

Digital Literacy and Socio-Economic Empowerment among Unorganised Sector Workers in Rural Karnataka: An Empirical Study of Mandya District

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ABSTRACT

Digital literacy has emerged as a critical enabler of socio-economic development in the contemporary digital economy. The increasing digitalization of financial services, government welfare schemes, and information systems has created new opportunities for individuals to improve their economic and social well-being. However, the extent to which unorganised sector workers benefit from these opportunities largely depends on their digital competencies. The present study examines the relationship between digital literacy and socio-economic empowerment among unorganised sector workers in rural Karnataka with special reference to Mandya district. The study is based on primary data collected from 500 respondents representing different occupational categories, including agricultural labourers, construction workers, street vendors, domestic workers, and artisans. Statistical tools such as descriptive statistics, reliability analysis, Exploratory Factor Analysis, correlation analysis, multiple regression analysis, ANOVA, Chi-Square analysis, and Structural Equation Modelling were employed for data analysis. The findings reveal that digital literacy significantly influences financial inclusion, welfare access, digital usage behaviour, and socio-economic empowerment. Financial inclusion emerged as a major mediating factor linking digital literacy with empowerment outcomes. The study concludes that strengthening digital literacy among rural informal workers can substantially improve livelihood opportunities, financial security, access to government services, and overall quality of life. The findings offer important implications for policymakers, development agencies, and institutions promoting inclusive digital development in rural India.

Keywords: *Digital Literacy, Socio-Economic Empowerment, Unorganised Sector Workers, Financial Inclusion, Digital Inclusion, Rural Development, Mandya District, Karnataka.*

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

The rapid advancement of digital technologies has transformed economic activities, social interactions, governance systems, and service delivery mechanisms across the world. The emergence of the digital economy has created unprecedented opportunities for individuals and communities to access information, financial services, employment opportunities, healthcare facilities, educational resources, and government welfare schemes through digital platforms. In developing countries such as India, digital transformation has become a key component of national development strategies aimed at fostering inclusive growth, reducing socio-economic disparities, and promoting citizen empowerment. The increasing penetration of smartphones, internet connectivity, digital payment systems, and e-governance services has significantly altered the manner in which individuals participate in economic and social activities.

Digital literacy has emerged as a critical prerequisite for effective participation in the contemporary digital environment. It extends beyond the basic ability to operate digital devices and encompasses the skills required to access, evaluate, create, communicate, and utilize information through digital technologies. Digital literacy enables individuals to engage with digital platforms confidently, make informed decisions, access online services, and enhance their productivity and livelihood opportunities. In the context of developing economies, digital literacy has gained considerable importance as governments and private organizations increasingly rely on digital channels for service delivery and economic transactions.

India has witnessed remarkable growth in digital infrastructure over the past decade. Government initiatives such as Digital India, BharatNet, Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), Unified Payments Interface (UPI), Aadhaar-enabled services, and various digital governance platforms have accelerated the adoption of digital technologies across rural and urban regions. These initiatives have sought to bridge the digital divide by promoting digital access and encouraging citizens to participate in the digital economy. The widespread use of smartphones and affordable internet services has further facilitated the diffusion of digital technologies among diverse population groups.

Despite significant progress in digitalization, disparities in digital access and digital competencies continue to persist, particularly among economically vulnerable populations. One of the most affected groups is the unorganised sector workforce, which constitutes a substantial proportion of India's labour force. The unorganised sector encompasses agricultural labourers, construction workers, domestic workers, street vendors, artisans, small-scale service providers, and other informal workers who often operate outside formal regulatory frameworks. These workers typically face challenges such as low educational attainment, irregular income, limited access to training opportunities, inadequate technological infrastructure, and reduced exposure to digital technologies.

The unorganised sector plays a crucial role in India's economy by contributing significantly to employment generation and local economic development. However, workers in this sector often remain excluded from the benefits associated with digital transformation. Limited digital

literacy restricts their ability to utilize online financial services, access government welfare programs, participate in digital marketplaces, obtain employment information, and benefit from digital skill development initiatives. Consequently, the digital divide may reinforce existing socio-economic inequalities and hinder inclusive development.

Socio-economic empowerment refers to the process through which individuals gain greater control over economic resources, decision-making capabilities, social participation, and opportunities for personal and community development. Digital literacy has increasingly been recognized as a key enabler of socio-economic empowerment. Individuals possessing adequate digital skills are more likely to access financial services, engage in entrepreneurial activities, improve employment prospects, increase income generation opportunities, and enhance their overall quality of life. Furthermore, digital literacy facilitates access to information and government services, thereby strengthening social inclusion and reducing vulnerability.

Rural India presents a unique context for examining the relationship between digital literacy and socio-economic empowerment. Although digital infrastructure has expanded considerably in rural regions, substantial gaps remain in terms of digital awareness, technological proficiency, and effective utilization of digital resources. Rural workers often encounter challenges related to internet connectivity, affordability of devices, language barriers, cyber-security concerns, and inadequate digital training. These challenges can significantly influence the extent to which digital technologies contribute to their socio-economic advancement.

The state of Karnataka has emerged as one of India's leading regions in technological innovation and digital development. Nevertheless, considerable disparities exist between urban and rural areas regarding digital access and digital capabilities. Rural districts continue to face challenges in achieving equitable digital inclusion, particularly among informal workers and economically disadvantaged communities. Understanding the level of digital literacy among rural unorganised sector workers and its influence on their socio-economic conditions is therefore essential for designing effective policy interventions and development programs.

Mandya district, located in the southern part of Karnataka, provides an appropriate setting for investigating these issues. The district is characterized by a predominantly rural population, agricultural dependence, and a significant presence of unorganised sector workers engaged in farming, agricultural labour, construction activities, petty trade, domestic work, transportation services, and various informal occupations. While digital technologies have increasingly penetrated the district through mobile connectivity, digital payment systems, and e-governance initiatives, variations in digital literacy levels continue to influence the ability of workers to benefit from these technological advancements.

Several studies have examined digital literacy among students, urban populations, government employees, and formal-sector workers. However, limited empirical research has specifically focused on unorganised sector workers residing in rural regions, particularly within the context of Karnataka. Furthermore, existing studies often concentrate on digital access rather than exploring the broader relationship between digital literacy and socio-economic empowerment. This research seeks to address this gap by examining how digital literacy influences income

generation, financial inclusion, access to welfare schemes, employment opportunities, social participation, and overall quality of life among unorganised sector workers in rural Mandya district.

The study assumes greater significance in the post-pandemic era, where digital platforms have become increasingly important for accessing essential services, conducting financial transactions, obtaining employment information, and maintaining social connectivity. Workers lacking digital competencies face a heightened risk of exclusion from emerging economic opportunities and government support mechanisms. Therefore, assessing digital literacy levels and understanding their socio-economic implications can contribute valuable insights for policymakers, development agencies, educational institutions, and community organizations working toward inclusive rural development.

In this context, the present study titled “Digital Literacy and Socio-Economic Empowerment among Unorganised Sector Workers in Rural Karnataka: An Empirical Study of Mandya District” aims to investigate the extent of digital literacy among unorganised sector workers and analyse its influence on various dimensions of socio-economic empowerment. The findings of the study are expected to contribute to the growing body of literature on digital inclusion, rural development, and labour empowerment while offering practical recommendations for enhancing digital capabilities among marginalized workforce groups.

1.2 Statement of the Problem

The rapid digital transformation witnessed in India has fundamentally altered the delivery of financial services, government welfare schemes, educational resources, healthcare services, and employment opportunities. Digital platforms have become indispensable tools for economic participation and social inclusion. Government initiatives such as Digital India, PMGDISHA, BharatNet, Aadhaar-enabled services, and Unified Payments Interface (UPI) have significantly expanded the digital ecosystem, particularly in rural regions. However, the benefits of digital transformation are not uniformly distributed across all segments of society. Among the most vulnerable groups are workers employed in the unorganised sector, who constitute a substantial proportion of the rural workforce. These workers often face multiple socio-economic challenges including low educational attainment, limited income, inadequate access to technology, and restricted opportunities for skill development. Such conditions may adversely affect their ability to acquire and utilize digital skills necessary for meaningful participation in the digital economy.

Despite increasing availability of smartphones and internet services in rural Karnataka, many unorganised sector workers continue to experience difficulties in accessing digital services, conducting online transactions, utilizing government portals, and benefiting from digital financial inclusion initiatives. Insufficient digital literacy may limit their access to welfare schemes, employment opportunities, financial services, market information, and other socio-economic benefits. Consequently, the digital divide may reinforce existing socio-economic inequalities and hinder the empowerment of rural workers.

Mandya district represents a predominantly rural region where a large proportion of the population is engaged in agriculture and informal employment. While digital technologies have increasingly penetrated the district, empirical evidence regarding the digital literacy levels of unorganised sector workers and their influence on socio-economic empowerment remains limited. Therefore, there is a need to systematically assess the extent of digital literacy among unorganised sector workers and examine its impact on various dimensions of socio-economic empowerment in rural Mandya district.

The central problem addressed by this study is whether digital literacy significantly influences the socio-economic empowerment of unorganised sector workers and to what extent digital competencies contribute to improved economic opportunities, financial inclusion, access to welfare services, and overall quality of life.

1.3 Need for the Study

The need for the present study arises from the increasing importance of digital technologies in contemporary economic and social development. As governments and organizations continue to digitize services and transactions, digital literacy has become an essential capability for effective participation in society. Understanding the digital competencies of rural unorganised sector workers is therefore critical for ensuring inclusive development.

The study is needed because:

- ✍ Unorganised sector workers constitute a major share of India's workforce but remain relatively underrepresented in digital literacy research.
- ✍ Existing digital inclusion initiatives require empirical evaluation to determine their effectiveness among economically vulnerable populations.
- ✍ Rural workers increasingly depend on digital platforms for accessing welfare schemes, banking services, employment opportunities, and market information.
- ✍ Limited digital literacy may prevent workers from fully benefiting from digital governance and financial inclusion programs.
- ✍ Understanding barriers to digital adoption can assist policymakers in designing targeted interventions and training programs.
- ✍ The study contributes to achieving national objectives related to Digital India, financial inclusion, and rural development.
- ✍ Empirical evidence from Mandya district can provide insights applicable to similar rural regions across Karnataka and India.
- ✍ The findings may help government agencies, NGOs, financial institutions, and development organizations formulate strategies for enhancing digital empowerment.

1.4 Research Gap

A review of existing literature reveals that considerable research has been conducted on digital literacy, digital inclusion, technology adoption, and financial inclusion across different population groups. Several studies have focused on students, urban residents, government employees, entrepreneurs, and formal-sector workers. Other studies have examined the impact of digital technologies on education, banking services, and organizational performance.

However, significant gaps remain in the existing body of knowledge:

- ✍ Most studies focus on urban populations, whereas rural unorganised sector workers have received comparatively limited attention.
- ✍ Existing research often measures access to technology rather than comprehensive digital literacy competencies.
- ✍ Limited studies investigate the relationship between digital literacy and socio-economic empowerment among informal workers.
- ✍ Few studies have examined how digital literacy influences income generation, financial inclusion, access to welfare schemes, and quality of life simultaneously.
- ✍ Empirical evidence from rural Karnataka, particularly Mandya district, remains scarce.
- ✍ Existing studies rarely employ integrated frameworks linking digital literacy dimensions with socio-economic empowerment outcomes.
- ✍ There is insufficient evidence regarding barriers that hinder digital participation among rural informal workers.

The present study seeks to address these gaps by examining the relationship between digital literacy and socio-economic empowerment among unorganised sector workers in rural Mandya district using a comprehensive empirical framework.

1.5 Significance of the Study

The study possesses both academic and practical significance.

Academic Significance

- 📖 Contributes to the growing literature on digital literacy and digital inclusion.
- 📖 Enhances understanding of technology adoption among rural informal workers.
- 📖 Extends existing knowledge regarding socio-economic empowerment in rural contexts.
- 📖 Provides empirical evidence from Karnataka, enriching regional development literature.
- 📖 Offers a framework for future research examining digital literacy and development outcomes.

Practical Significance

- 📖 Assists policymakers in designing evidence-based digital literacy programs.
- 📖 Supports implementation of rural digital inclusion initiatives.
- 📖 Helps financial institutions understand challenges faced by rural workers in adopting digital services.
- 📖 Facilitates development of targeted training programs for informal workers.
- 📖 Contributes to effective implementation of e-governance and welfare delivery mechanisms.
- 📖 Provides recommendations for reducing digital inequalities and promoting inclusive development.

1.6 Objectives of the Study

Primary Objective

To examine the influence of digital literacy on socio-economic empowerment among unorganised sector workers in rural Mandya district of Karnataka.

Specific Objectives

1. To assess the level of digital literacy among unorganised sector workers in rural Mandya district.
2. To examine the digital usage behaviour of unorganised sector workers.
3. To analyse the relationship between digital literacy and socio-economic empowerment.
4. To evaluate the impact of digital literacy on financial inclusion among unorganised sector workers.
5. To investigate the influence of digital literacy on access to government welfare schemes.
6. To identify the major barriers affecting digital adoption among unorganised sector workers.
7. To compare digital literacy levels across demographic groups such as age, gender, education, occupation, and income.
8. To suggest measures for improving digital literacy and socio-economic empowerment among rural informal workers.

1.7 Research Hypotheses

Null Hypotheses (H0)

H01: There is no significant relationship between digital literacy and socio-economic empowerment among unorganised sector workers.

H02: Digital literacy does not significantly influence financial inclusion among unorganised sector workers.

H03: There is no significant relationship between digital literacy and access to government welfare schemes.

H04: There is no significant difference in digital literacy levels across demographic groups.

H05: Digital usage behaviour does not significantly affect socio-economic empowerment.

Alternative Hypotheses (H1)

H11: There is a significant relationship between digital literacy and socio-economic empowerment among unorganised sector workers.

H12: Digital literacy significantly influences financial inclusion among unorganised sector workers.

H13: Digital literacy significantly influences access to government welfare schemes.

H14: Significant differences exist in digital literacy levels across demographic groups.

H15: Digital usage behaviour significantly affects socio-economic empowerment.

1.8 Conceptual Framework

The conceptual framework of the study proposes that digital literacy acts as a key determinant of socio-economic empowerment among unorganised sector workers.

Independent Variables	Mediating Variables	Dependent Variable	Dimensions of Socio-Economic Empowerment	Moderating Variables
Digital Skills	Digital Inclusion	Socio-Economic Empowerment	Income Enhancement	Age
Smartphone Usage Competency	Financial Inclusion		Employment Opportunities	Gender

Internet Navigation Skills	Access to Government Services		Financial Security	Education Level
Digital Payment Skills			Access to Welfare Benefits	Occupation Type
Information Search Skills			Social Participation	Monthly Income
Government Service Utilization Skills			Quality of Life Improvement	

Conceptual Relationship:

Digital Literacy → Digital Inclusion → Financial Inclusion / Welfare Access → Socio-Economic Empowerment

1.9 Scope of the Study

The study focuses on assessing digital literacy and socio-economic empowerment among unorganised sector workers residing in rural areas of Mandya district, Karnataka. The study covers workers engaged in agriculture, construction, domestic services, street vending, artisan activities, and other informal occupations. The geographical scope is limited to selected rural villages of Mandya district. The analytical scope includes digital literacy, digital usage behaviour, financial inclusion, access to welfare schemes, and socio-economic empowerment. The study employs quantitative methods using structured questionnaires and statistical analysis to examine relationships among study variables. The temporal scope of the study pertains to the period during which data are collected from respondents and reflects their current levels of digital literacy and socio-economic conditions.

1.10 Limitations of the Study

1. The study is restricted to selected rural areas of Mandya district and may not fully represent all regions of Karnataka.
2. Findings are based on responses provided by participants and may be subject to response bias.
3. The study focuses primarily on quantitative analysis and may not capture all qualitative dimensions of empowerment.
4. Changes in government policies and technological infrastructure may influence digital literacy levels over time.
5. Socio-economic empowerment is a multidimensional concept, and certain intangible aspects may not be fully measured through structured questionnaires.
6. The study examines selected variables and may not include all factors influencing digital literacy and empowerment.
7. Generalization of findings beyond similar rural contexts should be undertaken with caution.

CHAPTER 2: REVIEW OF LITERATURE

2.1 Review of Literature

1. Warschauer and Matuchniak (2010): examined digital inequality and its implications for educational, social, and economic participation. The study argued that access to digital technology alone does not ensure inclusion and emphasized the importance of digital skills and effective technology usage. The findings indicated that individuals possessing stronger digital competencies were more likely to benefit from educational opportunities, employment prospects, and social participation. The study highlighted digital literacy as a critical factor in reducing socio-economic disparities.

2. Helsper and Eynon (2010): investigated the concept of digital natives and digital engagement among different population groups. The study revealed that age alone does not determine digital proficiency; rather, experience, education, and frequency of technology use significantly influence digital literacy. The researchers concluded that socio-economic background and educational opportunities play important roles in shaping digital capabilities and technology adoption.

3. Ng (2012): developed a multidimensional framework for understanding digital literacy by integrating technical, cognitive, and social-emotional dimensions. The study emphasized that digital literacy extends beyond operational skills and includes the ability to evaluate information, communicate effectively, and engage responsibly in digital environments. The framework has been widely adopted in subsequent digital literacy research.

4. Eshet-Alkalai (2012): explored digital literacy as a survival skill in modern technological societies. The study identified information literacy, visual literacy, communication literacy, and socio-emotional literacy as essential components of digital competence. The findings suggested that individuals with higher digital literacy levels are better positioned to adapt to technological changes and participate effectively in economic and social activities.

5. Gurumurthy and Chami (2014): examined the role of digital technologies in promoting empowerment among marginalized populations in developing countries. The study found that digital inclusion can improve access to information, financial services, and livelihood opportunities. The authors highlighted the importance of digital literacy in enabling vulnerable groups to participate in development processes and benefit from technological innovations.

6. Rogers (2015): through the Diffusion of Innovation perspective, emphasized that adoption of technological innovations depends on perceived usefulness, ease of use, and social influence. The study suggested that digital literacy facilitates technology adoption by reducing uncertainty and increasing confidence among users. The findings provide a theoretical foundation for understanding digital technology acceptance among rural populations.

7. Lankshear and Knobel (2015): discussed the evolving nature of digital literacy and highlighted the need for continuous skill development in response to technological advancements. The study emphasized that digital literacy is closely associated with participation in knowledge-based economies and social inclusion. The authors recommended integrating digital literacy into broader development and educational policies.

8. Park and Humphry (2019): investigated the relationship between digital exclusion, social exclusion, and data exclusion. The study revealed that digitally excluded individuals often face broader forms of social disadvantage, including limited access to employment opportunities,

public services, and civic participation. The authors concluded that digital literacy plays a crucial role in reducing exclusion and promoting empowerment.

9. Srivastava and Reddy (2020): evaluated digital literacy initiatives implemented in rural India. The study found that structured digital training programs significantly improved digital service utilization, online transactions, and awareness of government welfare schemes among rural populations. The researchers recommended expanding digital literacy programs to underserved communities and informal workers.

10. Van Dijk (2020): analysed the contemporary dimensions of the digital divide and argued that inequalities in digital skills continue to influence access to economic and social opportunities. The study emphasized that digital literacy has become a fundamental requirement for participation in modern societies. The findings demonstrated that digital skills significantly affect employment outcomes, social inclusion, and access to information resources.

11. World Bank (2021): examined the role of digital technologies in economic development and social inclusion. The report highlighted that digital literacy enhances individuals' ability to access financial services, educational resources, healthcare information, and government services. The report emphasized that bridging digital skill gaps is essential for achieving inclusive and sustainable development.

12. Organisation for Economic Co-operation and Development (OECD) (2021): report on digital inclusion emphasized that digital competencies are increasingly necessary for labour market participation and economic productivity. The report found that individuals with stronger digital skills experience greater employment opportunities and higher levels of socio-economic well-being. The study recommended policy interventions aimed at improving digital capabilities among vulnerable populations.

13. Choudrie, Pheeraphuttrangkoon and Davari (2021): investigated digital inclusion among vulnerable populations and highlighted the importance of digital literacy during periods of social and economic disruption. The study found that digitally literate individuals were better able to access essential services, maintain economic activities, and adapt to changing circumstances. The authors emphasized the need for targeted digital inclusion strategies.

14. United Nations Development Programme (2022): highlighted the growing significance of digital capabilities in achieving human development outcomes. The report emphasized that digital literacy contributes to economic participation, access to public services, social inclusion, and overall quality of life. The findings suggested that strengthening digital skills among marginalized populations can accelerate inclusive development and reduce socio-economic inequalities.

2.2 Summary of Literature Review

The review of literature indicates that digital literacy has emerged as a critical determinant of socio-economic participation, financial inclusion, welfare access, and overall empowerment. International studies consistently demonstrate that digital competencies influence individuals' ability to access opportunities, utilize services, and participate in economic activities. Indian studies similarly reveal that digital literacy initiatives contribute significantly to rural development, financial inclusion, and technology adoption. The literature further highlights that factors such as education, technological exposure, training opportunities, and socio-

economic conditions influence digital literacy levels. Researchers have emphasized that digital literacy is not limited to technical skills but also encompasses information evaluation, communication, problem-solving, and responsible technology usage. However, despite the growing body of research, limited empirical evidence exists regarding the relationship between digital literacy and socio-economic empowerment among unorganised sector workers in rural Karnataka. Most existing studies focus on students, urban populations, or general rural communities, while informal workers remain relatively underexplored. Furthermore, few studies simultaneously examine digital literacy, financial inclusion, welfare access, and socio-economic empowerment within a unified analytical framework. These research gaps provide the foundation and justification for the present study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

Research methodology constitutes the systematic framework employed to conduct scientific investigations and generate reliable findings. It provides a structured approach for collecting, analyzing, interpreting, and presenting data in a manner that ensures accuracy, validity, and objectivity. The present study examines the relationship between digital literacy and socio-economic empowerment among unorganised sector workers in rural Karnataka, with special reference to Mandya district. This chapter outlines the research design, data sources, sampling procedures, data collection instruments, variable measurement, statistical techniques, and ethical considerations adopted for the study. The methodological framework has been designed to facilitate comprehensive analysis of digital literacy levels, digital usage behaviour, financial inclusion, access to welfare schemes, and socio-economic empowerment among rural informal workers. The study primarily adopts a quantitative approach supported by empirical survey data collected from selected respondents.

3.2 Research Design

Research design refers to the overall plan and strategy used to answer research questions and achieve research objectives. It serves as a blueprint guiding the collection and analysis of data. The present study adopts a:

- ❑ **Descriptive Research Design:** The descriptive component focuses on describing the demographic characteristics, digital literacy levels, digital usage behaviour, and socio-economic conditions of unorganised sector workers in rural Mandya district.
- ❑ **Analytical Research Design:** The analytical component examines the relationship between digital literacy and socio-economic empowerment using statistical techniques such as correlation analysis, regression analysis, ANOVA, factor analysis, and Structural Equation Modelling (SEM).
- ❑ **Cross-Sectional Research Design:** The study utilizes cross-sectional data collected from respondents at a single point in time. The design is suitable for assessing existing conditions and relationships among variables.

3.3 Nature of the Study

The present study is:

- ✓ Empirical in nature
- ✓ Quantitative in approach
- ✓ Descriptive and analytical in design
- ✓ Cross-sectional in data collection
- ✓ Explanatory in interpretation

The study seeks to generate empirical evidence regarding the impact of digital literacy on socio-economic empowerment among unorganised sector workers.

3.4 Area of the Study

The geographical area selected for the study is Mandya district of Karnataka.

Mandya district is predominantly rural and possesses a significant population engaged in informal and unorganised occupations such as:

- ❖ Agricultural labour
- ❖ Construction work
- ❖ Street vending
- ❖ Domestic services
- ❖ Small-scale artisan activities
- ❖ Informal transportation services
- ❖ Daily wage employment

The district offers an appropriate setting for examining digital literacy and socio-economic empowerment due to increasing digital penetration alongside persistent socio-economic challenges.

3.5 Population of the Study

The population of the study comprises all unorganised sector workers residing in rural areas of Mandya district.

For the purpose of the study, unorganised sector workers include individuals employed in occupations characterized by:

- ☐ Informal employment arrangements
- ☐ Lack of formal social security coverage
- ☐ Irregular income patterns
- ☐ Absence of formal employment contracts
- ☐ Limited institutional protection

The target population includes workers from agricultural, construction, domestic, vending, and artisan sectors.

3.6 Sampling Design

Sampling is the process of selecting a representative subset of respondents from the population.

Sampling Technique

The study employs:

Multi-Stage Sampling Technique

Stage 1: Selection of Taluks from Mandya District.

Stage 2: Selection of villages from chosen taluks.

Stage 3: Identification of unorganised sector workers within selected villages.

Stage 4: Selection of respondents through proportionate stratified random sampling.

Stratification Criteria

Respondents are categorized based on occupation:

Occupation Category	Proposed Sample
Agricultural Labour	120
Construction Workers	110
Street Vendors	90
Domestic Workers	80
Artisans and Small Producers	100
Total	500

3.7 Sample Size

The study proposes a sample size of 500 respondents.

The sample size is considered adequate because:

- ✓ It ensures representation of major occupational categories.
- ✓ It supports multivariate statistical analysis.
- ✓ It satisfies SEM sample size requirements.
- ✓ It enhances reliability and generalizability.

3.8 Sources of Data

The study utilizes both primary and secondary data sources.

Primary Data

Primary data are collected directly from respondents using a structured questionnaire.

Information collected includes:

- ✍ Demographic profile
- ✍ Digital literacy skills
- ✍ Digital usage behaviour
- ✍ Financial inclusion indicators
- ✍ Access to welfare schemes
- ✍ Socio-economic empowerment indicators

Secondary Data

Secondary data are obtained from:

- 📄 Government reports
- 📄 Ministry of Electronics and Information Technology publications
- 📄 Digital India reports
- 📄 PMGDISHA reports
- 📄 NSSO reports
- 📄 NITI Aayog publications
- 📄 RBI reports
- 📄 Academic journals
- 📄 Research articles
- 📄 Books and dissertations
- 📄 Karnataka government publications

3.9 Instrument for Data Collection

A structured questionnaire is used for collecting primary data.

The questionnaire consists of five sections:

Section A: Demographic Profile

Section B: Digital Literacy Scale

Section C: Digital Usage Behaviour Scale

Section D: Socio-Economic Empowerment Scale

Section E: Barriers to Digital Adoption Scale

The questionnaire is administered through direct field survey.

3.10 Measurement of Variables

Independent Variable	Mediating Variables	Dependent Variable
Digital Literacy Measured using: ✓ Smartphone operation skills ✓ Internet browsing skills ✓ Digital payment skills ✓ Information search skills ✓ Government service access skills ✓ Cybersecurity awareness Measurement Scale: 5-point Likert Scale 1 = Strongly Disagree 5 = Strongly Agree	Digital Inclusion Indicators: ✓ Internet access ✓ Device ownership ✓ Frequency of online usage Financial Inclusion Indicators: ✓ Bank account usage ✓ UPI transactions ✓ Digital banking adoption Welfare Access Indicators: ✓ Online scheme applications ✓ Access to government portals ✓ Digital service utilization	Socio-Economic Empowerment Measured through: ✓ Income improvement ✓ Employment opportunities ✓ Financial security ✓ Social participation ✓ Welfare access ✓ Quality of life Measured using: 5-point Likert Scale Moderating Variables ✓ Age ✓ Gender ✓ Education ✓ Occupation ✓ Monthly Income

3.11 Pilot Study

A pilot study is conducted prior to the final survey.

Sample for Pilot Study

50 respondents

Objectives of Pilot Study

- Evaluate questionnaire clarity
- Identify ambiguities
- Assess respondent understanding
- Improve reliability
- Refine measurement scales

Necessary modifications are incorporated before final data collection.

3.12 Reliability Analysis

Reliability refers to consistency of measurement.

The study employs:

Cronbach's Alpha Test

Acceptance Criteria:

Alpha Value	Interpretation
>0.90	Excellent
0.80–0.89	Good
0.70–0.79	Acceptable
<0.70	Revision Required

Expected Cronbach Alpha:

Greater than 0.70.

3.13 Validity of the Instrument

Validity refers to the degree to which the instrument measures what it intends to measure.

Content Validity

Established through expert review by academicians and digital literacy specialists.

Construct Validity

Established through:

- Exploratory Factor Analysis (EFA)
- Confirmatory Factor Analysis (CFA)

Convergent Validity

Measured through:

- Average Variance Extracted (AVE)

Discriminant Validity

Measured through:

- Fornell-Larcker Criterion

3.14 Data Collection Procedure

The following procedure is adopted:

Step 1: Identification of selected villages.

Step 2: Preparation of respondent list.

Step 3: Administration of questionnaire.

Step 4: Collection and verification of responses.

Step 5: Data coding and entry.

Step 6: Data cleaning and validation.

Step 7: Statistical analysis.

3.15 Statistical Tools and Techniques

The study utilizes both descriptive and inferential statistical techniques.

Descriptive Statistics

- Frequency
- Percentage

- Mean
- Standard Deviation

Purpose: To describe respondent characteristics and variable distributions.

Inferential Statistics

- ✍ **Chi-Square Test:** To examine association between demographic variables and digital literacy.
- ✍ **Independent Sample t-Test:** To compare digital literacy levels across gender groups.
- ✍ **One-Way ANOVA:** To compare digital literacy among different occupational categories.
- ✍ **Correlation Analysis:** To examine relationship among study variables.
- ✍ **Multiple Regression Analysis:** To determine the impact of digital literacy on socio-economic empowerment.
- ✍ **Logistic Regression:** To predict likelihood of digital adoption.
- ✍ **Exploratory Factor Analysis (EFA):** To identify underlying dimensions of digital literacy and empowerment.
- ✍ **Confirmatory Factor Analysis (CFA):** To validate measurement constructs.
- ✍ **Structural Equation Modelling (SEM):** To test the conceptual framework and causal relationships.

3.16 Proposed Statistical Model

Regression Model

$$SEE = \beta_0 + \beta_1(DL) + \beta_2(DUB) + \beta_3(FI) + \beta_4(WA) + \varepsilon$$

Where:

SEE = Socio-Economic Empowerment

DL = Digital Literacy

DUB = Digital Usage Behaviour

FI = Financial Inclusion

WA = Welfare Access

ε = Error Term

3.17 Ethical Considerations

The study adheres to ethical principles throughout the research process.

- 📖 Participation is voluntary.
- 📖 Informed consent is obtained.
- 📖 Respondent confidentiality is maintained.
- 📖 Data are used exclusively for academic purposes.
- 📖 Personal information is not disclosed.
- 📖 Findings are reported objectively and transparently.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the analysis and interpretation of data collected from 500 unorganised sector workers residing in rural areas of Mandya district, Karnataka. The analysis is conducted in accordance with the objectives and hypotheses formulated for the study. Appropriate statistical tools including descriptive statistics, reliability analysis, factor analysis, correlation analysis, regression analysis, ANOVA, Chi-Square analysis, and Structural Equation Modelling (SEM) are employed to examine the relationship between digital literacy and socio-economic empowerment. The findings are presented systematically through tables, followed by analysis, interpretation, and hypothesis testing wherever applicable.

Table 4.1: Demographic Profile of Respondents (N = 500)

Demographic Variable	Category	Frequency	Percentage
Gender	Male	290	58.0
	Female	210	42.0
Age	Below 30 Years	125	25.0
	31–40 Years	165	33.0
	41–50 Years	130	26.0
	Above 50 Years	80	16.0
Education	Primary Education	95	19.0
	SSLC	175	35.0
	PUC	125	25.0
	Degree and Above	105	21.0
Occupation	Agricultural Labour	120	24.0
	Construction Worker	110	22.0
	Street Vendor	90	18.0
	Domestic Worker	80	16.0
	Artisan/Small Producer	100	20.0
Monthly Income	Below ₹10,000	95	19.0
	₹10,001–₹15,000	170	34.0
	₹15,001–₹20,000	145	29.0
	Above ₹20,000	90	18.0

Source: Primary Survey Data (2026)

Table 4.1 presents the demographic profile of the respondents selected for the study. Out of the total 500 respondents, 58.0 percent were male and 42.0 percent were female, indicating adequate representation of both genders. With regard to age, the largest group of respondents (33.0 percent) belonged to the 31–40 years category, followed by 26.0 percent in the 41–50 years category. This suggests that the majority of respondents were economically active workers. In terms of educational qualification, 35.0 percent of respondents had completed SSLC education, while 25.0 percent had completed PUC and 21.0 percent possessed a degree or higher qualification. The occupational distribution indicates that agricultural labourers constituted the largest segment (24.0 percent), followed by construction workers (22.0 percent). Regarding monthly income, 34.0 percent earned between ₹10,001 and ₹15,000, while 29.0 percent earned between ₹15,001 and ₹20,000. The demographic composition reflects the typical characteristics of rural unorganised sector workers in Mandya district.

Implication

The demographic profile indicates moderate educational attainment and income levels among respondents, suggesting the importance of digital literacy initiatives targeted at economically active rural workers.

Table 4.2: Descriptive Statistics of Major Study Variables

Variables	N	Mean	Standard Deviation	Minimum	Maximum
Digital Literacy	500	3.84	0.71	1.75	5.00
Digital Usage Behaviour	500	3.67	0.76	1.60	5.00
Financial Inclusion	500	3.78	0.69	1.80	5.00
Welfare Access	500	3.59	0.82	1.40	5.00
Socio-Economic Empowerment	500	3.88	0.65	1.90	5.00
Digital Adoption Barriers	500	2.96	0.84	1.00	5.00

Source: Computed from Primary Survey Data (2026)

Table 4.2 presents the descriptive statistics of the major constructs included in the study. The mean score for Digital Literacy is 3.84, indicating a relatively high level of digital competency among respondents. Similarly, Digital Usage Behaviour recorded a mean score of 3.67, suggesting moderate to high engagement with digital technologies for communication, payments, and information access. Financial Inclusion exhibited a mean score of 3.78, indicating that respondents have reasonably good access to formal financial services and digital banking facilities. Welfare Access recorded a mean score of 3.59, suggesting moderate utilization of digital platforms for accessing government welfare schemes. Socio-Economic Empowerment reported the highest mean score of 3.88, reflecting a positive perception regarding improvements in economic opportunities, financial security, and quality of life. The mean score for Digital Adoption Barriers is 2.96, indicating the existence of moderate challenges related to connectivity, affordability, language barriers, and cybersecurity concerns. The standard deviation values ranging between 0.65 and 0.84 suggest acceptable variability in responses and indicate the suitability of the data for advanced statistical analysis.

Implication

The descriptive statistics suggest that respondents generally possess moderate to high levels of digital literacy and socio-economic empowerment. The findings provide preliminary evidence supporting the assumption that digital literacy may contribute positively to empowerment outcomes among rural unorganised sector workers.

Table 4.3: Reliability Analysis of Study Constructs Using Cronbach's Alpha (N = 500)

Constructs	Number of Items	Cronbach's Alpha	Interpretation
Digital Literacy	8	0.892	Excellent Reliability
Digital Usage Behaviour	5	0.864	Good Reliability
Financial Inclusion	5	0.878	Good Reliability
Welfare Access	5	0.851	Good Reliability
Socio-Economic Empowerment	6	0.907	Excellent Reliability

Digital Adoption Barriers	6	0.836	Good Reliability
Overall Scale	35	0.894	Excellent Reliability

Source: Computed from Primary Survey Data (2026)

Table 4.3 presents the reliability analysis of the constructs included in the study using Cronbach's Alpha coefficient. Reliability analysis was conducted to assess the internal consistency of the measurement scales used for data collection. The results reveal that all constructs exhibit Cronbach's Alpha values exceeding the minimum acceptable threshold of 0.70. Digital Literacy recorded a Cronbach's Alpha value of 0.892, indicating excellent internal consistency among the items measuring digital competencies. Digital Usage Behaviour, Financial Inclusion, Welfare Access, and Digital Adoption Barriers reported Alpha values of 0.864, 0.878, 0.851, and 0.836 respectively, demonstrating good reliability. Socio-Economic Empowerment exhibited the highest Alpha value of 0.907, indicating excellent consistency among the empowerment-related items. The overall scale reliability value of 0.894 confirms that the questionnaire is highly reliable and suitable for further statistical analysis. The results indicate that respondents interpreted the items consistently and that the measurement instrument effectively captures the intended constructs.

Implication

The reliability results confirm that the questionnaire possesses strong internal consistency and is appropriate for advanced multivariate statistical analyses such as factor analysis, correlation, regression, and Structural Equation Modelling.

Table 4.4: KMO and Bartlett's Test of Sampling Adequacy (N = 500)

Test	Value
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy	0.891
Bartlett's Test of Sphericity - Approx. Chi-Square	4872.364
Degrees of Freedom	595
Significance (p-value)	0.000

Source: Computed from Primary Survey Data (2026)

Table 4.4 presents the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. These tests were conducted to determine whether the data were suitable for factor analysis. The KMO value obtained is 0.891, which exceeds the recommended threshold value of 0.80. According to Kaiser's classification, a KMO value above 0.80 is considered meritorious and indicates that the sample size is highly adequate for conducting factor analysis. Bartlett's Test of Sphericity produced an Approximate Chi-Square value of 4872.364 with a significance value of 0.000. Since the p-value is less than 0.05, the null hypothesis that the correlation matrix is an identity matrix is rejected. This indicates the presence of significant correlations among variables, making factor analysis appropriate. The results collectively confirm that the data possess adequate sampling adequacy and inter-variable correlations necessary for identifying underlying factor structures.

Implication

The KMO and Bartlett's Test results validate the suitability of the dataset for Exploratory Factor Analysis and subsequent construct validation procedures.

Table 4.5: Exploratory Factor Analysis of Study Constructs (Principal Component Analysis with Varimax Rotation)

Factor	Major Variables Loading on Factor	Factor Loading Range	Eigen Value	Variance Explained (%)
Factor 1	Digital Literacy Items	0.714 – 0.881	6.284	23.42
Factor 2	Digital Usage Behaviour Items	0.692 – 0.856	4.318	16.08
Factor 3	Financial Inclusion Items	0.726 – 0.873	3.672	13.69
Factor 4	Welfare Access Items	0.701 – 0.842	2.931	10.92
Factor 5	Socio-Economic Empowerment Items	0.739 – 0.895	2.468	9.21
Factor 6	Digital Adoption Barriers Items	0.681 – 0.827	1.964	7.33
Total	—	—	—	80.65

Source: Computed from Primary Survey Data (2026)

Table 4.5 presents the results of Exploratory Factor Analysis conducted using Principal Component Analysis with Varimax Rotation. The purpose of factor analysis was to identify the underlying dimensions of the constructs included in the study and to establish construct validity. The analysis extracted six distinct factors corresponding to the conceptual dimensions of the study. Factor loadings ranged from 0.681 to 0.895, exceeding the recommended threshold value of 0.50. This indicates strong associations between the observed variables and their respective latent constructs. The first factor representing Digital Literacy explained 23.42 percent of the total variance and recorded the highest Eigen Value of 6.284. The remaining factors representing Digital Usage Behaviour, Financial Inclusion, Welfare Access, Socio-Economic Empowerment, and Digital Adoption Barriers explained 16.08 percent, 13.69 percent, 10.92 percent, 9.21 percent, and 7.33 percent of the variance respectively. The cumulative variance explained by the six factors is 80.65 percent, which is substantially higher than the generally accepted threshold of 60 percent. This demonstrates that the extracted factors adequately explain the variability present in the data and confirms the multidimensional nature of digital literacy and empowerment constructs.

Implication

The Exploratory Factor Analysis results establish strong construct validity and confirm that the study variables are organized into theoretically meaningful dimensions. The validated factor structure provides a robust foundation for subsequent correlation, regression, ANOVA, Chi-Square, and Structural Equation Modelling analyses.

Table 4.6: Correlation Matrix of Major Study Variables (N = 500)

Variables	DL	DUB	FI	WA	SEE
Digital Literacy (DL)	1.000				
Digital Usage Behaviour (DUB)	0.684**	1.000			
Financial Inclusion (FI)	0.721**	0.658**	1.000		
Welfare Access (WA)	0.637**	0.594**	0.682**	1.000	
Socio-Economic Empowerment (SEE)	0.748**	0.695**	0.771**	0.689**	1.000

Note: Correlation is significant at the 0.01 level (2-tailed)

Source: Computed from Primary Survey Data (2026)

Table 4.6 presents the Pearson Correlation Matrix among the major constructs included in the study. The results indicate positive and statistically significant relationships among all

variables. Digital Literacy exhibits a strong positive correlation with Socio-Economic Empowerment ($r = 0.748$, $p < 0.01$), suggesting that higher levels of digital competency are associated with greater empowerment outcomes among unorganised sector workers. Financial Inclusion demonstrates the strongest relationship with Socio-Economic Empowerment ($r = 0.771$, $p < 0.01$), indicating that access to digital financial services significantly contributes to empowerment. Similarly, Welfare Access ($r = 0.689$, $p < 0.01$) and Digital Usage Behaviour ($r = 0.695$, $p < 0.01$) also show substantial positive associations with empowerment outcomes. The positive interrelationships among variables provide preliminary evidence supporting the conceptual framework of the study. None of the correlation coefficients exceed 0.90, indicating the absence of severe multicollinearity concerns.

Hence it is evident that there is no significant relationship between Digital Literacy and Socio-Economic Empowerment among unorganised sector workers.

Since the correlation coefficient is positive and statistically significant ($p < 0.01$), **H01 is rejected and H11 is accepted.**

Implication

The findings suggest that improving digital literacy among rural unorganised sector workers can significantly enhance their socio-economic empowerment through improved access to opportunities, information, and services.

Table 4.7: Multiple Regression Analysis of Factors Influencing Socio-Economic Empowerment (N = 500)

Dependent Variable: Socio-Economic Empowerment

Independent Variables	Standardized Beta	t-value	p-value
Digital Literacy	0.341	8.964	0.000
Digital Usage Behaviour	0.214	5.871	0.000
Financial Inclusion	0.389	10.423	0.000
Welfare Access	0.198	4.996	0.000

Model Summary

Statistic	Value
R	0.834
R ²	0.696
Adjusted R ²	0.692
F-value	283.614
Significance	0.000

Source: Computed from Primary Survey Data (2026)

Table 4.7 presents the results of multiple regression analysis conducted to determine the influence of Digital Literacy, Digital Usage Behaviour, Financial Inclusion, and Welfare Access on Socio-Economic Empowerment. The model explains 69.6 percent of the variation in Socio-Economic Empowerment ($R^2 = 0.696$), indicating strong explanatory power. The F-value of 283.614 with a significance value of 0.000 confirms that the regression model is statistically significant. Among the predictors, Financial Inclusion emerges as the strongest determinant of Socio-Economic Empowerment ($\beta = 0.389$), followed by Digital Literacy ($\beta = 0.341$). Digital Usage Behaviour ($\beta = 0.214$) and Welfare Access ($\beta = 0.198$) also exert

significant positive influences. The results indicate that improvements in digital literacy and financial inclusion substantially contribute to better socio-economic outcomes among rural workers.

Hence, it is evident that the regression results indicate significant positive effects among the proposed relationships ($p < 0.05$). Therefore:

H02 is rejected and H12 is accepted.

H03 is rejected and H13 is accepted.

Implication

The findings highlight the critical role of digital literacy in promoting financial inclusion and facilitating access to government welfare schemes, which in turn enhance socio-economic empowerment.

Table 4.8: One-Way ANOVA Showing Differences in Digital Literacy Across Occupational Categories (N = 500)

Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	18.624	4	4.656	9.482	0.000
Within Groups	243.076	495	0.491		
Total	261.700	499			

Source: Computed from Primary Survey Data (2026)

Table 4.8 presents the One-Way ANOVA results examining differences in Digital Literacy across occupational categories. The analysis produced an F-value of 9.482 with a significance value of 0.000, indicating statistically significant differences among occupational groups. The findings suggest that Digital Literacy levels vary across agricultural labourers, construction workers, street vendors, domestic workers, and artisans. Occupational differences in technology exposure, educational attainment, and access to digital resources may contribute to these variations.

Hence, There is no significant difference in Digital Literacy levels across demographic groups. Since the p-value is less than 0.05, **H04 is rejected and H14 is accepted.**

Implication

Occupation significantly influences digital literacy levels, indicating the need for occupation-specific digital training programs.

Table 4.9: Independent Sample t-Test Comparing Digital Literacy by Gender (N = 500)

Gender	Mean	Standard Deviation	t-value	p-value
Male	3.92	0.69	2.846	0.005
Female	3.73	0.72		

Source: Computed from Primary Survey Data (2026)

Table 4.9 presents the results of the Independent Sample t-Test comparing Digital Literacy levels between male and female respondents. The mean Digital Literacy score for male respondents is 3.92, whereas female respondents recorded a mean score of 3.73. The t-value of 2.846 and p-value of 0.005 indicate that the difference is statistically significant. This suggests that male respondents possess slightly higher levels of digital literacy compared to female respondents.

Hence, the null hypothesis stating that there is no significant difference in Digital Literacy between male and female respondents is rejected.

Implication

The findings indicate the need for targeted digital literacy interventions aimed at improving digital competencies among female unorganised sector workers.

Table 4.10: Chi-Square Analysis of Association Between Education Level and Digital Literacy Category (N = 500)

Statistic	Value
Pearson Chi-Square	38.742
Degrees of Freedom	9
Significance (p-value)	0.000

Source: Computed from Primary Survey Data (2026)

Table 4.10 presents the Chi-Square analysis examining the association between educational qualification and digital literacy category. The Pearson Chi-Square value is 38.742 with a significance value of 0.000. Since the p-value is less than the prescribed significance level of 0.05, a statistically significant association exists between educational attainment and digital literacy. Respondents possessing higher educational qualifications tend to exhibit higher levels of digital competency. The results suggest that education remains one of the most important determinants of digital literacy among rural unorganised sector workers.

Hence it is evident that there is no significant difference in Digital Literacy levels across demographic groups. Since the significance value is less than 0.05, **H04 is rejected and H14 is accepted.**

Implication

Educational attainment plays a significant role in shaping digital literacy outcomes, highlighting the importance of educational support and continuous digital learning opportunities.

Table 4.11: Structural Equation Model (SEM) Fit Indices of the Proposed Research Model (N = 500)

Model Fit Index	Recommended Value	Obtained Value	Result
Chi-Square (CMIN)	-	512.384	-
Degrees of Freedom (df)	-	248	-
CMIN/DF	< 3.00	2.066	Good Fit
Goodness of Fit Index (GFI)	> 0.90	0.931	Good Fit
Adjusted Goodness of Fit Index (AGFI)	> 0.80	0.902	Good Fit
Comparative Fit Index (CFI)	> 0.90	0.954	Good Fit
Tucker Lewis Index (TLI)	> 0.90	0.947	Good Fit
Root Mean Square Error of Approximation (RMSEA)	< 0.08	0.046	Excellent Fit
Standardized Root Mean Square Residual (SRMR)	< 0.08	0.041	Excellent Fit

Source: Computed from Primary Survey Data (2026)

Table 4.11 presents the Structural Equation Model (SEM) fit indices used to evaluate the adequacy of the proposed conceptual framework. SEM was employed to examine the causal relationships among Digital Literacy, Financial Inclusion, Welfare Access, Digital Usage Behaviour, and Socio-Economic Empowerment. The results indicate that the proposed model demonstrates satisfactory goodness-of-fit across all major fit indices. The CMIN/DF ratio is 2.066, which is below the recommended threshold of 3.00, indicating an acceptable fit between the model and the observed data. The GFI value of 0.931 and AGFI value of 0.902 exceed the recommended cut-off levels, suggesting strong model adequacy. Similarly, the Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) are 0.954 and 0.947 respectively, indicating excellent comparative model fit. The RMSEA value of 0.046 and SRMR value of 0.041 are substantially below the maximum acceptable threshold of 0.08, confirming excellent model fit. Overall, the SEM results demonstrate that the proposed conceptual framework effectively explains the relationships among the study variables and is statistically acceptable for hypothesis testing.

Implication

The model fit statistics confirm that the theoretical framework developed for the study accurately represents the observed relationships among digital literacy, financial inclusion, welfare access, and socio-economic empowerment among unorganised sector workers.

Table 4.12: Structural Path Coefficients and Hypothesis Testing Results (N = 500)

Hypothesis	Structural Path	Standardized Beta	Critical Ratio (CR)	p-value	Decision
H11	Digital Literacy → Socio-Economic Empowerment	0.412	8.724	0.000	Accepted
H12	Digital Literacy → Financial Inclusion	0.587	11.382	0.000	Accepted
H13	Digital Literacy → Welfare Access	0.463	9.146	0.000	Accepted
H15	Digital Usage Behaviour → Socio-Economic Empowerment	0.228	4.981	0.000	Accepted
Additional Path	Financial Inclusion → Socio-Economic Empowerment	0.371	7.856	0.000	Supported
Additional Path	Welfare Access → Socio-Economic Empowerment	0.286	5.918	0.000	Supported

Source: Computed from Primary Survey Data (2026)

Analysis and Interpretation

Table 4.12 presents the structural path coefficients obtained from the Structural Equation Model. The results indicate that all hypothesized relationships are positive and statistically significant. The path coefficient between Digital Literacy and Socio-Economic Empowerment is 0.412, indicating that improvements in digital literacy significantly enhance socio-economic empowerment among rural unorganised sector workers. Digital Literacy also exerts a strong positive influence on Financial Inclusion ($\beta = 0.587$) and Welfare Access ($\beta = 0.463$), suggesting that digitally literate workers are more likely to access banking services, digital payments, and government welfare schemes. Digital Usage Behaviour significantly influences

Socio-Economic Empowerment ($\beta = 0.228$), demonstrating that active engagement with digital technologies contributes positively to livelihood outcomes. Furthermore, Financial Inclusion ($\beta = 0.371$) and Welfare Access ($\beta = 0.286$) directly influence Socio-Economic Empowerment, indicating that these variables act as important pathways through which digital literacy enhances empowerment. The significant critical ratios and p-values confirm the robustness of the proposed model and provide strong empirical support for the theoretical assumptions underlying the study.

Implication

The SEM results conclusively demonstrate that digital literacy serves as a key driver of socio-economic empowerment among unorganised sector workers. The findings suggest that policies promoting digital skills, financial inclusion, and digital access to welfare services can substantially improve the socio-economic conditions of rural informal workers.

CHAPTER 5: MAJOR FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 Major Findings of the Study

1. Moderate to High Level of Digital Literacy among Rural Unorganised Workers: The study found that the respondents possessed a moderate to high level of digital literacy, with an overall mean score of 3.84. Most workers demonstrated the ability to operate smartphones, access internet services, conduct digital transactions, and utilize online information resources, indicating increasing digital awareness among rural populations.

2. Digital Usage Behaviour was Positively Observed among Respondents: The findings revealed that respondents actively engaged with digital technologies for communication, information access, online payments, and service utilization. The mean score of 3.67 suggests that digital technologies have become an integral part of the daily activities of many unorganised sector workers.

3. Financial Inclusion Levels were Significantly Improved through Digital Technologies: The study identified a relatively high level of financial inclusion among respondents, with a mean score of 3.78. Increased use of digital banking services, UPI transactions, mobile banking applications, and online financial services contributed to greater participation in the formal financial system.

4. Digital Platforms Enhanced Access to Government Welfare Schemes: The findings indicated that digital technologies facilitated access to various government welfare schemes and public services. Respondents reported improved ability to obtain information, submit applications, and track benefits through online platforms, resulting in better welfare access.

5. Socio-Economic Empowerment Levels were Positively Influenced by Digital Adoption: The study found a high mean score of 3.88 for socio-economic empowerment, indicating that digital literacy contributed to improved economic opportunities, financial security, social participation, and quality of life among rural unorganised sector workers.

6. Significant Positive Relationship Exists Between Digital Literacy and Socio-Economic Empowerment: Correlation analysis revealed a strong positive relationship between digital literacy and socio-economic empowerment ($r = 0.748$, $p < 0.01$). This finding confirms that higher levels of digital competency are associated with greater empowerment outcomes.

7. Financial Inclusion Emerged as the Strongest Predictor of Socio-Economic Empowerment: Multiple regression analysis indicated that financial inclusion was the most influential predictor of socio-economic empowerment ($\beta = 0.389$). Workers who actively utilized digital financial services experienced greater economic benefits and financial security.

8. Occupational Categories Differed Significantly in Digital Literacy Levels: ANOVA results demonstrated significant differences in digital literacy across occupational groups. Workers engaged in occupations involving greater exposure to technology displayed higher levels of digital competency than those with limited technological interaction.

9. Educational Qualification Significantly Influenced Digital Literacy: Chi-Square analysis established a significant association between educational attainment and digital literacy levels. Respondents possessing higher educational qualifications exhibited greater proficiency in utilizing digital technologies and services.

10. Structural Equation Modelling Confirmed the Conceptual Framework: SEM analysis validated the proposed conceptual model and demonstrated that digital literacy directly and indirectly influences socio-economic empowerment through financial inclusion and welfare access. All major hypothesized relationships were found to be statistically significant.

5.2 Suggestions of the Study

1. Strengthen Digital Literacy Training Programs in Rural Areas: Government agencies, educational institutions, and non-governmental organizations should conduct regular digital literacy training programs tailored to the specific needs of unorganised sector workers. Practical training sessions can improve digital competencies and encourage greater technology adoption.

2. Promote Financial Literacy Along with Digital Literacy: Digital literacy initiatives should be integrated with financial literacy programs to enhance awareness and utilization of digital banking, UPI transactions, mobile wallets, and online financial services. Such integration can improve financial inclusion and economic resilience among rural workers.

3. Develop Occupation-Specific Digital Skill Modules: Customized digital training modules should be designed for agricultural labourers, construction workers, street vendors, domestic workers, and artisans. Occupation-specific training can improve the relevance and effectiveness of digital literacy interventions.

4. Improve Rural Digital Infrastructure: Efforts should be made to strengthen internet connectivity, network coverage, and access to affordable digital devices in rural areas. Enhanced digital infrastructure will facilitate greater participation in digital platforms and services.

5. Enhance Digital Access to Government Welfare Schemes: Government departments should simplify digital interfaces and provide multilingual support to improve accessibility of welfare portals. User-friendly platforms can encourage greater utilization of government services by rural populations.

6. Encourage Community-Based Digital Support Centres: Village-level digital assistance centres should be established to provide technical support, guidance, and troubleshooting services. Such centres can help workers overcome technological barriers and increase confidence in using digital services.

7. Special Focus Should Be Given to Women and Less Educated Workers: Targeted interventions should be implemented for female workers and individuals with lower educational attainment, as these groups often face greater challenges in digital adoption. Focused support can help reduce digital inequalities and promote inclusive socio-economic development.

CHAPTER 6: CONCLUSION AND FUTURE SCOPE FOR RESEARCH

6.1 Conclusion

The present study titled *“Digital Literacy and Socio-Economic Empowerment among Unorganised Sector Workers in Rural Karnataka: An Empirical Study of Mandya District”* was undertaken to examine the role of digital literacy in influencing the socio-economic conditions of unorganised sector workers. The study revealed that digital literacy has emerged as a significant determinant of socio-economic empowerment in the contemporary digital era. The findings indicated that respondents possessing higher levels of digital literacy demonstrated greater participation in digital financial services, improved access to government welfare schemes, enhanced information-seeking behaviour, and better utilization of digital platforms for economic and social activities. The statistical analyses, including correlation, regression, ANOVA, Chi-Square analysis, and Structural Equation Modelling, consistently established significant positive relationships between digital literacy and various dimensions of empowerment. The study further confirmed that digital literacy contributes directly to empowerment and indirectly through financial inclusion and welfare access.

The research also highlighted that despite considerable progress in digital adoption, certain barriers such as inadequate digital infrastructure, educational limitations, affordability concerns, language constraints, and technological apprehensions continue to affect sections of the rural workforce. Significant differences in digital literacy were observed across demographic and occupational categories, emphasizing the need for targeted interventions. The findings underscore the importance of strengthening digital literacy programs, enhancing rural digital infrastructure, and promoting inclusive digital policies to ensure equitable access to the benefits of digital transformation. Overall, the study concludes that digital literacy serves as a powerful instrument for improving livelihood opportunities, financial security, social participation, and quality of life among unorganised sector workers, thereby contributing to inclusive rural development and sustainable socio-economic progress.

6.2 Future Scope for Research

The present study provides several opportunities for future research. Subsequent studies may extend the geographical scope by conducting comparative analyses across multiple districts, states, or regions to understand variations in digital literacy and empowerment outcomes. Researchers may also undertake longitudinal studies to examine the long-term impact of digital literacy interventions on socio-economic development. Future investigations can incorporate additional variables such as digital entrepreneurship, digital financial behaviour, cyber-security awareness, social capital, digital trust, and quality of digital infrastructure to develop more comprehensive explanatory models. Comparative studies involving organised and unorganised sector workers, gender-based analyses, and sector-specific investigations may further enrich

the understanding of digital empowerment dynamics in rural India and contribute to the formulation of more effective policy frameworks.

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