills, increasing their

proficiency with fintech solutions. Today, many jobs require digital literacy, encouraging younger workers to adopt digital finance.

Gender

The odds ratio for the variable gender of the respondent is 1.5638027, indicating that men have 56.38 per cent more chance to have a higher level of digital financial literacy than female. The odds ratio suggests that being male (compared to being female) is associated with higher odds of being digitally financially literate. The p-value (0.044) indicates that the relationship between gender and digital financial literacy is statistically significant at the typical significance level of 0.05. Historically, women have often reported lower access to and usage of digital technologies, which could impact their digital financial literacy. The sociocultural norms in rural areas can influence how men and women engage with technology and finances. In some societies, traditional gender roles might limit women's exposure to digital platforms and financial decision-making. Women generally have lower digital financial literacy due to limited access to digital devices, internet connectivity, and financial education compared to men. In many societies, especially in developing economies, men are likelier to own smartphones and have independent financial accounts. Men are more likely to work in formal sectors, so they are more accustomed to using digital financial platforms because they frequently receive digital payments (bank transfers, online salary credits). Women are less exposed to digital banking and fintech solutions because they are more likely to work in informal or unpaid labour, particularly in rural areas.

Family Size

The variable, Family Size, does have a robust, statistically significant association with digital financial literacy. The odds ratio of this variable is 0.6800594, which suggests that with an increase in family size by one unit, the odds of having higher levels of digital financial literacy decrease by approximately 32.00 per cent. However, the p-value associated with the family size is 0.000, which is below the conventional significance level of 0.05. It suggests that the relationship between family size and digital financial literacy is statistically significant, and the

observed association could not be due to random variation in the data. Larger families often have higher financial responsibilities, leading to limited disposable income for digital financial services, education, or technology adoption. Households with many dependents prioritize essential expenses (food, healthcare, education) over investments in digital financial tools, internet access, or financial training. In large families, resources like smartphones, computers, and internet access are often shared, reducing individual exposure to digital financial services. Children or younger members may use digital devices more for entertainment (e.g., gaming, social media) than financial learning, limiting the household's financial literacy. In extended or joint families, financial decisions are often made by senior members (who may be less digitally literate). Younger members might be more tech-savvy, but their involvement in financial decision-making is limited, affecting their exposure to digital financial transactions. Rural large families face challenges like poor internet access, lower education levels, and traditional financial practices, worsening their digital financial literacy levels.

MGNREGS

The predictor variable 'MGNREGS' cardholder has an odds ratio of 3.700498 and a p-value of 0.002. The result suggests that individuals who have participated in the MGNREGS have approximately 3.70 times more likely to move higher levels of digital financial literacy than those who haven't participated while holding other variables constant. It represents the participation or impact of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) on the likelihood of an individual being digitally financially literate. The associated p-value of 0.002 indicates a statistically strong significant relationship between MGNREGS participation and digital financial literacy. In other words, there's evidence to suggest that the impact of MGNREGS on digital financial literacy is not likely due to random chance. This could be attributed to various factors related to the program, since this program is a primary source of income many people, it leads to exposure to technology, training, or increased awareness about financial matters through participation in employment and development projects. Under MNREGS, wages are

credited directly into bank accounts, encouraging workers to open and use bank accounts, ATMs, and mobile banking services. Regular exposure to digital banking transactions helps MNREGS workers develop familiarity with financial technology. MGNREGS participants must often visit banks, Business Correspondents (BCs), or post offices to withdraw wages. These frequent interactions eventually help them understand digital financial procedures, including using PINs, transaction authentication, and mobile banking applications. Participation in MGNREGS significantly increases digital financial literacy by increasing exposure to digital banking, financial transactions, and government-led financial inclusion programs. The rural digital financial divide can be further closed by fortifying the digital payment systems used in MNREGS wage disbursement.

Landholding

Landholding is another factor considered for analyzing the determinant of digital financial literacy. This factor appeared a statistically significant association with digital financial literacy. The p-value associated with landholding is 0.003, greater than the conventional significance level of 0.05. The odds ratio of variable landholding is 1.618091, indicating that individuals with larger landholdings are 1.62 times more likely to have higher digital financial literacy compared to those with smaller or no landholdings. It implies that there might be a positive relationship between higher landholding and digital financial literacy. Since the p-value is below the significance threshold of 0.05, this indicates that the observed association could not be due to random variation and shows a strong statistical relationship between the size of landholding and digital financial literacy. Due to their frequently higher and steadier incomes, landowners are better able to invest in digital financial tools such as online financial services, UPI, and mobile banking. They are more likely to be exposed to financial institutions, have bank accounts, and have access to credit—all of which are factors that go into developing digital financial literacy. Landowners engage with banks for loans, subsidies, and agricultural credit schemes (e.g., Kisan Credit Card, crop insurance, and direct benefit transfers). These interactions familiarize them with digital transactions, including internet banking,

ATM usage, and mobile payments. Thus, landowners are therefore more likely to use digital financial services because they have greater financial exposure than labourers without land. Due to increased income, more interactions with financial institutions, government subsidies, and access to digital financial infrastructure, landholding dramatically raises digital financial literacy.

Religion

Another variable considered for analysis is religion. Keeping the 'Hindu' as the reference category shows no statistically significant associations with the Muslim religions. The odds ratio of 3.907596 for the Muslim religion suggests that, compared to individuals who identify as Hindu, Muslims are approximately 3.91 times more likely to have higher digital financial literacy than Hindus, but the p-value (0.164) suggests that this result is not statistically significant. However, the p-value associated with the Muslim is 0.164, more significant than the conventional significance level of 0.05. It indicates that the observed effect might not be statistically significant. However, the odds ratio for Christians is 2.175195, suggesting that, compared to Hindus, Christians have approximately 2.17 times higher likelihood of having higher digital financial literacy than Hindus, and this result is statistically significant. Religious communities often differ in access to education, financial inclusion, and exposure to technology, especially in rural areas. Christian communities in Kerala have higher literacy rates due to missionary-run educational institutions emphasising formal education and skill development, contributing to higher digital financial literacy. Different religious groups have varying levels of engagement with formal banking systems. Muslim communities may have cultural and financial practices (e.g., preference for cash-based transactions due to religious beliefs regarding interest) that slow down digital financial adoption despite their higher odds ratio in this study. Many Christian-majority institutions and NGOs promote digital and financial education, leading to higher adoption of digital financial services. Muslim communities may face barriers to financial inclusion due to religious concerns about interest (Riba), which can affect their willingness to use traditional banking services. Thus, religion influences

digital financial literacy through education, financial inclusion, banking habits, and cultural attitudes toward technology. Christians show significantly higher digital financial literacy, while Muslims also have higher odds but with less statistical significance.

Caste

The caste variable contains multiple categories (SC, ST, and OBC) with General as the reference category. The odds ratio for the SC category is .7326253, which suggests that individuals from Scheduled Caste are approximately 0.33 times less likely to have a higher level of digital financial literacy compared to individuals from the General caste. However, the p-value associated with the SC category is 0.559, greater than the conventional significance level of 0.05. This suggests that the relationship might not be statistically significant. Similarly, the odds ratio for the ST category is .8000882, indicating that individuals from the Scheduled Tribe are less likely to have a higher level of digital financial literacy compared to individuals from the general caste. The p-value is 0.015, below the conventional significance level of 0.05, indicating a statistically significant relationship. The odds ratio for the OBC category is .2681927. It suggests that individuals from Other Backward Classes are approximately 0.26 times less likely to have a higher level of digital financial literacy compared to individuals from the general caste. However, the p-value associated with this category is 0.157, greater than 0.05, reflecting that the relationship is not statistically significant. Among the provided categories, only the ST category shows a statistically significant association with digital financial literacy. SC, ST, and OBC communities have historically faced social and economic marginalization, leading to lower access to quality education, employment opportunities, and financial services. Digital financial literacy is strongly tied to education and economic stability, both of which have been historically lower in marginalized caste groups. Many SC and ST populations live in rural areas with low banking penetration, where traditional financial services are less accessible. Due to historical discrimination, marginalized castes may have lower trust in formal financial institutions, leading to lower digital financial adoption. Higher-paying

white-collar jobs (which demand financial literacy) are more common in the General category. At the same time, SC, ST, and OBC individuals are more likely to be engaged in informal, low-wage employment. Lower-income individuals are less likely to engage with digital financial services, as they often rely on cash-based transactions. Thus, SC, ST, and OBC individuals are less likely to have high digital financial literacy than the General category.

Marital Status

The marital status variable contains multiple categories, with unmarried as the reference category. The results of ordered logistic regression suggest that marital status may play a role in influencing digital financial literacy. The married category has an odds ratio of 0.4610367, indicating that married individuals are 53.9 per cent less likely to have higher digital financial literacy than unmarried individuals. This relationship is statistically significant at a p-value of 0.040. Married individuals, especially in traditional households, may rely on their spouse for financial decisions, leading to less direct engagement with digital financial tools. Time constraints due to household and family responsibilities may reduce their learning and usage of digital financial services. Gender norms in some societies may result in men handling financial matters, leaving married women with lower financial literacy. Digital education and access to technology may be impacted by traditional gender roles in marriage. Due to societal or cultural factors, women may have less access to digital resources than men.

The widowed category has an odds ratio of 0.2922875, suggesting that widowed individuals are 70.8 per cent less likely to have higher digital financial literacy than unmarried individuals. However, this relationship is statistically insignificant, since the p-value of 0.287. Many widowed individuals, particularly older women, may have been financially dependent on their spouse and may struggle to adapt to digital finance post-widowhood. Older widowed individuals often lack exposure to digital technology, making it harder for them to adopt online banking and digital payments.

Separated individuals have nearly the same likelihood of higher digital financial literacy as unmarried individuals (not significant, $p = 0.997$), but it is statistically not significant. The odds ratio for separated individuals (0.9475) is close to 1, indicating that their digital financial literacy levels are comparable to those of single people. People who are separated might have to handle their own money on their own, which would require them to learn digital and financial skills. They may have experienced financial hardship, pushing them to learn and use digital financial services for managing expenses efficiently.

Thus, the highest level of digital financial literacy is found among unmarried people. Because of their traditional financial roles or dependence on their spouses, married and widowed people are less likely to be digitally financially literate. Probably because they handle their own money, separated people are comparable to unmarried people.

Education

The variable education is a significant factor in determining digital financial literacy. The ordinal logistic regression analysis of education as an independent variable implies that higher education levels are associated with significantly higher chances of being digitally financially literate. People who are illiterate in this study are considered the reference category against which other education categories (lower and upper primary, high school and higher secondary, and graduation and above) are compared. The odds ratio for people with education up to lower primary (LP) levels is 2.038343. Individuals with LP education are 2.04 times more likely to have higher digital financial literacy than illiterate individuals. The p-value was 0.092, indicating that this effect was statistically not significant at the typical significance level of 0.05. Similarly, the odds ratio for people with education up to upper primary (UP) levels is 1.402893. Individuals with UP education are 1.40 times more likely to have higher digital financial literacy than illiterate individuals, and statistically significant results were found ($p = 0.011$). Individuals with LP and UP education are more likely to be digitally financially literate than illiterate individuals, but the effect is weaker compared to higher education levels. Basic

literacy helps them to understand simple digital financial tools like mobile banking and UPI payments. However, limited financial and technological exposure restricts their ability to use advanced financial services.

People with education at the senior and higher secondary (SS/HSS) levels have an odds ratio of 2.646460. It indicates that they have significantly (2.64 times) higher odds of having higher levels of digital financial literacy than illiterate individuals. The p-value was 0.021, reflecting that this result was statistically significant at the typical significance level of 0.05. Similarly, those with graduate and above the level of education have an odds ratio of 3.305881. It indicates significantly higher odds of having a higher level of digital financial literacy than illiterate people. This effect was statistically significant at the typical significance level of 0.05.

Thus, education significantly increases digital financial literacy, with higher education levels showing a stronger effect on digital financial literacy. They may have enough knowledge and skills needed for digital financial activities. Graduates and higher secondary educated individuals are the most likely to be digitally financially literate. Illiterate individuals and those with only primary education are at the highest risk of digital financial exclusion.

Occupation

The variable occupation includes multiple categories: agriculture, casual labour, salaried, and self-employed with no Job as the reference category. Among the provided categories, self-employed and salaried categories show statistically significant associations with digital financial literacy. The odds ratio for the agriculture category is 0.8561887, suggesting that individuals in the agriculture occupation are less likely to have higher digital financial literacy than unemployed individuals. However, the p-value associated with this category is 0.790, greater than the conventional significance level of 0.05, which suggests that the relationship might not be statistically significant. Rural farmers frequently do not have access to digital infrastructure or formal banking. The agricultural sector is dominated by cash-based transactions, which lessens the demand for digital financial literacy.

Despite the availability of services like Kisan Credit Cards (KCC), older farmers might not feel comfortable making payments online.

The odds ratio for the casual labour category is 1.934982, indicating that individuals in casual labour are approximately 93 per cent more likely to have higher digital financial literacy than unemployed individuals. The p-value is 0.000, below the conventional level, suggesting the relationship is statistically significant. Many government schemes, such as MNREGA, direct benefit transfers (DBT), and subsidies, are now linked to digital banking. Mobile-based financial services (like UPI and digital wallets) have increased accessibility for informal sector workers. The odds ratio for salaried people is 4.140255, which indicates that individuals in salaried professions are 4.14 times more likely to have higher digital financial literacy than unemployed individuals. The p-value is 0.000, below the conventional significance level of 0.05, indicating a statistically significant association. Salaried people frequently use digital financial services because their salaries are deposited into bank accounts. Many independent contractors use digital payment gateways, UPI, and mobile banking to conduct business online. Employers frequently provide financial technology training to salaried staff members, enhancing their digital financial literacy.

Similarly, the odds ratio for the self-employed category is 4.56323, which signifies that self-employed individuals have significantly higher odds of having a higher level of digital financial literacy than those with no job. The p-value associated with the self-employed class is 0.001, which is very low, indicating a highly statistically significant association. Thus, the self-employed and salaried categories show statistically significant associations with digital financial literacy. This could be due to a stable and regular source of income, frequent engagement with digital financial transactions, or other factors associated with these types of occupations. Thus, salaried and self-employed individuals have the highest digital financial literacy, while agricultural workers and unemployed individuals lag behind. Casual labourers benefit from government digital financial initiatives, increasing their digital financial literacy.

Type of Ration

The variable ration refers to government-issued ration cards that provide access to subsidized food and essential commodities. The variable ration has been categorized into below poverty line (BPL) and Antyodaya, with above the poverty line (APL) as the reference category. The odds ratio for the BPL category is .7061923, which indicates that people categorized as BPL are 29.4 per cent less likely to have higher digital financial literacy than APL households. The p-value (0.039) is statistically significant, indicating that this difference is unlikely to be due to random chance. Therefore, being in the BPL category is associated with significantly lower odds of digital financial literacy. Similarly, the negative coefficient for Antyodaya suggests that people under the Antyodaya category also have lower log odds of being digitally financially literate than those APL. The odds ratio of .6682084 indicates that people categorized as Antyodaya have roughly 33.18 per cent odds of being digitally financially literate compared to those categorized as APL. However, the p-value (0.218) is not statistically significant at a conventional significance level (e.g., 0.05). Families that fall into the Antyodaya and BPL categories frequently struggle to meet their basic needs and might not be able to give digital financial services priority. It may be more difficult for these groups to use digital financial services because they do not have bank accounts, smartphones, or internet access. Digital financial literacy may decline in lower-income households due to their limited access to digital banking tools and financial education. Even with programs that encourage financial inclusion, the poorest people continue to face obstacles like lack of awareness, lack of income trust issues, and digital and financial illiteracy. Thus, the analysis concludes that people categorized as BPL are significantly less likely to be digitally financially literate than APL. In contrast, the difference between Antyodaya and APL is not statistically significant in this analysis.

Level of Income

The variable income is statistically significant in predicting digital financial literacy. The result indicates that higher income categories are associated with

increased odds of moving toward higher levels of digital financial literacy. The p-values associated with each income category are very low, indicating that income plays a role in influencing digital financial literacy. The variable income has been categorized into different income brackets, such as less than 15000, 15001-30000, 30001-45000, and greater than 45001. The ordinary logistic regression model assesses how these income categories relate to an individual's likelihood of a higher level of digital financial literacy. Given that <15000 is the reference category for the Income variable, the odds ratio for the income category 15001-30000 is 2.775976, which means that individuals with this income have approximately 2.77 times more likely to have a higher level of DFL compared to those earning less than 15,000. The very low p-value of 0.020 indicates that this effect is statistically significant. The odds ratio for the income category 30001-45000 is 4.085003, which suggests that individuals with this income group have significantly higher odds of being digitally financially literate than individuals with incomes less than 15000. The very low p-value of 0.011 indicates that this effect is highly statistically significant. Similarly, the odds ratio for the income category > 45001 is 4.222072, which means that individuals with incomes greater than 4.22 times more likely to have a higher level of DFL compared to those earning less than ₹15,000. The p-value of 0.013 indicates that this effect is highly statistically significant. Higher-income groups have more chances to use digital banking services, own smartphones, and have internet access, all of which increase their level of digital financial literacy. Higher-income groups of people frequently possess more education, which enhances their comprehension of online financial services. People with higher incomes have more digital financial experience because they use banking, investments, and online payments more frequently. Higher earners are more likely to look for investment opportunities, financial literacy programs, and security measures for digital payments. Thus, each higher income category result shows progressively higher odds of digital financial literacy. This suggests that the likelihood of digital financial literacy increases as income increases and shows a statistically significant relationship.

The study identifies key socio-economic and demographic determinants of digital financial literacy. Age negatively impacts digital financial literacy, with younger individuals being more literate. Males exhibit higher digital financial literacy than females. Larger family sizes reduce digital financial literacy, while

MGNREGS participation significantly enhances it. Landholding and higher education levels positively influence digital financial literacy. Married individuals show lower digital financial literacy than unmarried ones. Salaried and self-employed individuals have higher digital financial literacy compared to unemployed individuals. Higher-income groups demonstrate greater digital financial literacy. Christianity Religion and ration status BPL also impact digital financial literacy. Caste, widowed/separated status, and house type show no significant influence on digital financial literacy.

6.3 Impact of Digital Financial Literacy on Usages of Digital Financial Services

The study also investigates the role of digital financial literacy in enhancing the usage of digital financial services. The study employs a structural equation modelling (SEM) approach to examine the relationships between the latent variables and to explore the direct and indirect effects of these digital financials on digital financial services usage. By employing SEM, the study provides a robust framework for understanding the intricate relationships between the dimensions of digital financial literacy, namely digital financial aptitude, attitude and behaviour, and awareness of financial services and products and risks and their influence on the usage of digital financial services. The study utilizes primary data collected from rural households in the three selected districts of Kerala using a structured questionnaire on digital financial aptitude, attitude and behaviour, and awareness of financial services and products and risks of respondents, as well as their usage of digital financial services.

Reliability Test and Model Fit

The Cronbach Alpha value of 0.953 indicates an excellent internal consistency and reliability of the survey items used to measure the construct, as shown in Table 6.13. This high level of reliability improves the validity of the results and the credibility of the inferences drawn from the sample data. The calculation of Cronbach's alpha was based on 40 items, which is a relatively large number and ensures a comprehensive representation of the measured construct.

Table: 6.13

Reliability Statistics

Cronbach Alpha	Cronbach Alpha based on Standardized Items	No. of Items
0.953	0.960	40

Source: Calculated from Field Survey Data

The goodness-of-fit statistics for the Structural Equation Model (SEM) used in this study are shown in Table 6.14. In the Likelihood Ratio, the Chi-square model vs saturated is ($\chi^2_{ms}(730) = 13,334.238, p = 0.059$) considers the discrepancy between the observed and predicted covariance matrices in the model. The p-value shows the probability of getting the chi-square value if the model is correct. A value higher than 0.05 suggests the model fits the data well. The p-value of 0.059 (greater than 0.05) indicates that the model fits the data reasonably well, as the discrepancy between the model and the data is not statistically significant. Similarly, the Chi-square baseline vs saturated is $\chi^2_{bs}(780) = 31,895.199, p = 0.0771$, which shows that the baseline model also has a marginal fit, with the p-value above the 0.05 threshold. Similar to the above, this p-value assesses the fit of the baseline model. A higher value (>0.05) might not be a significant improvement. The root Mean Square Error of Approximation (RMSEA) equals 0.0208, which measures the error of approximation in the model per degree of freedom. An RMSEA value below 0.05 indicates excellent fit, and values between 0.05 and 0.08 suggest reasonable fit. In this case, the value of 0.0208 suggests that the model approximates the observed data well. The confidence interval shows the uncertainty around the RMSEA estimate. A lower bound of 0.000 indicates the model has very little error. Similarly, a pclose value of 0.0872 is above the typical threshold of 0.05, meaning there is sufficient evidence to conclude that the model fits the data closely at the population level.

Akaike's Information Criterion (AIC) is 1639.313, used to compare different models, with a lower AIC showing a better model fit relative to alternative models. The AIC value can be used to compare models, with lower values indicating better fit. Bayesian Information Criterion (BIC) is 10,929.803. A lower BIC indicates a better fit, and the value of 10,929.803 suggests that this model is parsimonious and

fits well. Comparative Fit Index (CFI) values range from 0 to 1, with values closer to 1 indicating a better fit. A CFI value above 0.795 is considered acceptable. With a CFI of 0.795, the model is close to the acceptable threshold but still slightly below, suggesting a moderate and sub-optimal, but not excellent, fit. Tucker-Lewis Index (TLI), like CFI, should ideally be above 0.90 for a good fit. A value of 0.767 suggests room for improvement. Standardized Root Mean Square Residual (SRMR) values below 0.08 are considered a good fit. An SRMR of 0.075 indicates that the model fits reasonably well, with minimal residual differences between observed and predicted data. With a Coefficient of Determination (CD) value of 0.890, the model explains 89 per cent of the variance in the observed data, which indicates a very good fit. It means that the model captures the relationships among the variables very well, leaving only 11 per cent of the variance unexplained, which is attributed to random error or factors not included in the model.

Table: 6.14
Model Fit (SEM)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(730)	13334.238	Model vs. saturated
p > chi2	0.059	-
chi2_bs(780)	31895.199	Baseline vs. saturated
p > chi2	0.0673	-
Population Error		
RMSEA	0.0208	Root mean squared error of approximation
90% CI lower & upper bound	0.000	-
pclose	0.0872	Probability RMSEA ≤ 0.05
Information Criteria		
AIC	10410.913	Akaike's information criterion
BIC	10929.803	Bayesian information criterion
Baseline Comparison		
CFI	0.795	Comparative fit index
TLI	0.767	Tucker–Lewis index
Size of Residuals		
SRMR	0.075	Standardized root mean squared residual
CD	0.890	Coefficient of determination

Source: Calculated from Field Survey Data

Figure: 6.1

Role of Digital Financial Literacy on Usage of Digital Financial Services:
SEM Results

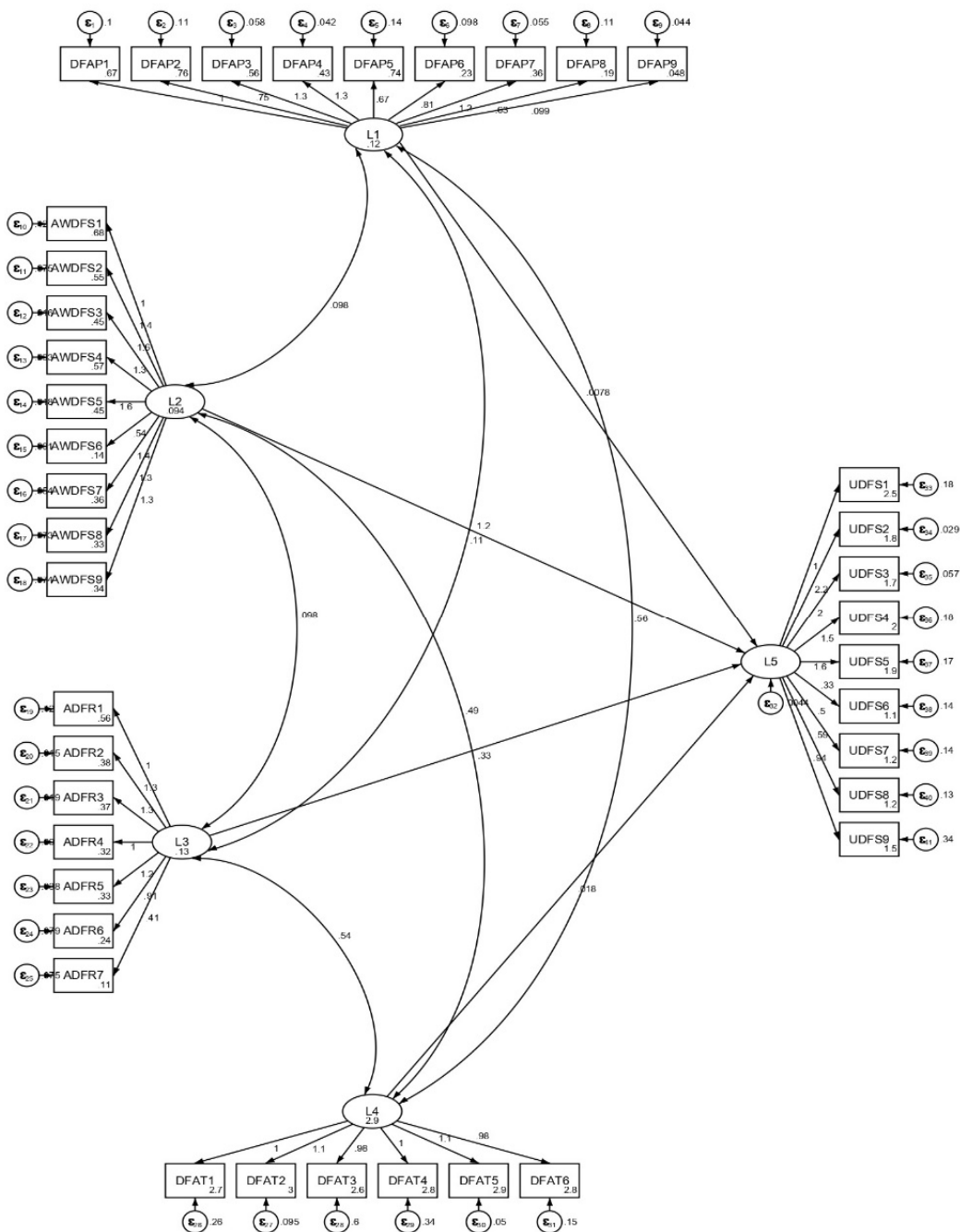


Table: 6.15
Effects of Independent Variables on Usages of Digital Financial Services

Variables	Coefficient	std. err	z	P> z 	[95% conf. interval]	
Digital Financial Aptitude	0.0078379	0.1080485	0.07	0.042	0.2196091	0.2039333
Awareness Digital Financial Services	1.166643	0.1162262	10.04	0.000	0.9388438	1.394442
Awareness Digital Financial Risks	0.3253307	0.0485952	6.69	0.000	0.2300858	0.4205755
Digital Financial Attitude & Behaviour	0.0180669	0.0200029	0.90	0.366	0.0572718	0.021138

Source: Calculated from Field Survey Data

Table 6.15 summarizes the effects of various independent variables on the dependent variable, Usage of digital financial services.

Effects of Digital Financial Aptitude on Usages of Digital Financial Services

Digital financial aptitude is the proficiency in operating smartphones, laptops, or tablets that customers commonly use to access digital financial services. It is the ability of an individual to navigate mobile banking apps, set up accounts, and troubleshoot basic issues. The coefficient of 0.0078 indicates a small positive effect of digital financial aptitude on using digital financial services. With a p-value of 0.042, this positive effect is statistically significant, which indicates that individuals with higher digital financial aptitude are slightly more likely to use digital financial services. However, the low magnitude suggests that increasing digital financial aptitude alone might not substantially increase the usage of digital financial services. Thus, digital financial aptitude positively facilitates digital financial services usage, but its effect is relatively small compared to awareness-related factors. However, it is an essential building block for sustained and confident use of digital financial services, especially with awareness campaigns and supportive infrastructure.

Effects of Awareness of Digital Financial Services on their Usages

Another dimension of digital financial literacy is the awareness of digital financial services delivered by service providers. It demonstrates how individuals are knowledgeable about the availability, functionality, and applications of various financial products and services that are offered through digital platforms. It reflects the understanding of digital financial services by the people like mobile and online banking, digital wallets, Unified Payments Interface (UPI), internet banking, electronic fund transfers, etc... The coefficient of 1.1666 shown in Table 6.15 suggests a strong positive effect of awareness of digital financial services on their usage. It means that a 1-unit increase in awareness leads to an increase of approximately 1.17 units in the usage of digital financial services. The large effect size of this dimension highlights the key role of awareness in encouraging the adoption and usage of financial services. The variable is relatively highly significant with a p-value of 0.000, indicating that greater awareness of respondents leads to a considerable increase in the adoption and usage of digital financial services. Individuals who are more aware of digital financial services are likely to adopt and use these services in their financial activities. The p-value confirms that the effect is statistically significant. It means the relationship is unlikely to have occurred by chance and demonstrates a meaningful link between awareness and usage of digital financial services. The 95 per cent confidence interval suggests that the true value of the coefficient lies between 0.9388 and 1.3944, further supporting the strong and consistent impact of awareness. Many individuals, particularly in rural areas, may not even know that digital financial services options exist or how they can benefit from using them. Awareness is a necessary precursor to the effective use of digital financial aptitude. Without awareness, even those with technical skills might not use digital financial services.

Effects of Awareness of Digital Financial Risk and Control on Usages

Awareness of digital financial risks and control refers to understanding the potential dangers and vulnerabilities of digital financial services. These risks can include awareness about cyber security risks such as phishing, pharming, spyware,

etc, mechanisms to prevent personal data leakages, updation of transaction applications, and complaint mechanisms. The coefficient of 0.3253 (Table 6.15) shows a moderate positive effect of awareness of digital financial risks on usages of digital financial services. This positive coefficient indicates that greater awareness of digital financial risks is associated with higher usage of digital financial services. While risks might initially seem like a deterrent, this result suggests that informed users who are aware of risks take precautions and are still willing to engage with digital financial services. The p-value of 0.000 of this association confirms the relationship is statistically significant, meaning the effect is not due to random chance. Awareness of digital financial risks is an important determinant of digital financial services usage. Individuals who are more aware of the risks associated with digital financial services are more likely to use them, possibly due to informed decision-making. A positive relationship between awareness of risk factors involved with digital financial transactions and usage of digital financial services suggests that users who are more aware of risks are likely better equipped to mitigate them. Understanding these risks and how to address them fosters trust in digital financial systems. This awareness helps users distinguish between genuine and fraudulent services, reducing fear and encouraging adoption.

Effects of Digital Financial Attitude & Behaviour on Usage of Digital Financial Services

Digital financial attitude and behaviour are theoretically considered the most critical dimensions of digital financial literacy. It refers to the mindset, perceptions, and actions of individuals toward the usage of digital financial services. It generally captures the beliefs, habits, opinions, and predispositions about the usefulness, convenience, and reliability of digital financial services. Positive attitudes typically translate into a willingness to explore and use digital financial tools. The coefficient of 0.0181 (Table 6.15) indicates a minimal positive effect of digital financial attitude and behaviour on using digital financial services. While a positive attitude and proactive behaviour contribute towards adoption and usage, they are not as impactful as other factors, such as awareness of digital financial services or risk

awareness. However, the p-value of 0.366, indicates that this effect is not statistically significant, which means that attitude and behaviour do not have a meaningful impact on the usage of digital financial services in this study. It indicates that any observed effect might be due to chance and not a strong or reliable predictor of digital financial services usage. While having a positive attitude toward digital financial services is generally important, it may not be enough to significantly impact usage. Other factors include skills and awareness, which play a more critical role. Even if people have a positive attitude, external barriers like poor internet connectivity, lack of infrastructure, or high costs may limit their usage of digital financial services. Positive attitudes may not translate into action if individuals are unaware of digital financial services or lack the necessary digital and financial aptitude to use them. Thus, this dimension shows a weak and statistically insignificant relationship with using digital financial services.

Thus, this section examined the association between the various dimensions of digital financial literacy and the usage of digital financial services among rural households in Kerala. Out of all these dimensions, the awareness of digital financial services emerged as the most significant predictor of usage of digital financial services. A high and statistically significant coefficient underscores the critical role of knowledge and familiarity with digital financial services platforms in encouraging adoption. Similarly, awareness of digital financial risks also demonstrated a positive and statistically significant influence on the usage of digital financial services. This finding highlights the importance of equipping users with knowledge of potential risks and mitigation strategies associated with usage. The dimension of digital financial aptitude showed a moderately positive effect on the usage of digital financial services, which indicates that skills and familiarity with digital financial tools contribute to the usage of financial services. However, this relationship is weaker than awareness-based factors, suggesting that skill-building efforts should complement broader awareness initiatives. Finally, digital financial attitude & behaviour exhibited a minimal and statistically insignificant effect on digital financial services usage. This result suggests that while positive attitudes and

proactive behaviours are important, they do not independently drive adoption without adequate awareness, aptitude, and access to infrastructure.

6.3.1 Effects of Indicators on Latent Variable Digital Financial Aptitude

Digital financial aptitude (DFAP) is a latent variable, which means it is not directly observable and is measured through a set of indicators (observed variables). Table 6.16 presents the relationship between nine indicators (DFAP1 to DFAP9) and the latent variable of digital financial aptitude in the measurement model. The coefficients indicate how strongly each indicator reflects the latent construct of DFAP, with a higher coefficient suggesting a stronger contribution. V1 variable serves as the reference point for all other indicators. It indicates the fundamental importance of understanding digital transfer techniques as a core competency of digital financial aptitude. Its constrained coefficient (1) establishes a benchmark to scale other indicators. The second variable, V2 (DFAP2), i.e. Knowing how to use debit and credit cards, significantly contributes to digital financial aptitude but is moderately less impactful compared to the baseline. This indicator represents the ability of respondents to use debit and credit cards for financial transactions. It has a moderately high contribution to digital financial aptitude (0.7535), suggesting that understanding card-based payments is essential for digital financial literacy. While highly significant ($p=0.000$), its contribution is slightly lower than other indicators like mobile wallets or Internet banking. The third indicator measures the knowledge and ability of respondents to use mobile or digital wallets for transactions. One of the high coefficients among the indicators (1.2671) shows a strong contribution to digital financial aptitude, which is highly significant. The high coefficient indicates that understanding and using mobile or digital wallets is crucial to digital financial literacy. The fourth indicator (DFAP4) assesses the ability of respondents to conduct Internet banking transactions, such as transferring funds, checking account balances, and paying bills through online banking platforms. This indicator has the highest coefficient among all indicators (1.3169) of digital financial aptitude, demonstrating its significant contribution towards the latent variable and found to be statistically significant. As Internet banking generally serves as the backbone of digital financial services, it reflects that individuals who can perform these transactions efficiently are better equipped to engage in the digital financial system.

Table: 6.16

Effects of Indicators on Latent Variable Digital Financial Aptitude

No	Indicator	Coefficient	Std. err	z	P> z	[95% conf. interval]	
V1	DFAP1			1 (constrained)			
	_cons	.6701	.0235106	28.50	0.000	.62392	.71608
V2	DFAP2	.7535149	.0612539	12.30	0.000	.6334594	.8735703
	_cons	.7625	.0212776	35.84	0.000	.7207968	.8042032
V3	DFAP3	1.26711	.0699967	18.10	0.000	1.129919	1.404301
	_cons	.5625	.0248039	22.68	0.000	.5138852	.6111148
V4	DFAP4	1.316913	.0714939	18.42	0.000	1.176787	1.457038
	_cons	.43	.0247538	17.37	0.000	.3814835	.4785165
V5	DFAP5	.6703982	.063768	10.51	0.000	.5454153	.7953812
	_cons	.74	.0219317	33.74	0.000	.6970146	.7829854
V6	DFAP6	.8126213	.0617146	13.17	0.000	.691663	.9335796
	_cons	.2275	.0209609	10.85	0.000	.1864174	.2685826
V7	DFAP7	1.227192	.0701321	17.50	0.000	1.089736	1.364648
	_cons	.365	.0240715	15.16	0.000	.3178207	.4121793
V8	DFAP8	.6299135	.0576818	10.92	0.000	.5168592	.7429678
	_cons	.19	.019615	9.69	0.000	.1515552	.2284448
V9	DFAP9	.0985534	.0317276	3.11	0.000	.0363684	.1607383
	_cons	.0475	.0106353	4.47	0.000	.0266552	.0683448

Source: Calculated from Field Survey Data

The fifth indicator (DFAP5) evaluates the ability to operate Automated Teller Machines (ATMs) for activities like withdrawing cash, checking account balances, and depositing funds. The moderate coefficient (0.6704) indicates that ATM usage is an important, at the same time, not the most critical contributor to Digital Financial Aptitude. While ATMs are one of the earliest forms of digital financial services, their role in digital financial literacy is somewhat foundational compared to newer technologies like mobile wallets or Internet banking. This result indicates that while ATM usage remains relevant, its relative contribution to digital financial aptitude is lower in comparison to modern, more advanced digital financial

tools. The DFAP6 indicator assesses the ability to use Unstructured Supplementary Service Data (USSD) to transfer money, which does not require internet connectivity. This method is particularly relevant in rural areas with limited internet access. The moderate coefficient (0.8126) indicates a meaningful contribution to digital financial aptitude and was found statistically significant. The ability to transfer money using USSD actually emphasizes the importance of offline digital financial tools, especially in contexts with infrastructural constraints in rural areas. The moderate coefficient of this indicator reflects that knowledge of USSD-based transactions is vital for improving access to financial services in underserved regions.

The DFAP7 measures the ability of a respondent to make payments using point-of-sale (POS) devices. POS is commonly used in retail settings to facilitate card-based transactions. The high positive coefficient (1.2272) of this indicator stresses its substantial contribution towards the latent variable, which is found to be statistically significant. Proficiency in using POS systems is a critical indicator, as POS transactions are considered one of the primary methods of cashless payments in the country. This indicator has a high coefficient, reflecting the importance of this skill, which enables the respondent to participate in a cashless payment system. Promoting awareness and familiarity with POS devices can significantly drive the adoption of digital payment methods, particularly in areas where such infrastructure is readily available. The DFAP8 indicator evaluates understanding of direct benefit transfer (DBT) mechanisms, such as the Aadhaar Payments Bridge System (APBS). These payment systems actually facilitate the smooth transfer of various government subsidies or benefits directly to the bank accounts of concerned beneficiaries since they avoid exploitation. The moderate coefficient value (0.6299) of this indicator captures the notable contribution, which is found to be statistically significant. Knowledge about DBT and APBS transactions is essential in rural, remote, and underserved regions of the state. These systems of payments are instrumental in guaranteeing an inclusive financial system and the efficient transfer of various government welfare schemes. The last indicator assesses the knowledge of the Aadhaar Enabled Payment System (AEPS), which allows individuals to perform basic banking and financial transactions using their Aadhaar number and biometric authentication. The relatively low coefficient (0.0986) indicates a smaller but

significant contribution towards the latent variable of digital financial aptitude, which is statistically significant. While AEPS is a vital digital financial service for individuals in rural areas, the low coefficient suggests that awareness and understanding of AEPS are currently limited among respondents.

Thus, out of nine indicators, internet banking transactions (DFAP4), Mobile/Digital Wallets (DFAP3), and POS payments (DFAP7) have been found to have the highest coefficients, indicating their critical role in shaping digital financial aptitude. At the same time, indicators like Debit/Credit card usage (DFAP2), USSD-based transfers (DFAP6), and ATM usage (DFAP5) are significant but comparatively less impactful. However, DBT/ABPS knowledge (DFAP8) and AEPS (DFAP9) have relatively lower coefficients, presenting they are secondary contributors to digital financial aptitude.

6.3.2 Effects of Indicators on Latent Variable Awareness about Digital Financial Services

The first indicator (AWDFS1) assesses the awareness of having a bank account, whether it is a current or savings account or one under the Jan Dhan Yojana scheme. Bank accounts are a foundational element for accessing digital financial services. It is a gateway for individuals to engage with other digital financial services tools, making awareness of such accounts critical to financial inclusion. The significant value reflects a strong and essential contribution to the awareness of digital financial services (AWDFS). The constrained coefficient indicates that this indicator has been standardized as a baseline for comparison with other indicators. The second indicator (AWDFS2) measures the awareness and understanding of mobile wallet platforms, such as Paytm, M-pesa, MobiKwik, and PayU. These wallets allow users to store funds electronically and make transactions like paying bills, transferring money, and purchasing goods and services without using cash or traditional banking methods. The coefficient value of 1.357987 (Table 6.17) indicates that awareness of mobile wallets significantly contributes to the latent variable of awareness of digital financial services. The positive and statistically significant z-value of 15.05 ($p = 0.000$) confirms that this awareness is critical in building familiarity with digital financial services. The relatively high coefficient suggests that mobile wallets are a prominent feature of the digital financial

landscape and well-recognized financial transaction tools. These findings show that mobile wallets are an effective medium for promoting digital financial inclusion, particularly in the remote regions of the state with limited access to traditional banking services. The third indicator (AWDFS3) evaluates awareness and familiarity with internet banking services. The indicator Internet banking is a vital component of digital financial services, offering convenience and accessibility without the requirement of physically visiting a bank. The coefficient of 1.569836 indicates that internet banking has a strong positive and significant impact on the latent variable awareness of digital financial services. This large coefficient reflects that awareness of Internet banking is a key driver of digital financial literacy. It highlights the role of web-based banking platforms in promoting digital financial inclusion.

Table: 6.17

Effects of Indicators on Latent Variable Awareness about Digital Financial Services

No.	Indicator	Coefficient	Std. err	z	P> z	[95% conf. interval]	
V10	AWDFS1	1 (constrained)					
	_cons	.68	.0233238	29.15	0.000	.6342862	.7257138
V11	AWDFS2	1.357987	.0902289	15.05	0.000	1.181141	1.534832
	_cons	.5475	.0248869	22.00	0.000	.4987225	.5962775
V12	AWDFS3	1.569836	.0934235	16.80	0.000	1.386729	1.752942
	_cons	.4525	.0248869	18.18	0.000	.4037225	.5012775
V13	AWDFS4	1.272818	.0889326	14.31	0.000	1.098513	1.447123
	_cons	.5675	.0247711	22.91	0.000	.5189495	.6160505
V14	AWDFS5	1.563854	.0932748	16.77	0.000	1.381038	1.746669
	_cons	.4475	.0248618	18.00	0.000	.3987718	.4962282
V15	AWDFS6	.5434807	.0587738	9.25	0.000	.4282861	.6586752
	_cons	.1375	.0172187	7.99	0.000	.1037519	.1712481
V16	AWDFS7	1.374161	.0884015	15.54	0.000	1.200897	1.547425
	_cons	.3625	.0240361	15.08	0.000	.3153901	.4096099
V17	AWDFS8	1.252934	.0852094	14.70	0.000	1.085927	1.419942
	_cons	.3275	.0234651	13.96	0.000	.2815093	.3734907
V18	AWDFS9	1.269426	.0861656	14.73	0.000	1.100544	1.438307
	_cons	.3425	.0237273	14.43	0.000	.2959954	.3890046

Source: Calculated from Field Survey Data

The fourth indicator (AWDFS4) evaluates awareness and familiarity with banking cards, such as credit and debit cards. These cards facilitate accessing and utilizing digital financial services, which enable transactions like cash withdrawals, online payments, point-of-sale (POS) purchases, and other electronic fund transfers. The coefficient value of 1.272818 indicates a strong and significant association between awareness of banking cards and the latent variable awareness of digital financial services. The z-value of 14.31 and a p-value of 0.000 confirm the significant contribution of this indicator in explaining the awareness of digital financial services. It underscores the critical role of banking cards in promoting digital financial inclusion; given their widespread use and versatility, awareness of effectively using and managing these cards significantly impacts engagement with financial services. The fifth indicator (AWDFS5) measures the awareness and familiarity of respondents with mobile phone payment systems, including UPI (Unified Payments Interface), USSD (Unstructured Supplementary Service Data), AEPS (Aadhaar Enabled Payment System), and JAM (Jan Dhan-Aadhaar-Mobile integration). These payment systems enable users to perform digital transactions conveniently via their mobile phones, even in low-connectivity environments, such as rural areas. The high coefficient value of 1.563854 signifies a robust and positive relationship between awareness of mobile phone payment systems and the latent variable awareness of digital financial services. The z-value of 16.77 and the p-value of 0.000 confirm a statistically significant contribution of this indicator towards awareness. Mobile phone payments are particularly transformative in underserved areas, as they provide secure and efficient means to transfer money, pay bills, and access government subsidies (e.g., through JAM). The sixth indicator (AWDFS6) evaluates awareness and understanding of various modes of mobile banking, including IVR (Interactive Voice Response), SMS (Short Message Service), WAP (Wireless Application Protocol), USSD (Unstructured Supplementary Service Data), STK (SIM Toolkit), and mobile apps. The coefficient value of 0.5434807 indicates a positive relationship between awareness of mobile banking modes and the latent variable Awareness of Digital Financial Services. Although the coefficient is lower

than other indicators like internet banking or mobile wallets, it is statistically significant (p-value of 0.000). Although the awareness of mobile banking modes significantly contributes to digital financial awareness, it is less influential than other indicators such as mobile phone payments or internet banking.

The seventh indicator (AWDFS7) captures awareness of electronic fund transfer systems like NEFT (National Electronic Funds Transfer), RTGS (Real-Time Gross Settlement), and IMPS (Immediate Payment Service). NEFT and RTGS are primarily used for larger transfers and scheduled payments, while IMPS enables instant transfers, even outside banking hours. The coefficient value of 1.374161 signifies a strong positive relationship between awareness of electronic fund transfer methods and the latent variable awareness of digital financial services (AWDFS). This high coefficient, along with a z-value of 15.54 and a p-value of 0.000, indicates that awareness of NEFT, RTGS, and IMPS significantly contributes to digital financial awareness. The eighth indicator (AWDFS8) is the awareness of the Direct Benefit Transfers (DBT) Aadhaar-based Payment System (ABPS). These systems are key components of India's efforts to promote financial inclusion. The coefficient value of 1.252934 indicates a strong positive relationship between awareness of DBT/ABPS and the latent variable awareness of digital financial services. With a z-value of 14.70 and a p-value of 0.000, it confirms that awareness of DBT/ABPS significantly contributes to the awareness of digital financial services. It underscores the importance of government-driven digital financial initiatives in building awareness and trust in digital financial systems. The last indicator (AWDFS9) evaluates QR Code Banking awareness. It is widely used for merchant payments, utility bills, and other transactions. It eliminates the need for manual input of account or payment details, making transactions faster and more convenient. The coefficient value of 1.269426 signifies a strong positive relationship between awareness of QR Code Banking and the latent variable awareness of digital financial services. This high positive coefficient, with a significant p-value, confirms that awareness of QR codes significantly contributes to awareness of digital financial services. It received widespread acceptance due to its simplicity of scanning a QR code to complete transactions, which is recognizable by merchants and consumers.

Thus, out of nine indicators, internet banking, mobile phone payments, and electronic fund transfers were found to be the strongest contributors to awareness, reflecting their prominence in digital financial ecosystems. Similarly, factors like QR Code Banking and Direct Benefit Transfers are moderate contributors and demonstrate growing importance, especially in rural and underserved areas of the state. However, the foundational mode of mobile banking is a weak contributor and still plays a critical role for specific populations.

6.3.3 Effects of Indicators on Awareness of Digital Financial Risk & Control

Seven indicators are considered for estimating the latent variable of Digital Financial Risk and control. Table 6.18 represents the effects of various indicators (ADFR1 to ADFR7) on the latent variable of Digital Financial Risk and control. The first indicator is awareness of cyber security risks like phishing, pharming, spyware, etc. (ADFR1). This indicator has been constrained to a coefficient of 1 for model comparison purposes. It highlights the importance of awareness of cybersecurity risks such as phishing, pharming, and spyware in mitigating digital financial risks. The high significance ($P < 0.000$) and strong z-value suggest that this is a critical foundational element for understanding and controlling financial risks in the digital space. The second one is the Mechanism to prevent data leakages (ADFR2). The awareness of mechanisms that prevent data leakages is a highly influencing factor of digital financial risks. The high coefficient of 1.317751 suggests that individuals knowledgeable about or actively use such mechanisms contribute significantly to the overall control of financial risks. Here, the strong z-value (19.51) and high significance ($P < 0.000$) indicate the critical role of employing protective strategies, such as encryption, secure connections, and firewalls, that prevent unauthorized access or misuse of sensitive and personal data. The third indicator is frequently changing passwords (ADFR3). The high positive coefficient of 1.301642 shows that frequently changing passwords greatly reduces digital financial risks. It demonstrates that individuals who regularly update their passwords may significantly reduce financial risks in digital platforms. The z-value of 19.24 and high significance P value of 0.000 further re-confirm the role of this indicator. Thus,

a user who regularly changes passwords reduces the likelihood of unauthorized access, particularly in cases of password leaks, phishing, or other cyber threats. It emphasizes the requirement of setting strong password management practices to maintain the security of financial transactions.

Table: 6.18

Effects of Indicators on Latent Variable Digital Financial Risk & Control

No.	Indicator	Coefficient	std. err	z	P> z	[95% conf. interval]	
V19	ADFR1			1 (constrained)			
	_cons	.565	.0247878	22.79	0.000	.5164167	.6135833
V20	ADFR2	1.317751	.0675339	19.51	0.000	1.185387	1.450116
	_cons	.3775	.0242381	15.57	0.000	.3299942	.4250058
V21	ADFR3	1.301642	.0676446	19.24	0.000	1.169061	1.434223
	_cons	.37	.0241402	15.33	0.000	.322686	.417314
V22	ADFR4	1.006874	.0655496	15.36	0.000	.8783988	1.135348
	_cons	.3225	.0233717	13.80	0.000	.2766924	.3683076
V23	ADFR5	1.206127	.0660925	18.25	0.000	1.076588	1.335666
	_cons	.3325	.0235555	14.12	0.000	.2863322	.3786678
V24	ADFR6	.9144199	.0606644	15.07	0.000	.7955199	1.03332
	_cons	.245	.0215044	11.39	0.000	.2028522	.2871478
V25	ADFR7	.411161	.0440037	9.34	0.000	.3249154	.4974067
	_cons	.1075	.0154874	6.94	0.000	.0771453	.1378547

Source: Calculated from Field Survey Data

The fourth indicator is Common Password for All Apps (ADFR4). Setting a common password for all applications is also considered a stronger indicator of digital financial risk since the coefficient of 1.006874 was and is statistically significant. Generally, setting the same password may be convenient for users. However, it significantly increases the possibility of cybersecurity threats and risks. The strong z-value, i.e. 15.36 and high significance, i.e. $P < 0.000$, highlight the substantial role this practice plays in digital financial risk and control frameworks. The fifth one is Updating Payment Transaction Applications (ADFR5). Regularly updating payment transaction applications is crucial in mitigating digital financial risks. The coefficient of 1.206127 reflects a strong contribution, giving the importance of keeping applications up-to-date that ensure access to the latest security patches, improved features, and protection against any type of digital

vulnerability. It is further confirmed that the significant z-value (18.25) and high statistical significance ($P < 0.000$) indicate that this behaviour is a major determinant in controlling digital financial risks. The sixth indicator is the Grievance Redressal/Complaint Mechanism (ADFR6). The grievance redressal or complaint mechanism is a moderately strong contributor to reducing digital financial risks. Here, the coefficient is 0.9144199, indicating that having an appropriate redressal system for addressing user complaints and resolving issues is vital in building trust and ensuring secure digital financial transactions. It is further confirmed by the z-value of 15.07 and high statistical significance of $P < 0.000$, highlighting that this factor is critical in controlling risks. Users who are aware of and can access mechanisms to report unauthorized transactions, service issues, or fraud are better equipped to mitigate the impact of financial risks. It reduces perceived risks and encourages the wider adoption of digital financial services. The last one is Knowledge of Compensation Mechanisms (ADFR7). However, the awareness of compensation mechanisms is found to be a relatively weaker indicator. Here, the coefficient is 0.411161, indicating that while it plays a positive role, its impact is less significant than other factors of digital financial risks. The z-value of 9.34 and statistical significance, i.e. $P < 0.000$, emphasize that this indicator is still an important determinant. Awareness of compensation policies like refunds for unauthorized or any wrong transactions or compensation for losses due to fraud empowers users and reduces their perceived risks. However, the relatively lower contribution may reflect a lack of awareness of these mechanisms or the fact that compensation policies are not well-implemented.

Out of seven indicators, the mechanisms to prevent data leakages (ADFR2), frequent password changes (ADFR3), and updating payment transaction applications (ADFR5) are the strongest contributors to the latent variable of digital financial risk and control. These factors are considered proactive measures that are key to reducing vulnerabilities. Similarly, indicators like awareness about grievance redressal systems (ADFR6) and the risks of using a common password for all applications (ADFR4) also significantly influence control over financial risks. However, the knowledge of compensation mechanisms (ADFR7) has been found to be the weakest contribution. While still relevant, its lower coefficient indicates the

need to increase awareness about the benefits and processes of compensation mechanisms.

6.3.4 Effects of Indicators on Latent Variable Digital Financial Attitude & Behaviour

Table 6.19 examines the influence of six indicators on the latent variable of digital financial attitude & behaviour (DFAT). The coefficients of the estimated model indicate the relative contribution of each indicator to the latent variable. At the same time, the z-values and P-values show the relative strength and statistical significance of the relationships between indicators and latent variables. The first indicator of the latent variable, digital financial attitude & behaviour (DFAT1), serves as the reference point for comparison purposes. It captures the preference for traditional physical banking over digital financial services. The large constant, i.e. 2.7275, suggests that many individuals still rely on conventional banking, indicating hesitation or resistance toward digital financial services adoption.

Table: 6.19

Effects of Indicators on Latent Variable Digital Financial Attitude & Behaviour

No.	Indicator	Coefficient	std. err	z	P> z	[95% conf. interval]	
V26	DFAT1			1 (constrained)			
	_cons	2.7275	.0888572	30.70	0.000	2.553343	2.901657
V27	DFAT2	1.058298	.0183889	57.55	0.000	1.022257	1.09434
	_cons	2.97	.091366	32.51	0.000	2.790926	3.149074
V28	DFAT3	.9765238	.0271714	35.94	0.000	.9232688	1.029779
	_cons	2.59	.0916774	28.25	0.000	2.410316	2.769684
V29	DFAT4	1.039746	.0232664	44.69	0.000	.994145	1.085348
	_cons	2.8025	.0931195	30.10	0.000	2.619989	2.985011
V30	DFAT5	1.08739	.0177682	61.20	0.000	1.052565	1.122215
	_cons	2.9	.0932068	31.11	0.000	2.717318	3.082682
V31	DFAT6	.9786595	.01872	52.28	0.000	.941969	1.01535
	_cons	2.7775	.0855569	32.46	0.000	2.609812	2.945188

Source: Calculated from Field Survey Data

The second indicator is the attitude towards the inconvenience of using digital financial services (DFAT2). It has a strong positive contribution to attitudes

and behaviours toward digital financial services. A positive coefficient of 1.058298 suggests that perceived inconvenience significantly influences negative attitudes. Users who find digital financial services cumbersome or challenging to use are likelier to avoid adopting these services. The high z-value (57.55) and statistical significance ($P < 0.000$) confirm the goodness of the relationship between the indicator and the latent variable. The third indicator (DFAT3) is the attitude towards safe and secure digital financial services. Perceived lack of security substantially impacts digital financial attitudes since the coefficient of this indicator is 0.9765238. It indicates that concerns over safety and security are a significant deterrent to using digital financial services. The relationship is statistically significant, and it suggests that concerns over the safety and security of digital financial services are a moderately strong contributor to negative attitudes and behaviours toward their adoption. Individuals who believe digital financial services are unsafe are less likely to use them or develop a favourable attitude toward them. The fourth indicator (DFAT4) captures users' perceptions of the difficulty involved in using digital financial services, which may hinder adoption and usage. The study found a coefficient of 1.0397, which indicates a relatively strong contribution of perceived difficulty to the latent variable of digital financial attitude and behaviour. Further, it suggests that users who find digital financial services difficult to use are significantly more likely to exhibit negative attitudes and behaviours toward digital financial service adoption. The z-value (44.69) and P-value ($P < 0.000$) indicate that this factor is highly statistically significant. It strongly affects the engagement of users with digital financial services. The 95 per cent confidence interval reflects a high level of precision in the coefficient estimate, confirming the reliability of this finding. The fifth indicator (DFAT5) assesses the emotional state of users who feel nervous while using digital financial services. It reflects a psychological barrier that impacts the trust, confidence, and usage behaviour of individuals. The coefficient of 1.0874 suggests that nervousness is a moderately strong factor contributing to the latent variable of digital financial attitude and behaviour. It indicates that nervousness significantly correlates with a more cautious or hesitant attitude toward digital financial services. The z-value (61.20) and P-value ($P < 0.000$) show that this

factor is highly statistically significant. Thus, nervousness plays a critical role in shaping the perceptions and behaviour of users regarding digital financial services. The last indicator considers the perception that digital financial services are costly, which can be a barrier to adoption and usage. With a high and positive coefficient of 0.9787, this indicator shows a positive contribution of this indicator to attitudes and behaviours regarding digital financial services. Although slightly weaker than other indicators, it remains a key factor influencing reluctance to engage with digital financial services. The z-value (52.28) and P-value ($P < 0.000$) indicate that this factor is highly significant in shaping digital financial attitudes and behaviours. Users who perceive digital financial services as expensive are less likely to embrace them.

Thus, emotional barriers like nervousness (DFAT5) and difficulty in using digital financial services (DFAT4) have the highest impact, indicating the need for confidence-building measures. Similarly, the inconvenience of digital financial service (DFAT2) and safety concerns (DFAT3) moderately influence digital financial attitudes & behaviour. However, the expense of digital financial services (DFAT6) is a slightly less prominent factor compared to usability and emotional barriers.

6.3.5 Effects of Indicators on Latent Variable Usage of Digital Financial Services

Table 6.20 explores the contribution of nine indicators to the latent variable usage of digital financial services. The first indicator (UDFS1) is Bank Account (Current/Saving)/Jan Dhan Account. This indicator serves as the baseline for evaluating other indicators with a coefficient of 1. A bank account is considered a fundamental institution for accessing most digital financial services, which acts as the starting point for broader financial inclusion. The large constant of 2.4975 indicates a strong reliance on banking accounts as an integral part of the digital financial ecosystem. The second indicator (UDFS2) is mobile wallets (Paytm, M-pesa, MobiKwik, PayU etc.), which demonstrate a strong positive contribution to using digital financial services. The coefficient of this indicator is 2.182265, which

underscores their significant role in driving the adoption of digital financial services. Mobile wallets facilitate transactions by offering convenient, fast, affordable and accessible platforms for payments and money transfers to users. The high z-value of 20.26 and statistical significance with $P < 0.000$ confirm the goodness of this relationship. This indicates that the widespread use of mobile wallets is a major factor in the use of digital financial services. Mobile wallets have become integral to the digital financial ecosystem due to their ease of use and wide availability. The third indicator is Internet banking (UDFS3), which significantly contributes to digital financial services usage. The coefficient of 1.974276 shows that individuals who are actively using internet banking are more likely to adopt and use digital financial services. Thus, Internet banking delivers a reliable and versatile platform for various financial activities, like transferring funds, paying bills, checking account details, and extending various financial facilities. It contributes to its substantial role in digital financial services usage. The high z-value (19.83) and statistical significance ($P < 0.000$) capture the strength and robustness of the relationship. The fourth indicator is banking cards, which are comprised of credit and debit cards (UDFS4). The usage of these banking cards significantly influences the latent variable of digital financial services usage, with a high and positive coefficient of 1.499892. This indicates that individuals who utilize banking cards are likely to be active users of digital financial services. Banking cards are essential for accessing digital financial services and enabling online transactions, payments, and purchases. The high z-value (17.16) and statistical significance ($P < 0.000$) confirm the robustness of this relationship.

Table: 6.20

Effects of Indicators on Latent Variable Usages of Digital Financial Services

No.	Indicator	Coefficient	std. err	z	P> z	[95% conf. interval]	
U1	UDFS1			1 (constrained)			
	_cons	2.4975	.0304136	82.12	0.000	2.437891	2.557109
U2	UDFS2	2.182265	.1077043	20.26	0.000	1.971168	2.393361
	_cons	1.8475	.0485861	38.03	0.000	1.752273	1.942727
U3	UDFS3	1.974276	.0995799	19.83	0.000	1.779103	2.169449
	_cons	1.7425	.0448941	38.81	0.000	1.654509	1.830491
U4	UDFS4	1.499892	.0874162	17.16	0.000	1.32856	1.671225
	_cons	2.0225	.039115	51.71	0.000	1.945836	2.099164
U5	UDFS5	1.625002	.0919512	17.67	0.000	1.444781	1.805223
	_cons	1.8875	.0412263	45.78	0.000	1.806698	1.968302
U6	UDFS6	.3349902	.0461037	7.27	0.000	.2446286	.4253519
	_cons	1.135	.0201106	56.44	0.000	1.095584	1.174416
U7	UDFS7	.5027695	.049362	10.19	0.000	.4060217	.5995173
	_cons	1.1725	.0216647	54.12	0.000	1.130038	1.214962
U8	UDFS8	.5900666	.0502314	11.75	0.000	.4916149	.6885183
	_cons	1.2375	.0221412	55.89	0.000	1.194104	1.280896
U9	UDFS9	.9397459	.0811172	11.59	0.000	.7807592	1.098733
	_cons	1.4925	.0357052	41.80	0.000	1.422519	1.562481

Source: Calculated from Field Survey Data

The fifth indicator (UDFS5) is mobile phone payments, which are comprised of UPI, USSD, AEPS, and JAM. Mobile phone payments significantly contribute to the latent variable of digital financial services usage. A coefficient of 1.625002 indicates that mobile phone payments have a strong positive relationship with digital financial services adoption, which is also found to be statistically significant. The high z-value (17.67) and statistical significance (P<0.000) validate the importance of mobile payment systems. The sixth indicator (UDFS6) is Modes of Mobile Banking (IVR, SMS, WAP, USSD, STK, and Mobile Apps). The various modes of mobile banking have a positive but moderate contribution to the latent variable of digital financial services usage, with a coefficient of 0.3349902. The z-value of 7.27 indicates statistical significance, confirming the p-value of 0.000, and the narrow

confidence interval confirms the robustness of this relationship. However, the lower coefficient compared to other indicators suggests that these modes have a relatively smaller influence on digital financial services usage. The seventh indicator (UDFS7) is electronic fund transfers. The use of Electronic Fund Transfer systems such as NEFT (National Electronic Funds Transfer), RTGS (Real Time Gross Settlement), and IMPS (Immediate Payment Service) demonstrates a positive but moderate impact on the latent variable of digital financial services usage, with a coefficient of 0.5027695. It indicates that these transfer systems contribute to the adoption of digital financial services and are found to be statistically significant, although their influence is not as strong as some other indicators, like mobile wallets or mobile phone payments. The high z-value (10.19) and statistical significance ($P < 0.000$) confirm the importance of this indicator. The confidence interval is relatively narrow, highlighting the robustness of this result. The eighth indicator (UDFS8) is Direct Benefit Transfer (DBT)/ABPS. In the study, the use of Direct Benefit Transfer (DBT) and Aadhaar-Enabled Payment System (ABPS) demonstrates a moderate positive impact on the latent variable of digital financial services usage, with a coefficient of 0.5900666. It suggests that DBT and ABPS programs contribute meaningfully to adopting digital financial services, albeit with a slightly smaller influence than more direct, user-initiated services like mobile wallets or Internet banking. The z-value (11.75) indicates a strong statistical significance, and the narrow confidence interval ([0.4916, 0.6885]) reflects the robustness of this relationship. The last indicator (UDFS9) assesses the usage of QR Code Banking. The use of QR Code Banking has a strong positive impact on the latent variable for digital financial services usage, as shown in the table by the coefficient of 0.9397459. It indicates that QR code-based banking systems contribute significantly to the overall adoption of digital financial services. The z-value (11.59) and the P-value (< 0.000) demonstrate that the relationship is statistically significant, while the confidence interval ([0.7808, 1.0987]) also suggests a reliable estimate of the effect.

Thus, indicators like Mobile Wallets (UDFS2) and Internet Banking (UDFS3) have the highest coefficients, demonstrating their critical roles in driving digital financial services adoption. Similarly, mobile phone payment (UDFS5) shows a strong positive influence. At the same time, Banking cards (UDFS4), QR code banking (UDFS9), and DBT (UDFS8) contribute meaningfully to digital financial services usage but to a lesser extent than mobile wallets or Internet banking. However, indicators like Modes of mobile banking (UDFS6) and electronic fund transfers (UDFS7) have relatively more minor coefficients, suggesting potential areas for growth through targeted improvements.

The study highlighted the critical role of digital financial literacy in improving the usage of digital financial services among rural households in Kerala. The study uses Structural Equation Modeling to demonstrate the intricate relationships between digital financial literacy and digital financial services usage. The study considered the dimensions of digital financial literacy, namely digital financial aptitude, attitude and behaviour, and awareness of financial services and products and risks, to analyze their influence on the usage of digital financial services. The findings show that awareness of digital financial services is the most significant determinant among the various dimensions of digital financial literacy, with a strong positive influence on the usage of these financial services. Awareness of digital financial risks also emerged as a critical factor, underlining the importance of equipping users with the knowledge to mitigate potential vulnerabilities and mitigation strategies associated with usage. The dimension of digital financial aptitude showed a moderately positive effect on the usage of digital financial services, which indicates that skills and familiarity with digital financial tools contribute to the usage of financial services. However, this relationship is weaker than awareness-based factors, suggesting that skill-building efforts should complement broader awareness initiatives. Interestingly, though theoretically critical, digital financial attitude and behaviour did not show a statistically significant effect, suggesting that awareness and skills are more decisive factors than attitudes alone. This result suggests that while positive attitudes and proactive behaviours are important, they do not independently drive adoption without

adequate awareness, aptitude, and access to infrastructure. Overall, digital financial literacy is the most critical prerequisite for promoting the usage and adoption of digital financial services.

The analysis of indicators contributing to digital financial aptitude identified Internet banking, mobile/digital wallets, and POS payments as the most impactful. In contrast, knowledge of Aadhaar-enabled payment systems and direct benefit transfer mechanisms played a secondary role. It emphasizes the need to improve proficiency in advanced digital financial tools while continuing to educate people about foundational and government-driven financial services. The study also suggested for targeted interventions to bridge the financial divide in rural Kerala. Awareness campaigns, skill-building initiatives, and risk education are essential to boost the usage of digital financial services. Addressing infrastructural challenges, like internet connectivity and accessibility, can further enhance the effectiveness of these efforts. Thus, the study identifies key drivers and obstacles to adopting digital financial services, providing actionable insights for policymakers, financial institutions, and other stakeholders to promote digital financial inclusion, particularly in rural and underserved regions. The findings call for the importance of a holistic approach to digital financial literacy that combines awareness, aptitude, and risk education to empower individuals and foster a more inclusive financial ecosystem.

6.4 Reasons for Digital Financial Illiteracy

Digital financial illiteracy refers to the inability to use digital financial tools and services successfully due to the lack of knowledge, abilities, and comprehension, such as the difficulty in using digital payment methods, negotiating online banking and financial apps, encompassing digital financial products, safeguarding against cyber-attacks, access and interpret financial information online. There are many reasons for the digital financial illiteracy. Lack of education, technological barriers, generational gaps, and the complexity of digital financial products, socio-economic factors, language barriers, and fear of technology are some of them. The following table represents a comprehensive overview of the

primary reasons for digital financial illiteracy in Kerala, based on the data collected from the survey conducted in the districts of Malappuram, Wayanad, and Ernakulam. This data represents the heterogeneous barriers that individuals face in adopting and effectively using digital financial tools and services. By identifying these specific reasons, stakeholders can better understand the root causes of digital financial illiteracy and develop targeted interventions to address them. The insights from this data are crucial for policymakers, educators, and financial institutions aiming to enhance digital financial literacy and inclusion in the state.

Table: 6.21

Reasons for Digital Financial Illiteracy in Kerala

Sl. No.	Reasons	No. of Respondent	Percentage
1	Lack of education	160	40.0
2	Lack of financial education in schools	206	51.5
3	Religious problems	59	14.7
4	Poverty and unemployment	111	27.7
5	Lack of confidence	192	48.0
6	Non-accessibility of financial institutions	40	10.0
7	Poor standard of living	148	37.0
8	Lack of awareness	205	51.2
9	Poor money management	165	41.2
10	Lack of banking habits	173	43.3

Source: Calculated from Field Survey Data

Table 6.21 represents the major reasons for digital financial illiteracy. The highest percentage of respondents (51.5 per cent) indicated that the lack of financial education in schools is a major reason for digital financial illiteracy. Close to the highest, 51.2 per cent of respondents reported a lack of awareness as a key factor. It indicates that many people are unaware of the available digital financial tools and services or do not understand their benefits. Nearly half of the respondents (48.0 per cent) reported lacking confidence in using digital financial services as the cause. It could be due to a fear of making mistakes or security concerns. Many respondents (43.3 per cent) lack regular banking habits, which might hinder their ability to use

digital financial services effectively. Poor money management skills are a reason for digital financial illiteracy for 41.2 per cent of respondents. It implies the need for broader financial education beyond just digital aspects. A general lack of education was cited by 40.0 per cent of respondents, indicating that those with lower levels of education may find it more challenging to engage with digital financial services. 37.0 per cent of respondents believe that a poor standard of living contributes to digital financial illiteracy, possibly due to limited access to technology and financial services. Poverty and unemployment are reasons for digital financial illiteracy for 27.7 per cent of respondents. Financial instability may prevent individuals from engaging with digital financial tools. 14.7 per cent of respondents indicated that religious beliefs or practices affect their use of digital financial services. This might include restrictions on certain types of financial transactions. The lowest percentage (10.0 per cent) reported that the non-accessibility of financial institutions is a barrier.

Table: 6.22

Reasons for Digital Financial Illiteracy (Ernakulum)

Sl. No.	Reasons	No. of Respondent	Percentage
1	Lack of education	46	54.2
2	Lack of financial education in schools	52	61.3
3	Religious problems	19	22.4
4	Poverty and unemployment	29	34.1
5	Lack of confidence	51	60.0
6	Non-accessibility of financial institutions	11	12.9
7	Poor standard of living	37	43.5
8	Lack of awareness	51	60.0
9	Poor money management	42	49.4
10	Lack of banking habits	35	41.2

Source: Calculated from Field Survey Data

Table 6.22 shows the data on the reasons for digital financial illiteracy in the Ernakulam district. The lack of financial education in schools (61.3 per cent) and general education (54.2 per cent) are the most significant reasons for digital financial illiteracy, highlighting a critical gap in the educational system. Lack of

confidence in using digital financial tools and services (60.0 per cent) and awareness (60.0 per cent) are also significant contributors. These factors indicate that even if financial resources are available, individuals might need more self-assurance and knowledge about financial tools and practices to utilize them effectively. Poverty and unemployment (34.1 per cent), poor standard of living (43.5 per cent), and poor money management (49.4 per cent) show that socio-economic challenges play a significant role in digital financial illiteracy. Financial instability can hinder individuals' ability to engage with digital financial services. Religious problems (22.4 per cent) suggest cultural or religious beliefs may influence attitudes toward financial practices and technologies. Non-accessibility of financial institutions (12.9 per cent) and lack of banking habits (41.2 per cent) highlight infrastructural and habitual barriers.

Table: 6.23

Reasons for Digital Financial Illiteracy (Malappuram)

Sl. No.	Reasons	No. of Respondent	Percentage
1	Lack of education	69	42.9
2	Lack of financial education in schools	111	68.8
3	Religious problems	31	19.3
4	Poverty and unemployment	50	31.1
5	Lack of confidence	87	54.0
6	Non-accessibility of financial institutions	24	14.9
7	Poor standard of living	67	41.6
8	Lack of awareness	87	54.1
9	Poor money management	87	54.0
10	Lack of banking habits	68	42.2

Source: Calculated from Field Survey Data

The reason for the digital financial illiteracy of the respondents from the Malappuram district is given in Table 6.23. As in the case of Malappuram district, the most significant reason identified by respondents is the absence of financial education in the school curriculum. About 69 per cent of respondents reported the

lack of financial education in schools as the reason behind their digital financial illiteracy. Financial literacy is not adequately covered in the school curriculum. The lack of awareness and confidence (54.1 per cent) are equally significant and point towards a broader issue of social and personal barriers. Poor money management skills (54.0 per cent) are closely linked to the overall financial literacy of the population. General educational deficits (42.9 per cent) and unfamiliarity with banking habits (42.2 per cent) are also significant contributors. Poverty and unemployment affect 31.1 per cent of respondents. Religious problems are a factor for 19.3 per cent of respondents. This could be due to religious beliefs and cultural practices which are strongly prevalent in the district.

Table: 6.24

Reasons for Digital Financial Illiteracy (Wayanad)

Sl. No.	Reasons	No. of Respondent	Percentage
1	Lack of education	45	29.2
2	Lack of financial education in schools	43	27.9
3	Religious problems	09	05.8
4	Poverty and unemployment	32	20.7
5	Lack of confidence	54	35.0
6	Non-accessibility of financial institutions	05	03.2
7	Poor standard of living	44	28.5
8	Lack of awareness	67	43.5
9	Poor money management	36	23.3
10	Lack of banking habits	70	45.4

Source: Calculated from Field Survey Data

Wayanad is the most rurally populated district in Kerala. Agriculture is the primary occupation. So, Wayanad faces a lot of challenges in attaining education, with many areas lacking adequate educational infrastructure and resources, contributing to lower literacy rates compared to the state average. The highest percentage of respondents (45.4 per cent) indicated that a lack of banking habits is a significant reason for digital financial illiteracy (Table 6.24). It suggests that a substantial portion of the population may not engage with banking services regularly

due to cultural factors and trust issues. The second most common reason is a lack of awareness (43.5 per cent). It indicates a gap in knowledge about digital financial tools and services. The lack of awareness may be caused by limited exposure to digital financial education and access to technology and the Internet. A significant number of respondents (35.0 per cent) reported a lack of confidence in using digital financial services. This lack of confidence could stem from technological anxiety and security concerns. According to the survey reports, many respondents identified a general lack of education as a primary reason for digital financial illiteracy. It includes both formal and informal education systems. With a foundational education, individuals may gain basic numeracy and literacy skills essential for understanding and engaging with digital financial tools and services. A notable portion of respondents (29.2 per cent) cited a lack of general education as a reason. It highlights the broader issue of educational attainment and its impact on financial literacy. Approximately 27.9 per cent of respondents believe that the absence of financial education in schools is a contributing factor. Because the school curriculum does not cover financial literacy topics. Poverty and unemployment were mentioned by 20.7 per cent of respondents. Financial instability can make it difficult to focus on learning and using digital financial tools. Unemployed individuals might have less access to financial educational resources. A smaller percentage (5.8 per cent) cited religious problems as a barrier. Certain religious beliefs might discourage the use of conventional banking and financial services. Cultural practices associated with religious beliefs can also impact financial behaviour. Non-accessibility of financial institutions is the least cited reason (3.2 per cent). Inaccessibility due to remote or rural locations might be a minor issue compared to other factors. The limited physical infrastructure of financial institutions also leads to digital financial illiteracy in Wayanad.

6.5 Challenges of Digital Financial Literacy

Digital financial literacy is a crucial aspect of modern financial inclusion, enabling individuals to effectively utilize digital tools and services to manage their finances. In Kerala, a state known for its high literacy rates and progressive social

indicators, adopting digital financial services is still faced with several challenges. Despite the rapid advancements in technology and the proliferation of digital platforms, a significant portion of the population remains digitally and financially illiterate. This gap poses a barrier to the economic empowerment of individuals and hinders the overall financial growth of the region. Understanding and addressing these challenges of digital financial literacy in Kerala is essential for fostering a more inclusive and flexible economy.

Table: 6.25

Challenges of Digital Financial Literacy

Sl. No.	Challenges	No. of Respondent	Percentage
1	Lack of income	196	49.0
2	Inadequate internet connectivity	194	48.5
3	General illiteracy	102	25.5
4	Inadequate financial knowledge and skill	249	62.3
5	Lack of digital financial infrastructures	77	19.3
6	Digital insecurity/ fakes/fear of cybercrime	203	50.7
7	Non-accessibility of financial institutions	92	23.0
8	Service charges of digital transactions	165	41.2
9	Customer resistance to new technology	150	37.5
10	Only limited point of sale	40	10.0
11	Lack of smartphones	143	35.7
12	Very low internet speed	166	41.5
13	Language problems	134	33.5
14	Lack of Awareness	235	58.7
15	Religious problems	72	18.0
16	Not user-friendliness	154	38.5
17	Lack of convenience	169	42.2
18	Lack of trust	196	49.0
19	Merchant acceptance	135	33.7
20	Risk of loss	219	54.8

Source: Calculated from Field Survey Data

Table 6.25 highlights several critical challenges contributing to digital financial illiteracy in Kerala. Understanding the challenges of digital financial literacy is crucial for developing strategies to improve financial inclusion and economic development. The table represents the data on the challenges of digital financial literacy reported from the three districts of Malappuram, Wayanad, and Ernakulam. The most significant barrier to digital financial literacy is the lack of financial knowledge and skills. About 62 per cent of the respondents reported it as their challenge for digital financial literacy. This limitation prevents individuals from effectively using digital financial tools, making informed financial decisions, and managing their personal finances. This lack of competence can lead to poor financial planning, higher levels of debt, and lower savings and investment rates, ultimately hindering economic growth and stability. A considerable portion of respondents (58.7 per cent) are unaware of digital financial services and their benefits. This gap in awareness significantly reduces the adoption rates of digital financial tools, limiting financial inclusion. When people are unaware of the advantages and safety of digital transactions, they miss out on opportunities for efficient financial management, which affects overall economic participation and development. The fear of losing money in digital transactions is a major concern. About 54 per cent of the respondents reported risk of loss as their challenge of digital financial literacy. This realization discourages individuals from using digital financial services, slowing the transition from cash to digital economies. This barrier can reduce transaction efficiency, increase reliance on cash, and limit the potential benefits of digital financial systems, such as reduced transaction costs and enhanced economic activity. Security concerns regarding digital transactions prevent many individuals (50.7 per cent) from using digital financial tools. Fear of cybercrime, fraud, and digital insecurity can significantly reduce trust in digital financial systems. This mistrust leads to lower adoption rates, lowering the potential for a powerful digital economy and limiting the efficiency and security benefits that digital financial services can provide.

Lack of income is considered as the major challenge by 49 per cent of the respondents. Limited income restricts access to digital devices and services necessary for involvement in the digital financial system. This financial barrier worsens economic inequality, as individuals with lower incomes are unable to

benefit from the efficiency and cost-saving advantages of digital financial services, further hindering their economic progress. Trust is fundamental to the adoption of any financial service. A lack of trust in digital financial systems can lead to lower utilization of these services, affecting financial inclusion and economic growth. When individuals do not trust digital platforms, they are less likely to engage in online transactions, invest in digital assets, or use digital financial services for savings and loans. About 49 per cent of the respondents considered the lack of trust as the major challenge. Poor internet connectivity is a significant barrier for 48.5 per cent of the respondents. Without reliable internet access, individuals cannot efficiently use digital financial services, which limits their economic participation and ability to access markets and financial information. This barrier restricts the overall digital economy's growth and reduces opportunities for economic advancement. Of the total respondents, 41.5 per cent face the problem of internet speed. Slow internet speeds can be just as restrictive as a lack of connectivity. Slow speeds can frustrate users, making digital financial transactions awkward and unreliable. This limitation can reduce the efficiency of financial operations, increase transaction costs, and deter users from engaging with digital financial platforms, thus limiting economic productivity and growth.

The service charge for digital transactions is considered a major factor hindering digital financial literacy. High transaction fees are a discouraging factor for many users, particularly those with lower incomes. When the cost of digital transactions is considered too high, individuals and businesses may prefer cash transactions, reducing the overall efficiency of the financial system. This resistance can slow down the adoption of digital financial services and limit their economic benefits. If digital financial services are not convenient, users may be less interested in adopting them. Convenience is a significant factor in user adoption, and any notable inconvenience can deter usage, thereby reducing the potential economic benefits of digital financial inclusion and efficiency. Lack of convenience was reported as the major challenge by 42.2 per cent of the respondents. Complexity and non-inherent user interfaces can deter individuals from using digital financial services. If platforms are not user-friendly, they can exclude less tech-savvy individuals from participating in the digital economy, limiting financial inclusion and reducing the overall efficiency of economic transactions. About 38 per cent of

the respondents considered the absence of user-friendliness in digital financial products and services to be the major challenge for digital financial literacy. The resistance to adopting new technology was considered a major hindering factor for digital financial literacy by 37.5 per cent. It can slow the spread of digital financial services. This resistance can stem from a lack of understanding, fear of the unknown, or satisfaction with traditional methods. This barrier limits the speed at which digital financial inclusion can be achieved, affecting economic growth and innovation. Smartphones are essential tools for accessing digital financial services. Without them, individuals are cut off from mobile banking, payment apps, and other digital financial tools. A lack of smartphones was faced, and this lack was considered the major cause of digital financial illiteracy at 37.5 per cent. This technological barrier limits financial inclusion, particularly in low-income populations, and restricts access to economic opportunities available through digital platforms. Beyond these barriers, language barriers can also prevent individuals from fully understanding and utilizing digital financial services. This can limit financial inclusion for non-native speakers and reduce the overall adoption rates of digital financial tools, affecting economic participation and growth. The language barrier was a major challenge for 35.5 per cent of the respondents. Limited acceptance of digital payments by merchants restricts the use of digital financial services. When merchants do not accept digital payments, consumers are forced to rely on cash, which limits the efficiency and security benefits of digital transactions. This barrier can slow down the growth of the digital economy and affect economic activity. From the survey report, it was found that 33.7 per cent considered merchant acceptance as the major problem.

General illiteracy (25.5) prevents individuals from engaging with digital financial services, even if they are available. This exclusion affects economic participation and growth, as a significant portion of the population is unable to benefit from the efficiencies and opportunities provided by digital financial tools. Physical distance from financial institutions can be a significant barrier, particularly in rural areas. The non-accessibility of financial institutions was a major concern for 23 per cent of the respondents. This lack of access limits individuals' ability to use financial services, save money, obtain credit, and invest, thereby hindering economic growth and stability. About 19 per cent of the respondents are affected by

the lack of digital financial infrastructure. Insufficient infrastructure for digital transactions restricts access to financial services. This limitation can slow economic transactions, increase transaction costs, and limit the growth of the digital economy, affecting overall economic efficiency and development. Religious beliefs can influence attitudes toward certain financial practices, such as interest-bearing accounts or specific types of financial transactions. Religious problems are a major challenge for 18 per cent. This can limit the use of conventional financial services, affecting financial inclusion and economic development. The lack of point-of-sale terminals was reported as a major challenge by 10 per cent of the respondents. A lack of point-of-sale terminals restricts the ability to conduct digital transactions, particularly in small and rural businesses. This limits market reach and economic opportunities for businesses and consumers, affecting economic activity and growth.

Table: 6.26

Challenges of Digital Financial Literacy (Ernakulum)

Sl. No.	Challenges	No. of Respondent	Percentage
1	Lack of income	43	50.6
2	Inadequate internet connectivity	50	58.8
3	General illiteracy	20	23.5
4	Inadequate financial knowledge and skill	53	62.4
5	Lack of digital financial infrastructures	23	27.1
6	Digital insecurity/ fakes/fear of cybercrime	42	49.4
7	Non-accessibility of financial institutions	31	36.5
8	Service charges digital transaction	37	43.5
9	Customer resistance to new technology	33	38.8
10	Only limited point of sale	07	8.24
11	Lack of smartphones	45	52.9
12	Very low internet speed	36	42.4
13	Language problems	37	43.5
14	Lack of Awareness	48	56.5
15	Religious problems	22	25.9
16	Not user-friendliness	35	41.2
17	Lack of convenience	31	36.5
18	Lack of trust	41	48.2
19	Merchant acceptance	30	35.3
20	Risk of loss	52	61.2

Source: Calculated from Field Survey Data

Table 6.26 represents the data on the challenges of digital financial illiteracy in the Ernakulam district. Inadequate Financial Knowledge and Skill (62.4 per cent) remains the top challenge. A significant portion of the population lacks the financial knowledge and skills needed to use digital financial tools effectively. This barrier restricts financial inclusion and economic participation. A significant portion of respondents (61.2 per cent) are concerned about the potential risks associated with digital transactions, such as the possibility of losing money. This indicates a substantial fear or distrust in the digital financial ecosystem, possibly due to past experiences or general anxiety about cyber fraud. Connectivity issues are more pronounced in Ernakulam (58.8 per cent) compared to the general data. Improved internet infrastructure is essential to enhance access to digital financial services, supporting economic growth and inclusion. More than half of the respondents (56.5 per cent) cited a lack of awareness as a major challenge, because of the insufficient information or understanding among the public regarding how to effectively and safely use digital financial tools. A considerable percentage of 52.9 respondents indicated that not having access to smartphones is a significant barrier. Because smartphones are essential for digital financial transactions, and without them, individuals are left out of the digital economy. Half of the respondents (50.6 per cent) reported that insufficient income prevents them from participating in digital financial activities. This could be due to the inability to afford internet services, smartphones, or the fear of potential financial loss in case of a transaction error. The fear of digital insecurity, including fraud and cybercrime, is a major concern for almost half of the respondents (49.4 per cent). This indicates a significant trust deficit in digital financial platforms. Closely linked to digital insecurity, a lack of trust in the digital financial system is a substantial barrier for 48.2 per cent. About half of the respondents (43.5 per cent) reported language problems and service charge issues as the major challenges. Very low internet speed (42.9 per cent) and lack of user-friendliness (41.2 per cent) are also prominent factors. General illiteracy (23.5 per cent) and religious problems (25.9 per cent) were less affected by the respondents. Adequacy of the point of sale terminals was the least affected problem and was only reported by 8.24 per cent of the respondents.

Table: 6.27

Challenges of Digital Financial Literacy (Malappuram)

Sl. No.	Challenges	No. of Respondent	Percentage
1	Lack of income	92	57.1
2	Inadequate internet connectivity	118	73.3
3	General illiteracy	50	31.1
4	Inadequate financial knowledge and skill	123	76.4
5	Lack of digital financial infrastructures	29	18.0
6	Digital insecurity/ fakes/fear of cybercrime	118	73.3
7	Non-accessibility of financial institutions	52	32.3
8	Service charges digital transaction	107	66.5
9	Customer resistance to new technology	75	46.6
10	Only limited point of sale	30	18.6
11	Lack of smartphones	63	39.1
12	Very low internet speed	109	67.7
13	Language problems	74	46.0
14	Lack of Awareness	114	70.8
15	Religious problems	37	23.0
16	Not user-friendliness	99	61.5
17	Lack of convenience	91	56.5
18	Lack of trust	115	71.4
19	Merchant acceptance	91	56.5
20	Risk of loss	111	68.9

Source: Calculated from Field Survey Data

Table 6.27 provides data on the challenges of digital financial literacy in the Malappuram district. Again, inadequate financial knowledge and skill are the most significant challenges, with 76.4 per cent of respondents identifying them as major issues. A 73.3 per cent of respondents cited poor internet connectivity and digital insecurity (73.3 per cent) as the major challenge. More than half of the respondents responded with lack of trust (71.4), risk of loss (68.9), very low internet speed (67.7), and service charges (66.5) etc...as their major challenges. Only a few reported inadequacy of point of sale (18.6) and religious problems as their challenges.

Table: 6.28

Challenges of Digital Financial Literacy (Wayanad)

Sl. No.	Challenges	No. of Respondent	Percentage
1	Lack of income	61	39.6
2	Inadequate internet connectivity	26	16.9
3	General illiteracy	32	20.8
4	Inadequate financial knowledge and skill	73	47.4
5	Lack of digital financial infrastructures	25	16.2
6	Digital insecurity/ fakes/fear of cybercrime	43	27.9
7	Non-accessibility of financial institutions	09	5.84
8	Service charges digital transaction	21	13.6
9	Customer resistance to new technology	42	27.3
10	Only limited point of sale	03	1.95
11	Lack of smartphones	35	22.7
12	Very low internet speed	21	13.6
13	Language problems	23	14.9
14	Lack of Awareness	73	47.4
15	Religious problems	13	8.44
16	Not user-friendliness	20	13
17	Lack of convenience	47	30.5
18	Lack of trust	40	26
19	Merchant acceptance	14	9.09
20	Risk of loss	56	36.4

Source: Calculated from Field Survey Data

The challenges of digital financial literacy in the district of Wayanad are given in Table 6.28. As stated earlier, the most significant challenge was that nearly half of the respondents highlighted a lack of financial knowledge and skills and also a lack of awareness. It indicates that many individuals are not aware of the benefits and usage of digital financial tools, similar to the challenge seen in Malappuram. Financial constraints (39.6) prevent access to necessary devices and services for digital finance. Many respondents fear potential losses (36.4), indicating concerns over the security and reliability of digital financial transactions. Merchant Acceptance (9.09 per cent), Religious Problems (8.44 per cent), Non-Accessibility of Financial Institutions (5.84 per cent), and Only Limited Point of Sale (1.95 per cent) are less significant challenges.

6.6 Factors Affecting the Propensity to Adopt Digital Financial Services

The propensity to adopt digital financial services refers to the likelihood or tendency of individuals or organizations to start using digital platforms and tools for managing their financial activities. This concept involves various factors that motivate or demotivate users from transitioning from traditional financial methods to digital alternatives. Digital financial services include a wide range of applications such as online banking, mobile payment systems, digital wallets, investment apps, and other financial technologies (fintech) that allow users to conduct transactions, manage accounts, and access financial information via the Internet or mobile devices. In the rapidly evolving landscape of financial technology, the adoption of digital financial services has gained significant traction. As traditional banking methods give way to more advanced, technology-driven solutions, understanding the factors influencing this shift becomes more important. Various elements contribute to an individual's or organization's decision to welcome digital financial services, ranging from the inherent advantages of these platforms to the specific needs and preferences of users. The following table outlines several key factors that influence the propensity to adopt digital financial services.

Table: 6.29

Factors of Propensity to Adopt Digital Financial Services

Sl. No.	Factors	No. of Respondent	Percentage
1	Faster transactions	186	46.5
2	Transparency and accountability	179	44.6
3	Discounts and offers	140	35.0
4	Saves time	185	46.2
5	Accurate timing	182	45.5
6	Quick financial decision-making	179	44.7
7	Convenience	189	47.2
8	Security	157	39.2
9	Adaptability	178	44.5
10	Affordability	177	44.2
11	User friendly	182	45.5
12	Low Service charge	142	35.5

Source: Calculated from Field Survey Data

Table 6.29 provides data on the factors affecting the propensity to adopt digital financial services. The most significant factor for adopting digital financial services is convenience, indicating that nearly half of the respondents (47.2 per cent) find digital financial services easy to use. Users value the ability to access financial services easily and efficiently from anywhere at any time. The ease of use of digital platforms is a major attraction. About 46 per cent of the respondents considered the faster transaction characteristic as their leading factor in the adoption of digital financial services. Speed is a critical component. Digital financial services enable quick processing of transactions, which is highly valued by users who need immediate and efficient service. The time-saving aspect of digital financial services is another major draw. A total of 46.2 respondents reported the time-saving behaviour of digital financial services as the major factor contributing to the adoption of DF services. Users appreciate the ability to complete financial transactions swiftly without the need for lengthy processes typical of traditional banking. Reliability and ease of use are important. Users expect accurate timing in transactions and interfaces that are easy to use. These factors ensure a smooth and trustworthy user experience. About 45 per cent appreciate the accurate timing feature of these transactions and consider it a contributing factor. The ability to make quick financial decisions is a significant advantage of digital financial services. Users can respond quickly to financial opportunities or emergencies, enhancing their financial ability. Trust is a foundational element. Users value services that offer transparency and accountability, ensuring they have clear insights into their financial transactions and the security of their funds. The leading factors are 44.6 per cent transparency and accountability and 44.5 per cent adaptability. The affordability feature of DFS is favoured by 44.2 per cent. Cost-effectiveness is a notable consideration. Users are likelier to adopt services that provide good value for money, balancing cost with the benefits offered. The security assurance feature was favoured by 39.2 per cent. The discounts and offers given by the DFS authorities and low service charges also lead to increased use of DFS (35 per cent).

Table: 6.30

Factors of Propensity to Adopt Digital Financial Services (Ernakulam)

Sl. No.	Factors	No. of Respondent	Percentage
1	Faster transactions	37	43.5
2	Transparency and accountability	35	41.2
3	Discounts and offers	33	38.8
4	Saves time	36	42.4
5	Accurate timing	35	41.2
6	Quick financial decision-making	35	41.2
7	Convenience	35	41.2
8	Security	35	41.2
9	Adaptability	33	38.8
10	Affordability	35	41.2
11	User friendly	35	41.2
12	Low Service charge	33	38.8

Source: Calculated from Field Survey Data

The data given in Table 6.30 consists of responses from residents of Ernakulam on various factors that influence their adoption of digital financial services. The highest percentage of respondents (43.5 per cent) considered faster transactions as a primary reason for adopting digital financial services. Closely following, 42.4 per cent of respondents value the time-saving aspect of digital financial services. Transparency and accountability are crucial for 41.2 per cent of the respondents. This suggests that users appreciate the clear records and traceability offered by digital transactions, which enhance trust. The precision in timing provided by digital services is important for 41.2 per cent of respondents, highlighting the value placed on timely and accurate transactions. The ability to make quick financial decisions is a key factor for 41.2 per cent of the respondents. Convenience is also critical for 41.2 per cent of respondents, indicating that ease of use and accessibility are major drivers of digital financial services adoption. Security concerns are significant for 41.2 per cent of respondents, showing that confidence in the safety of digital transactions is a major factor. Affordability is important for 41.2 per cent of respondents, indicating that the cost-effectiveness of digital financial services plays a vital role in their adoption. The user-friendly nature of digital

financial services is essential for 41.2 per cent of respondents. Discounts and offers attract 38.8 per cent of respondents. Adaptability is a key factor for 38.8 per cent of respondents. Low service charges are important for 38.8 per cent of respondents, highlighting the role of cost in the decision to use digital financial services.

Table: 6.31

Factors of Propensity to Adopt Digital Financial Services (Malappuram)

Sl. No.	Factors	No. of Respondent	Percentage
1	Faster transactions	89	55.3
2	Transparency and accountability	87	54.0
3	Discounts and offers	72	44.7
4	Saves time	89	55.3
5	Accurate timing	88	54.7
6	Quick financial decision making	86	53.4
7	Convenience	85	52.8
8	Security	74	46.0
9	Adaptability	86	53.4
10	Affordability	85	52.8
11	User friendly	89	55.3
12	Low Service charge	73	45.3

Source: Calculated from Field Survey Data

The data reveals the factors influencing the adoption of digital financial services among residents of Malappuram (Table 6.31). The highest percentage of respondents (55.3 per cent) prioritizes faster transactions, emphasizing the importance of efficiency and speed in digital financial services. Equal to the preference for faster transactions, 55.3 per cent of respondents valued time-saving benefits. Another 55.3 per cent of respondents consider user-friendly interfaces important, highlighting the need for intuitive and easy-to-use platforms. Accurate timing is the leading factor for 54.7 per cent of respondents, showing the value placed on precise and timely transactions. Transparency and accountability matter to 54.0 per cent of respondents. The ability to make quick financial decisions is the boosting factor for 53.4 per cent of respondents, reflecting a need for immediate access to financial information. Adaptability is valued by 53.4 per cent of respondents, suggesting that flexible services catering to diverse needs are

important. Convenience is a key factor for 52.8 per cent of respondents, reinforcing the importance of ease of use. Affordability is significant for 52.8 per cent of respondents. Security is crucial for 46.0 per cent of respondents, showing that confidence in the safety of digital transactions is a significant concern. Discounts and offers attract 44.7 per cent of respondents, and Low service charges are important for 45.3 per cent of respondents.

Table: 6.32

Factors of Propensity to Adopt Digital Financial Services (Wayanad)

Sl. No.	Factors	No. of Respondent	Percentage
1	Faster transactions	60	39.0
2	Transparency and accountability	57	37.0
3	Discounts and offers	35	22.7
4	Saves time	60	39.0
5	Accurate timing	59	38.3
6	Quick financial decision-making	58	37.7
7	Convenience	69	44.8
8	Security	50	32.5
9	Adaptability	57	37.0
10	Affordability	57	37.0
11	User friendly	58	37.7
12	Low Service charge	36	23.4

Source: Calculated from Field Survey Data

Table 6.32 provides data that examines the factors influencing the adoption of digital financial services among residents of Wayanad. The highest percentage of respondents (44.8 per cent) prioritize convenience, indicating that ease of use and accessibility are the most critical factors in adopting digital financial services in Wayanad. About 39 per cent valued faster transactions, emphasizing the importance of speed and efficiency in digital services. An equal percentage of respondents appreciate the time-saving benefits of digital financial services, highlighting the importance of efficiency. Accurate timing is significant for 38.3 per cent of respondents, who valued the precise and timely transactions. The ability to make quick financial decisions is important for 37.7 per cent of respondents, reflecting a need for immediate access to financial information and decision-making capabilities.

User-friendly interfaces are crucial for 37.7 per cent of respondents. Transparency and accountability matter to 37.0 per cent of respondents. Adaptability is valued by 37.0 per cent of respondents, and affordability is significant for 37.0 per cent of respondents. Security is important for 32.5 per cent of respondents, and Low service charges are important for 23.4 per cent of respondents. Discounts and offers attract 22.7 per cent of respondents.

Understanding the propensity to adopt digital financial services, along with the challenges faced, is crucial for fostering financial inclusion and economic growth. It helps identify key drivers and barriers, allowing for targeted interventions and the development of customized solutions. By addressing issues like trust, access, and security, stakeholders can bridge the digital divide, enhance user confidence, and ensure that digital financial tools are accessible and beneficial to all, particularly underserved communities. This understanding also informs policymaking and drives innovation, ultimately leading to a more inclusive and resilient digital financial ecosystem.

6.7 Reasons for Not Preferring Digital Transaction

The shift towards digital transactions has been a significant trend globally, promising enhanced convenience, security, and efficiency. However, despite these advantages, many individuals remain reluctant to adopt digital financial services. This hesitance can arise for various reasons, ranging from security issues to personal preferences for cash transactions. In this context, analyzing the reasons behind the non-preference for digital transactions provides valuable insights into the barriers that need to be addressed to promote wider adoption. The following analysis examines the reasons for not preferring digital transactions among a group of respondents, shedding light on the key factors influencing their reluctance.

Table: 6.33

Reasons for Not Preferring Digital Transaction

Sl. No.	Reasons	No. of Respondent	Percentage
1	Fear of Online Fraudulent Practices	156	39.00
2	Security Issues	142	35.50
3	Only Limited Points of sale	105	26.25
4	Privacy Issues (Possibility of information theft)	133	33.25
5	It makes business activity difficult	134	33.50
6	It makes smaller payments difficult	133	33.25
7	Absence of bargaining	140	35.00
8	Absence of feel-good factor when you have Cash in the hand	161	40.25
9	Lack of grievance body	135	33.75
10	Non-familiarity and lack of required technological skills	222	55.50

Source: Calculated from Field Survey Data

The data in Table 6.33 reveals several key reasons why individuals prefer not to engage in digital transactions, each with varying degrees of impact. The highest number of respondents (55.5 per cent) cited non-familiarity and lack of technological skills as their primary reason for not preferring digital transactions. This indicates a significant barrier related to digital literacy and technology adoption. The second most cited reason (40.25 per cent) is the absence of the "feel good" factor when having cash in hand. This suggests a psychological and emotional preference for tangible money over digital equivalents. Fear of fraudulent online practices is a major concern for 39 per cent of the respondents, highlighting significant trust issues with digital transactions. Security issues are a significant concern for 35.5 per cent, reflecting a lack of confidence in the safety of digital financial transactions. The inability to bargain is a key reason for 35 per cent. A lack of a grievance body is a concern for 33.75 per cent, highlighting the need for better support and resolution mechanisms for digital transaction issues. The perception that digital transactions complicate business activities is held by 33.5 per cent of the respondents. This may be due to additional processes or perceived inefficiencies introduced by digital systems. The difficulty of making smaller payments through

digital means is a reason for 33.25 per cent. Privacy issues, such as the possibility of information theft, are again of concern by 33.25 per cent, reflecting worries about data security and personal information protection. Limited points of sale terminals accepting digital transactions is a reason for 26.25 per cent showing an infrastructural gap in the acceptance of digital payments.

Table: 6.34

Reasons for Not Preferring Digital Transaction (Ernakulam)

Sl. No.	Reasons	No. of Respondent	Percentage
1	Fear of Online Fraudulent Practices	35	41.18
2	Security Issues	31	36.47
3	Only Limited Points of sale	19	22.35
4	Privacy Issues (Possibility of information theft)	30	35.29
5	It makes business activity difficult	29	34.12
6	It makes smaller payments difficult	30	35.29
7	Absence of bargaining	30	35.29
8	Absence of feel-good factor when you have Cash in the hand	31	36.47
9	Lack of grievance body	30	35.29
10	Non-familiarity and lack of required technological skills	43	50.59

Source: Calculated from Field Survey Data

The data given in Table 6.34 highlights the reasons why respondents in Ernakulam prefer not to use digital transactions. The most cited reason is the lack of familiarity and required technological skills, indicating a significant barrier due to digital literacy issues. About more than half of the respondents (50.59 per cent) reported it as their reason for not preferring digital transactions. Many respondents (41.18 per cent) are prevented by the fear of online fraud, reflecting substantial trust issues with digital transactions. Security issues and the absence of the Feel Good Factor with Cash in Hand are a significant concern for 36.47 per cent of respondents, indicating worries about the safety of digital financial transactions. The preference for the tangible feel of cash suggests a clear bond to physical money. Concerns about privacy and the possibility of information theft affected many respondents (35.29 per cent), reflecting worries about data security. The same

percentage of the respondents considered the difficulty in making smaller payments digitally as their major deterring factor, suggesting that digital solutions may not be as convenient for minor transactions. The inability to bargain during transactions is also affected by 35.29 per cent, and the same number of respondents reported that the lack of a grievance body is the major factor hindering the adoption of digital financial transactions. The absence of an effective grievance mechanism highlights the need for better customer support and dispute resolution. Some respondents feared that digital transactions would complicate business activities (34.12 per cent of respondents). Limited acceptance points of sales for digital payments highlight infrastructural gaps that prevent wider adoption. It was the major concern for 22.35 per cent of the respondents.

Table: 6.35

Reasons for Not Preferring Digital Transaction (Malappuram)

Sl. No.	Reasons	No. of Respondent	Percentage
1	Fear of Online Fraudulent Practices	91	56.52
2	Security Issues	85	52.8
3	Only Limited Points of sale	71	44.1
4	Privacy Issues (Possibility of information theft)	81	50.31
5	It makes business activity difficult	90	55.9
6	It makes smaller payments difficult	87	54.04
7	Absence of bargaining	91	56.52
8	Absence of feel-good factor when you have Cash in the hand	94	58.39
9	Lack of grievance body	90	55.9
10	Non-familiarity and lack of required technological skills	111	68.94

Source: Calculated from Field Survey Data

The data given in Table 6.35 identifies reasons why respondents in Malappuram prefer not to use digital transactions. The most cited reason is the lack of familiarity and required technological skills (68.94 per cent), which indicates a significant barrier due to digital literacy issues. Many respondents (58.39 per cent) cited the absence of feel good factor with cash in hand and preferred the tangible feel of cash. A major concern for 56.52 per cent of the respondents is the fear of

online fraud, reflecting substantial trust issues with digital transactions. Absence of Bargaining was a major issue for another 56.52 per cent. Security issues and privacy issues are significant concerns for 52.8 per cent of respondents and 50.31 per cent of respondents, respectively. Difficulty in making smaller payments digitally is a notable issue, as cited by 54.04 percent, suggesting that digital solutions may not be as convenient for minor transactions. Some respondents (55.9 per cent) find digital transactions complicate business activities. The absence of an effective grievance mechanism highlights the need for better customer support and dispute resolution. The absence of adequate point-of-sale terminals was also a hindering factor for 44.1 per cent of respondents.

Table: 6.36

Reasons for Not Preferring Digital Transaction (Wayanad)

Sl. No.	Reasons	No. of Respondent	Percentage
1	Fear of Online Fraudulent Practices	30	19.48
2	Security Issues	26	16.88
3	Only Limited Points of sale	15	9.74
4	Privacy Issues (Possibility of information theft)	22	14.29
5	It makes business activity difficult	15	9.74
6	It makes smaller payments difficult	16	10.39
7	Absence of bargaining	34	22.07
8	Absence of feel-good factor when you have Cash in the hand	45	29.22
9	Lack of grievance body	28	18.18
10	Non-familiarity and lack of required technological skills	98	63.63

Source: Calculated from Field Survey Data

Table 6.36 highlights the key reasons why individuals in Wayanad prefer not to engage in digital transactions. The data from Wayanad reveals that the primary reasons for not preferring digital transactions are non-familiarity and lack of required technological skills (63.63 per cent). This significant percentage suggests a substantial gap in digital literacy, where many individuals are either unaware of how to use digital financial tools or lack the confidence to do so. This highlights the need

for educational initiatives and training programs that can empower people with the necessary skills to engage in digital transactions safely and effectively. Additionally, the preference for cash due to the tangible feel (29.22 per cent) and the absence of bargaining (22.07 per cent) reflect cultural and psychological factors that influence the reluctance towards digital payments. For many, the physical presence of cash offers a sense of security and control that digital transactions do not. Concerns about security and privacy also play a significant role, with fear of online fraudulent practices (19.48 per cent), security issues (16.88 per cent), and privacy concerns (14.29 per cent) being notable deterrents. These concerns underline the importance of strengthening security measures and building trust in digital platforms. Furthermore, the lack of a grievance body (18.18 per cent) suggests that users are worried about not having proper recourse in case of issues with digital transactions. Other practical concerns, such as the limited availability of points of sale (9.74 per cent) and the difficulty in making smaller payments (10.39 per cent), add to the reluctance, indicating that the infrastructure for digital transactions may still be insufficient in certain areas. Addressing these challenges is crucial for increasing the adoption of digital financial services in Wayanad.

CHAPTER 7

FINDINGS AND SUGGESTIONS

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- 7.1 *Major Findings*
 - 7.2 *Suggestions and Policy Recommendations*
 - 7.3 *Scope for Further Research*
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The study on the assessment of the digital financial literacy of rural people in the State of Kerala is mainly focused on understanding digital financial literacy initiatives implemented by various stakeholders in India, especially in the State of Kerala. The study examined the demand-side aspects of digital financial literacy in rural areas, comprised of dimensions like digital financial aptitude, digital financial awareness, digital financial attitude & behaviour and digital financial affordability. Similarly, from the supply-side aspects of digital financial literacy, the study considered the availability of digital financial infrastructures and the accessibility of digital financial services. The study also attempted to measure digital financial literacy and evaluated its level and associations with various socio-economic and demographic factors in rural areas of Kerala. Finally, the study identified major reasons, challenges, and barriers rural households face regarding digital financial literacy in Kerala. Based on the aforementioned objectives, the following are the major findings of the study.

7.1 Major Findings

- a) Digital financial literacy is essential to access and use contemporary financial services efficiently. It makes it possible for residents of rural areas to take advantage of government social programs that are administered online, handle their money more effectively, and conduct safe online transactions. By closing the gap between rural communities and the formal banking sector, digital financial literacy might enhance financial inclusion in Kerala, a state famous for its high literacy rates and sizable remittance economy. It contributes to the overall socio-economic development of rural households by promoting economic resilience, lowering reliance on cash, and encouraging engagement in the developing digital economy.
- b) The government of India has undertaken various policy and program initiatives to enhance financial literacy and bridge the gap between technological advancements and financial inclusion. At the national level, programs like PMGDISHA, PMJDY, NDLM, the Digital India campaign, and financial literacy centres of RBI, financial educational websites, educational films, public

awareness programs, NSFE, NCFE, etc. focus on empowering rural communities with the skills to use digital financial tools. These efforts have substantially contributed to advancing digital financial literacy. Millions of rural residents nationwide have received training from initiatives like PMGDISHA, which has allowed them to access government benefits, use digital payment systems, and interact with financial institutions in digital mode. The Digital India initiative has improved the culture of digital transactions by establishing an ecosystem that promotes using products like UPI, BHIM, and Aadhaar-enabled payment systems. The financial literacy campaigns of RBI have focused on educating the general public about safe and effective digital banking procedures through its financial literacy centres.

- c) In Kerala, state-specific initiatives like Kudumbashree, Akshaya Centers, community-based financial literacy programs, SHGs, local language digital finance workshops and localized efforts by cooperative banks and Panchayats have complemented these national efforts, taking advantage of the higher literacy rates in the state. Equally notable contributions have been made in Kerala, where programs like Kudumbashree enable women in self-help groups to embrace and effectively use digital financial tools, allowing them to become tech-savvy and financially independent. Akshaya Centres have served as digital access points by giving rural communities practical training and services and improving their capacity to understand digital platforms. Local initiatives by panchayats and cooperatives have increased the impact by attending to community-specific needs. Together, these programs have minimized knowledge gaps, promoted digital financial services, and advanced the larger objective of financial inclusion, especially in rural regions. These initiatives have increased digital tool proficiency, decreased reliance on cash transactions, and enabled increased participation in formal financial systems.
- d) The study considered four major dimensions of the demand side of digital financial literacy. These are digital financial aptitude, digital financial awareness, digital financial attitude & behaviour and digital financial

affordability. Digital financial aptitude captures both financial aptitude and digital aptitude. Ernakulam district has found the highest financial aptitude score of 7.69, followed by Malappuram (7.18). Wayanad has the lowest financial aptitude score of 6.46. The digital aptitude score for Ernakulam is the highest, with a score of 5.32, followed by Malappuram (5.22). Wayanad is reported to have a lowest digital aptitude score of 4.59. The digital financial aptitude score is 4.51 for Malappuram, 3.81 for Ernakulam and 3.55 for Wayanad. Finally, a digital financial aptitude index (DFAI) of Kerala concerning the selected districts is measured, with Malappuram reporting the highest index of 0.44, followed by Ernakulam (0.42) and Wayanad (0.39). On average, males have the highest DFAI compared to females across all three districts. Males (0.47) have the highest DFAI than females (0.41). In the case of religion, Christians reported the highest (0.54), followed by Muslims (0.47) and Hindus (0.38). Among the social groups, the general and OBC categories have the highest DFAI, with a score of 0.47, followed by the ST category (0.26). When marital status is considered, married people have the highest score (0.69) and widowed the lowest (0.24). The education-wise DFAI shows that educated people above graduation are reported the highest (0.69) and the illiterate people the lowest (0.04). When the earnings are considered, those earning more than 450000 have the highest score (0.72), and those earning less than 15000 reported the lowest DFAI. Based on the statistical tests, statistically significant differences in digital financial aptitude exist among the three chosen districts, between the various religious groups, social groups, marital status groups, educated groups, and income level groups.

- e) The multiple regression model is used to estimate the impact of financial aptitude and digital aptitude on digital financial aptitude while controlling for each other's effects. The value of R-square (Coefficient of Determination) is 0.714, indicating that approximately 71.4 per cent of the variance in digital financial aptitude is explained by the linear combination of financial aptitude and digital aptitude included in the model. It means that the model best fits the data reasonably well, as it can explain a considerable portion of the fluctuations

in the dependent variable. Both predictors (financial aptitude and digital aptitude) have a positive value and statistically significant impact on digital financial aptitude, as indicated by their low p-values ($p < 0.001$).

- f) The survey found that the Malappuram district reported a high average digital financial attitude index value of 0.52, followed by Ernakulam (0.43) and Wayanad (0.38). It shows that the respondents from the Malappuram district are more willing to adopt new digital tools and have more confidentiality when using these tools and services, and they have more positive attitudes and behaviours towards emerging digitalized tools and services. Males have a higher digital financial attitude index (0.49) than females (0.39) across all districts. In each district, Christians have the highest digital financial attitude index (0.51), followed by Muslims (0.45) and then Hindus (0.42). Among the social groups, the study found that the General category (0.49) shows a highly positive index overall compared to the SC and ST categories. The study shows that married people generally have the highest positive value (0.86) across all districts. Unmarried and widowed individuals tend to have moderate positive attitudes, while separated individuals show a lower value. The above graduation-educated respondents have a higher digital financial attitude (0.96) or more positive attitude towards digitalized tools and services, followed by the graduated (0.84). The illiterate have a very low digital financial attitude index (0.008). Based on the attitudes of people of different ages, it is found that the index value is much higher for the age group 18-30 (0.85), followed by the age group 31-45 (0.52) and 46-60 (0.14). Therefore, as age increases, the digital financial attitude index decreases, showing a decline in the positive attitude towards digital financial matters. The index value for the age group 60 is only 0.002, showing a significant decrease in their attitude towards the upcoming digitalization of financial practices. Occupation and digital financial attitude are positively correlated with each other. Salaried individuals have the highest digital financial attitude index across all three districts (0.89) compared to other groups. Across all districts, the higher income group (>45001) have the highest digital financial aptitude, having an average index of 0.84, followed by the

income group 30001-45000 (0.63) and 15001-30000 (0.42). The lowest income group (>15000) reported a lower index value (0.18). So, when the income increases, the digital financial aptitude index increases. Based on the statistical tests, a statistically significant difference exists among three districts, between male and female, among three religious and social groups, marital, educational, age, occupational, and income groups and between different ration card holders.

- g) The study measured the affordability in terms of digital devices, internet services, and service charges. If the respondent is affordable to the first two, he is treated as affordable for free financial services. If he is affordable for all three indicators, then he is affordable for all digital financial services. Malappuram has the highest percentage (58.39) of affordability, followed by Ernakulam (57.65) and Wayanad (55.19). Males have more affordable (61.84) than females (51.81). General (76.67) and OBC (60.41) categories show higher affordability than SC and ST. Unmarried individuals (90.77) have the higher affordability, followed by married respondents (51.41 per cent). Widows have only low affordability. Among the religious groups, 77.27 per cent of Christians are affordable for all items, including service charges, followed by 60.22 per cent of Muslims and 48.57 per cent of Hindus. A clear trend of increasing affordability and access to digital financial services (smartphones/laptops, internet access, and affordability of fees) exists as income levels rise. When the educational level of the individuals is considered, 100 per cent of the above-graduated people and 85.37 per cent of the graduates can afford all the items. Only 45 per cent of UP-level educated respondents, 18.37 per cent among the LP-level educated, and 16 per cent of the illiterate respondents are affordable over all items.
- h) The study analyzed digital financial awareness in terms of awareness of digital financial services and products and awareness of digital financial risks & their control. In the case of awareness about digital financial services and products, the bulk of the respondents are fully aware of bank accounts (62.5 per cent), mobile wallets (42.25) and banking cards (52 per cent). However, more than

half of the respondents are unaware of internet banking (52.5 per cent), mobile phone payment (51.75 per cent) and direct benefit transfers (59.25). About 82 per cent are unaware of the modes of mobile banking, and only 2 per cent are aware. As 30.25 per cent are unaware of QR Code banking, it is also unfamiliar to the respondents. The survey found that Malappuram district reported a high awareness index value of 0.44, followed by Wayanad (0.39) and Ernakulam (0.37). The respondents from the Malappuram district are more aware and skilled in using digital financial products and services. Although Malappuram has comparatively higher digital financial awareness than other districts, the respondents lack awareness about certain digital financial products and services, such as mobile banking and electronic banking. The findings on the awareness about digital financial risks and control reveal that awareness about cyber security risks such as phishing, pharming, and spyware have the highest percentage of understanding among the listed stakes, with more than half of the respondents (56.5 per cent) indicating awareness of the cyber security risks. About 37.75 per cent of the respondents know the mechanisms to prevent data leakages. About 37 per cent are aware of the need to change passwords frequently, and 33.25 per cent are knowledgeable about the issue of setting common passwords for all apps. Only 24.5 per cent of the respondents know the complaint mechanisms, and 10.75 per cent know about the compensation mechanisms. The study found that Malappuram district reported a high aggregate digital financial awareness index value of 0.41, followed by Ernakulam and Wayanad. The analysis actually shows that existence of a statistically significant differences in the digital financial awareness index values exist between districts, gender, religion, age, social, education, and income groups.

- i) The study considered two dimensions of the supply side of digital financial literacy. They are the availability of digital financial infrastructures and the accessibility of digital financial services. When the availability is considered, Bank branches are available for all the respondents: 85 per cent have the availability over internet access, 81 per cent have ATM counters, 80 per cent

have smartphones/laptops/desktops, 79 per cent have smartphones with internet access, and 68 per cent have availability of point of sale terminals. The respondents from the Malappuram district have the highest availability of smartphones, internet access, and the availability of smartphones along with required internet access. Ernakulam has the highest availability of ATMs and point-of-sale terminals. Compared to Malappuram and Ernakulam, Wayanad has a lower availability of all these digital financial infrastructures. To measure the physical accessibility, the distances to the bank branch, ATM counters, and POS terminals are analyzed. Most respondents have easy access to the main physical and digital financial infrastructures. Eighty per cent have easy access to the bank branches, which are available within 1 to 3 km. ATM counters are available within 1 to 3 km for 326 respondents (81.50 per cent), 3 to 5 km for 67 respondents (16.75 per cent) and more than 5 km for seven respondents (1.75 per cent). Likewise, point-of-sale terminals are available within 1 to 3 km for 353 respondents (88.25 per cent), 3 to 5 km for 46 respondents (11.50 per cent) and more than 5 km for 0.25 per cent. Compared to other districts, Wayanad has lower accessibility. Only 68.83 per cent of the respondents have accessibility within 3 km.

- j) The study estimated the digital financial literacy index (DFLI) using three core dimensions: digital financial aptitude, digital financial awareness and digital financial attitude and behaviour. The study found an overall digital financial literacy index of 0.39, showing a just satisfactory level of digital financial literacy in the state's rural areas. Malappuram has the highest digital financial literacy index (0.45) compared to other districts, followed by Ernakulam (0.39). Wayanad lags with a comparatively lower index (0.34), showing the respondents' lower understanding and usage of these tools.
- k) The study found an inverse relationship between age and digital financial literacy. The age-wise distribution of the overall digital financial literacy index reveals that young individuals aged 18-30 have the highest digital financial literacy index (0.729) compared to other groups. Males have a better digital

financial literacy index across three districts. Among the religious groups, Christians scored the highest in the digital financial literacy index (0.47), followed by Muslims (0.41). From the data, it is clear that the general category scored the highest index (0.43), followed by OBC (0.41) and SC (0.39). The survey reports show that married individuals' digital financial literacy index is the highest (0.75 compared to other marital groups. The positive attitude of married respondents, financial independence, and better financial management led to higher digital financial literacy. The factor education plays a critical role in improving the digital financial literacy level of individuals. The digital financial literacy index increases with higher levels of education, showing a positive correlation between digital financial literacy and education. Illiterate respondents have much lower indexes than higher-educated respondents. Individuals who are well-occupied tend to have higher digital financial literacy. The survey results show that the salaried respondents from all districts have the highest DFL index (0.807), and the agricultural workers from all three districts have the lowest DFL index (0.099). The self-employed respondents also have higher digital financial literacy in all districts, with an aggregate value of 0.585.

- 1) The ordinal logistic regression model has been used to identify the factors influencing digital financial literacy. By analyzing a diverse set of variables, including age, gender, family size, employment status, education level, income, and more, this model seeks to identify key factors that impact an individual's likelihood of possessing adequate digital financial literacy. The Pseudo R-squared value in this model is approximately 0.6830, which means that the independent variables included in the model collectively explain about 68.30 per cent of the variations in digital financial literacy. Age negatively impacts digital financial literacy, with younger individuals being more literate. Males exhibit higher digital financial literacy than females. Larger family sizes reduce digital financial literacy, while MGNREGS participation significantly enhances it. Landholding and higher education levels positively influence digital financial literacy. Married individuals show lower digital financial literacy than unmarried ones. Salaried and self-employed individuals have higher digital

financial literacy compared to unemployed individuals. Higher-income groups demonstrate greater digital financial literacy. Christianity Religion and ration status BPL also impact digital financial literacy. Caste, widowed/separated status, and house type show no significant influence on digital financial literacy.

- m) The study highlighted the critical role of digital financial literacy in improving the usage of digital financial services among rural households in Kerala. The study uses Structural Equation Modeling to demonstrate the intricate relationships between digital financial literacy and digital financial services usage. The study considered the dimensions of digital financial literacy, namely digital financial aptitude, attitude and behaviour, and awareness of digital financial services and products and financial risks, to analyze their influence on the usage of digital financial services. The findings show that awareness of digital financial services is the most significant determinant among the various dimensions of digital financial literacy, with a strong positive influence on the usage of these financial services. Awareness of digital financial risks also emerged as a critical factor, underlining the importance of equipping users with the knowledge to mitigate potential vulnerabilities and mitigation strategies associated with usage. The dimension of digital financial aptitude showed a moderately positive effect on the usage of digital financial services, which indicates that skills and familiarity with digital financial tools contribute to the usage of financial services. However, this relationship is weaker than awareness-based factors, suggesting that skill-building efforts should complement broader awareness initiatives. Interestingly, though theoretically critical, digital financial attitude and behaviour did not show a statistically significant effect, suggesting that awareness and skills are more decisive factors than attitudes alone. This result suggests that while positive attitudes and proactive behaviours are important, they do not independently drive adoption without adequate awareness, aptitude, and access to infrastructure. Overall, digital financial literacy is the most critical prerequisite for promoting the usage and adoption of digital financial services.

n) There are many reasons for digital financial illiteracy. The results of the study indicate that the majority percentage of respondents (51.5 per cent) indicated that the lack of financial education in schools is a significant reason for digital financial illiteracy. Close to the highest, 51.2 per cent of respondents reported a lack of awareness, and 48.0 per cent reported lacking confidence in using digital financial services as the cause. Only a few people reported religious beliefs and practices (14.7 per cent) and the non-accessibility of digital financial institutions (10 per cent) as a reason. In Ernakulam district, the lack of financial education in schools (61.3 per cent) and general education (54.2 per cent) are the most significant reasons for digital financial illiteracy. Lack of confidence in using digital financial tools and services (60.0 per cent) and awareness (60.0 per cent) are also significant contributors. Non-accessibility of financial institutions (12.9 per cent) and religious problems (22.4 per cent) are the least affected. Malappuram's lack of financial education in schools is the primary cause (69 per cent). Financial literacy is not adequately covered in the school curriculum. The lack of awareness and confidence (54.1 per cent) are equally significant and point towards a broader issue of social and personal barriers. Poor money management skills (54.0 per cent) are closely linked to the overall financial literacy of the population. Poverty and unemployment affect only 31.1 per cent, and religious problems are a factor for 19.3 per cent of respondents. Wayanad is the most rurally populated district in Kerala with agriculture is the primary occupation. So, Wayanad faces many problems in attaining education, with many areas lacking adequate educational infrastructure and resources, contributing to lower literacy rates than the state average. The highest percentage of respondents (45.4 per cent) indicated that a lack of banking habits is a significant reason for digital financial illiteracy. The second most common reason is a lack of awareness (43.5 per cent). A considerable number of respondents (35.0 per cent) reported a lack of confidence in using digital financial services. Poverty and unemployment were mentioned by 20.7 per cent of respondents. A smaller percentage (5.8 per cent) cited religious problems as a

hindering factor. Non-accessibility of financial institutions is the least cited reason (3.2 per cent).

- o) The most significant barrier to digital financial literacy is the inadequate financial knowledge and skills (62 per cent). A considerable portion of respondents (58.7 per cent) are unaware of digital financial services and their benefits. About 54 per cent of the respondents reported risk of loss as their challenge of digital financial literacy. About half of the respondents considered lack of income (49 per cent), security concerns (50.7 per cent), lack of trust (49 per cent), and poor internet connectivity (48.5 per cent) as the significant challenges. Lack of POS terminals (10 per cent), religious problems (18.0 per cent) and lack of digital financial infrastructures are reported by less per cent. In Ernakulam, inadequate financial knowledge and skill (62.4 per cent) remains the top challenge, followed by the potential risks of digital transactions and connectivity issues. In the case of Malappuram, inadequate financial knowledge and skill are the most significant challenges, with 76.4 per cent of respondents identifying them as major issues, followed by poor internet connectivity and digital insecurity (73.3 per cent) as the major challenge. As stated earlier, the most significant challenge in Wayanad was that nearly half of the respondents highlighted a lack of financial knowledge and skills and a lack of awareness. Financial constraints (39.6) and fear of potential losses (36.4) also caused significant challenges.
- p) In general, the most significant factor for adopting digital financial services is convenience (47.2 per cent), time-saving behaviour (46.2 per cent), accurate timing feature (45 per cent) and transparency, accountability and adaptability (44 per cent). The discounts and offers given by the DFS authorities and low service charges also lead to increased use of DFS (only 35 per cent). The study found that in Ernakulam, the highest percentage of respondents (43.5 per cent) considered faster transactions as a primary reason for adopting digital financial services. Closely following this, 42.4 per cent of respondents value the time-saving aspect of digital financial services. Transparency and accountability are

crucial for 41.2 per cent of the respondents. The discounts and offers and low service charges (38 per cent). In Malappuram, The highest percentage of respondents (55.3 per cent) prioritizes faster transactions, emphasizing the importance of efficiency and speed in digital financial services. Equal to the preference for faster transactions, 55.3 per cent of respondents valued time-saving benefits. Another 55.3 per cent of respondents consider user-friendly interfaces necessary, highlighting the need for intuitive and easy-to-use platforms. In the case of Wayanad, the highest percentage of respondents (44.8 per cent) prioritize convenience, faster transactions (39 per cent), accurate timing (38.3 per cent), quick financial decisions and user-friendly interfaces (37.7 per cent). Low service charges, discounts, and offers only attracted 23.4 and 24.7 per cent, respectively.

- q) The study reveals several vital reasons individuals prefer not to engage in digital transactions, each with varying degrees of impact. The highest number of respondents (55.5 per cent) cited non-familiarity and lack of technological skills as their primary reason for not preferring digital transactions. The second most cited reason (40.25 per cent) is the absence of the feel-good factor when having cash in hand. Fear of fraudulent online practices and security issues are significant concerns for 39 per cent and 35.5 per cent, respectively. The least cited (26.25 per cent) reason for not preferring digital transactions is a limitation of point-of-sale terminals. In the case of Ernakulam, most respondents considered the lack of familiarity. It required technological skills (50.59 per cent), fear of online fraud (41.18 per cent) and absence of the feel-good factor with cash in hand (36.47 per cent). The lack of point-of-sale terminals was the least reported (22.35 per cent) reason for not preferring digital transactions. In Malappuram, The most cited reason is the lack of familiarity and required technological skills (68.94 per cent), followed by the absence of a feel-good factor with Cash in Hand (58.39 per cent). Like other states, the lack of point-of-sale terminals is the least cited reason. The respondents from Wayanad reported that non-familiarity and lack of required technological skills (63.63 per cent) were the significant reasons that hindered them from adopting digital

transactions. The other primary reasons are the preference for cash due to the tangible feel (29.22 per cent) and the absence of bargaining (22.07 per cent). Concerns about security and privacy also play a significant role, with fear of online fraudulent practices (19.48 per cent), security issues (16.88 per cent), and privacy concerns (14.29 per cent) being notable deterrents. Other practical problems, like limited availability of points of sale (9.74 per cent) and the difficulty in making smaller payments (10.39 per cent), add to the reluctance to adopt digital financial services, indicating that the infrastructure for digital transactions may still be insufficient in certain areas.

- r) The study highlighted the critical role of digital financial literacy in improving the usage of digital financial services among rural households in Kerala. The study uses Structural Equation Modeling to demonstrate the intricate relationships between digital financial literacy and digital financial services usage. The study considered the dimensions of digital financial literacy, namely digital financial aptitude, attitude and behaviour, and awareness about basic and digital financial services and products and risks, to analyse their influence on usage of digital financial services. The findings show that awareness of digital financial services is the most significant determinant among the various dimensions of digital financial literacy, with a strong positive influence on the usage of these financial services. Awareness of digital financial risks also emerged as a critical factor, underlining the importance of equipping users with the knowledge to mitigate potential vulnerabilities and mitigation strategies associated with usage. The dimension of digital financial aptitude showed a moderate positive effect on the usage of digital financial services, which indicates that skills and familiarity with digital financial tools contribute to the usage of financial services. However, this relationship is weaker than awareness-based factors, suggesting that skill-building efforts should complement broader awareness initiatives. Interestingly, though theoretically critical, digital financial attitude and behaviour did not show a statistically significant effect, suggesting that awareness and skills are more decisive factors than attitudes alone. This result suggests that while positive attitudes and

proactive behaviours are important, they do not independently drive adoption without adequate awareness, aptitude, and access to infrastructure. Overall, digital financial literacy is the most critical prerequisite for promoting the usage and adoption of digital financial services.

7.2 Suggestions and Policy Recommendations

Based on the above-mentioned findings, the study suggests the following measures and policy initiatives that various stakeholders may consider to improve digital financial literacy among rural people for effective and inclusive financial inclusion.

1) Strengthen Digital Financial Literacy Programs

It is very crucial to implement comprehensive and targeted literacy programs across various platforms to enhance digital financial literacy. The following steps can help strengthen these programs:

- a) ***Curriculum Integration:*** Just like computer education, financial and digital education should be integrated into the school curriculum. Accordingly, digital financial literacy should be introduced as a core subject in school curricula to equip students with essential skills from an early age. The student must be taught about personal finances, financial security, financial products, financial market, inflation, digital financial services, digital financial infrastructure, financial fraud, etc.
- b) ***Community-Based Training:*** Establish community-level training centers in rural, remote and underserved areas, ensuring local populations can access digital literacy programs. These centres can collaborate with local governments, schools, and non-profit organizations to train the local community.
- c) ***Concentrate on Practical Skills:*** Rather than focusing on theoretical learning methods, conduct practical training programs that help people comprehend how to use digital financial tools for everyday tasks like online payments, savings, and

accessing government benefits along with cyber threats and fraudulence. It will create and improve the level of confidence and trust in using digital services.

- d) ***Mobile-Based Learning Tools:*** Develop some mobile-based apps and platforms that provide easy-to-understand lessons on digital finance, allowing people to learn at their own pace, especially in areas with limited internet access.
- e) ***Partnerships and collaborations with Financial Institutions:*** Collaborate with banks and non-banking financial institutions, fintech companies, Colleges and universities, NGOs, and government bodies to fund and provide financial literacy programs as an outreach initiative. It can leverage expertise and resources for more effective and efficient outreach.
- f) ***Targeted Training Programs for Different Demographics:*** Frame such training programs that are conducive to different age groups, women-centric, socio-economic groups, social communities, religious institutions, and educational backgrounds to ensure inclusivity and handle the specific needs of each group.

2) Create Awareness about Digital Financial Services and Products

The study reveals that most rural people are digitally illiterate, and only a few are very aware of digital financial services. The low level of digital financial literacy is mainly because of a lack of awareness about these services. Thus, there is a requirement to create awareness among rural people about financial education and digital financial services. Various training programs, nationwide campaigns and awareness camps should be organized at the village level by multiple stakeholders such as banks, governments, NGOs, insurance companies, microfinance institutions, etc. Even government departments such as MGNREGA, local government schools, NSS of Colleges, etc., may come forward to create awareness among the people.

3) Create awareness about the Risks and Problems involved in Digital Transactions

The convenience that digital payments have brought into the digital world is vulnerable to online fraud and cybersecurity risks, and there are many potential risks

facing digital financial services users. Rural people need to be informed and educated about the risks involved in its usage. At this level, consumers need to be aware of the do's and don'ts when it comes to the safety of information and their data while transacting digitally. There is a need for responsible digital financial practices to protect people from fraud, increasing their confidence level. It is also required to launch nationwide campaigns on cybersecurity risks and mitigation strategies, focusing on phishing, data protection, and fraud prevention to safeguard customers. There are also established community-based digital security help desks to help people secure their digital accounts. A regulatory framework should be framed to impose strict penalties for digital fraud and promote a transparent complaint resolution mechanism.

4) Introduce Fraud Insurance Scheme

Create partnerships with banks and other financial institutions to offer affordable insurance policies that cover losses from digital fraud, encouraging risk-averse users to push digital financial services.

5) Expand Digital Financial Infrastructure in Rural Areas

The wide range of digital and financial services is accessed and delivered through various digital platforms. Having a well-developed infrastructure for the delivery of digital financial services magnetizes people to use it, especially in rural areas. There is a positive relationship between the penetration of digital financial services and the digital financial infrastructure. In rural areas, the lack of accessible digital financial infrastructure leads to low awareness and the usage of its services. Therefore, financial infrastructures need to be developed in rural areas to efficiently deliver and use digital financial services.

6) Introduce a Low Cost based Digital Devices

Introduce subsidy-based schemes or instalment-based programs for purchasing smartphones and laptops to incorporate and access digital financial services to low-income groups. Promote lightweight apps optimized for low-cost, user-friendly smartphones to ensure accessibility.

7) Introduce User-friendly Digital Financial Services

The services provided by the banking and non-banking financial institutions should be user-friendly so that even illiterate people from rural areas can also use them. The PoS and ATM need to provide voice commands and narration for all facilities in a multi-language format, which could help increase banking penetration among illiterate people. Therefore, digital financial services and infrastructures should be framed in such a manner that they are conducive to use by rural people.

8) Strengthen Internet Connectivity and Speed

Digital financial services are available to people with the collaboration of fin-tech companies and banks. For better and more successful digital transactions or, high-speed internet and its connectivity are required. In rural areas, the coverage and speed of internet connectivity are very low. Therefore, for smooth and successful digital operations, there is a need to improve internet connectivity in rural areas.

9) Improve the Level of Income and its Distribution and Standard of Living

The study found that the level of income to penetrate digital financial services. Those respondents who earn more are more likely to use digital financial services than those who earn less. The survey also found one of the challenges of digital financial transactions is the lack of money in the bank account. Therefore, it is essential to improve the income level and its distribution and standard of living in rural areas.

10) Any Charges on Digital Transactions should be Waived-off

Due to the recent innovation in Fin-Tech and its convenience, many people have moved to digital payment. However, there are some costs associated with it. Services such as NEFT, RTGS, IMPS, and Credit card/ Debit cards are chargeable after a certain limit. Therefore, all the service charges imposed on digital financial transactions should be waived.

7.3 Scope for Further Research

Based on the objectives, findings, and recommendations of this study, numerous opportunities are open for future research to deepen our understanding of digital financial literacy.

- a) State or regional level comparisons:** study how digital financial literacy varies across different states or regions in the country, especially urban and rural areas and socio-economic zones, such as tribal areas, hill regions, or highly urbanized states.
- b) Effectiveness of interventions by various stakeholders:** Compare the effectiveness of various digital financial literacy programs on various target populations. That is, evaluate whether government initiatives, such as PMGDISHA or RBI's financial literacy campaigns, effectively target rural-urban disparities.
- c) Digital financial divide:** The digital financial divide is the gap between individuals, households, communities, or rural-urban gaps that have access to and effectively use digital financial services and those that do not. This divide is influenced by factors such as access to technology, digital literacy, socio-economic status, geographic location, and trust in digital systems. Researching the digital financial divide helps to find barriers and other challenges to adopting and using digital financial services, which enables policymakers and stakeholders to design targeted interventions. The outcome of this research will lead to addressing the challenges of the digital financial divide, which is, thus, critical for boosting financial inclusion, decreasing economic inequality and poverty, and guaranteeing digital transformation of all segments of society.
- d) Economic impact of digital financial literacy:** Research the various economic consequences of digital financial literacy or divide, including its effects on entrepreneurship, small business growth, financial inclusion and

household incomes. Explore the link between digital financial inclusion employment and poverty alleviation.

- e) **Role of government and financial institutions:** Study how government, banks, microfinance institutions, and FinTech companies contribute to reducing the digital financial divide through innovative products and outreach programs for creating financial literacy. Assess how partnerships between the public and private sectors create awareness and improve access to digital financial services.

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APPENDIX

Annexure-I
Survey Schedule

I. Personal Information

District	:	Taluk	:
Panchayat	:	Age	:
Gender: Male (1); Female (0)	:	Family Size	:
MGNREG Job Card: Yes (1); No (0)	:	Size of Landholding	:
Religion: Hindu (0); Muslim (1); Christian (2); Others (3)			:
Caste: General (0); SC (1); ST (2); OBC (3); Other (4)			:
Marital Status: Unmarried: (0); Married: (1); Widowed (2); Separated (4)			:
Educational Level: Illiterate (0); L.P (1); U.P (2); SS/HSS (3); Graduate (4); Above (5)			:
Occupation: No Job (0); Agri. (1); Casual Labour (2); Salaried (3); Self Employed (4)			:
Ration Card Category: APL (1); BPL (2); Antyodaya (3); No Card (0)			:
Type of House: Kutchha (0); Semi-pucca (1); Pucca (2);			:
Ownership Status of House: Rented (0); Owned (1); Any Other (2)			:
Monthly Family Income: < 15000(0); 15001-30000 (1); 30001-45000 (2); > 45001 (3)			:

Do you have bank account? Yes/ No

Purpose of Using Bank Account (Multiple Options Possible)

LPG Subsidies		Savings	
Pension Scheme		To Get Loans	
MGNREGP Payments		Insurance	
Salary		Other (Specify)	

II. Financial Aptitude

- Suppose five people are given collectively a gift of Rs. 1,000 in total and they decided to share it equally, how much share does one receive? (Division)
 - Rs. 100
 - Rs. 150
 - Rs. 200
 - Rs. 250
- Imagine they are made to wait a year to get their share out of Rs.1,000 and the inflation remains at the rate of 10 percent. They can buy within a year's time. (Time-value of money)
 - More than Today
 - Less than Today
 - Same as Today
 - Do not know

III. Digital Aptitude

Do you Know how to....

S. No	Questions	Yes/ No
1	Use mobile/Computer/Tablet/ Laptop	
2	Read, write and send mobile SMS	
3	Use WhatsApp/ Facebook/ Any other Social media platforms	
4	Browses or uses the internet	
5	Obtain public service information through digital media	
6	Install software	
7	Make online payments	
8	Shop online	
9	Read and deduce information from visuals	
10	Protect devices, personal data, and privacy	

IV. Digital Financial Aptitude

Do you know....

S. No	Statements	Yes/ No
1.	Various digital transfer techniques used by banks	
2.	How to use debit and credit cards	
3.	How to use mobile/digital wallets	
4.	How to do internet banking transactions	
5.	How to use ATM	
6.	How to transfer money without internet data in mobile (USSD)	
7.	How to make payments through POS?	
8.	What is direct benefit transfer/ ABPS?	
9.	What is Aadhaar Enabled Payment System (AEPS)	

V. Digital Financial Attitude and Behaviour

S. No	Statements	SA (1)	A (2)	N (3)	DA (4)	SDA(5)
1.	I approach a bank to transfer money than DFS					
2.	I find inconvenient to use DFS					
3.	I believe that DFS are not safe and secure					
4.	I find difficult to use DFS					
5.	I feel nervous while using DFS					
6.	I believe that DFS are expensive					

VI. Digital Financial Infrastructures (Multiple Options Possible)

1	Bank Branch (How far)		2	Smart phone/ Laptop/ Desktop/ Tablet	
3	Internet access		4	Smart phone with internet access	
5	ATM (How far)		6	Point-of-sale terminal (How far)	

VII. Affordability Digital Financial Services

	Indicators	Yes/ No
1.	Is it affordable to purchase smartphone/laptop?	
2.	Is it affordable to purchase internet services?	
3.	Is it affordable to bear fees & other charges for DFS, if any?	

VIII. Awareness about Digital Financial Risks & Its Control

	Risks	(Yes/ No)
1	Aware about cyber security risks (phishing, pharming, spyware etc..)	
2	Mechanism to prevent data leakages	
3	Change password frequently	
4	Common Password for all Apps	
5	Updating Payment transaction Applications	
6	Grievance redressal/ Complaint mechanism	
7	Knowledge of compensation mechanisms	

IX. Source of Awareness (Multiple Options Possible)

T.V/ Radio		Social Media	
News Paper		Friend/ Relatives	
Internet Source		Training Program	
Advertisement		Others	

X. Awareness and Access to Digital Financial Products and Services

S. No	Digital Financial Products and Services	Level of Awareness			Level of Usages		
		Not Aware	Partially Aware	Fully Aware	Never	Rarely	Often
1	Bank Account (Current/ Saving)/ Jan Dhan Account						
2	Mobile Wallets (Paytm, M-pesa, MobiKwik,						

	PayU etc..)						
3	Internet Banking						
4	Banking Cards (Credit/Debit Card)						
5	Mobile Phone Payment (UPI, USSD, AEPS, JAM))						
6	Modes of Mobile banking (IVR, SMS, WAP, USSD, STK, Mobile Apps)						
7	Electronic fund transfers (NEFT, RTGS, IMPS)						
8	Direct Benefit Transfer (DBT)/ABPS						
9	QR Code Banking						

XI. Reasons for Digital Financial Illiteracy (Multiple Options Possible)

	Reasons	Yes
1	Lack of education	
2	Lack of financial education in schools	
3	Religious problems	
4	Poverty and unemployment	
5	Lack of confidence	
6	Non accessibility of financial institutions	
7	Poor standard of living	
8	Lack of awareness	
9	Poor money management	
10	Lack of banking habits	
11	Others (Specify)	

XII.Challenges of Digital Financial Literacy (Multiple Options Possible)

1	Lack of income	11	Lack of smart phones	
2	Inadequate internet connectivity	12	Very low internet speed	
3	General illiteracy	13	Language problems	
4	Inadequate financial knowledge and skill	14	Lack of Awareness	
5	Lack of digital financial infrastructures	15	Religious problems	

6	Digital insecurity/ fakes/fear of cybercrime		16	Not user-friendliness	
7	Non accessibility of financial institutions		17	Lack of convenience	
8	Service charges digital transaction		18	Lack of trust	
9	Customer resistance to new technology		19	Merchant acceptance	
10	Only limited point of sale		20	Risk of loss	

XIII. Factors Affecting Propensity of Digital Financial Services Adoption

1	Faster transactions		7	Convenience	
2	Transparency and accountability		8	Security	
3	Discounts and offers		9	Adaptability	
4	Saves time		10	Affordability	
5	Accurate timing		11	User friendly	
6	Quick financial decision making		12	Low Service charge	

XIV. Reasons for Not Preferring Digital Transaction (Multiple Options Possible)

1	Fear of online fraudulent Practices				
2	Security Issues				
3	Only Limited Point of sale				
4	Privacy Issues (Possibility of information theft)				
5	It makes the business activity difficult				
6	It makes smaller payment difficult				
7	Absence of bargaining				
8	Absence of feel good factor when you have Cash in the hand				
9	Lack of grievance body				
10	Non-familiarity and lack of required technological skills				

Have you attended any informative/Training programs meant for creating awareness on financial products/services? (Financial Education). If yes, give details of the program.

In your opinion what are the shortcoming/problems in spreading digital financial literacy in rural areas?

Can you give some suggestion in improving digital financial literacy in rural areas?

