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A Study On Economic Empowerment Through Ict Among Rural Women In The Chengalpattu District Of Tamil Nadu

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Abstract: *The study aimed to examine the level of economic empowerment among rural women through Information and Communication Technology (ICT) in Chengalpattu District of Tamil Nadu. Using a descriptive research design, the study gathered primary data from 380 rural women through structured interviews, employing a five-point Likert scale to assess various dimensions of ICT-driven empowerment. A multistage sampling technique ensured balanced representation across different blocks and villages. The research tool focused on 15 key indicators of economic empowerment through ICT. Statistical analyses, including descriptive statistics, cluster analysis, and one-way ANOVA and T-test revealed that while ICT significantly contributes to income generation, digital payments, and financial awareness, its role in entrepreneurial growth and digital commerce remains limited. Socio-demographic variables like age, education, income, and occupation showed significant influence on ICT-based empowerment. The findings underscore the need for targeted ICT literacy and economic skill-building initiatives, especially for younger and less-educated women, to maximize ICT's potential in fostering inclusive development.*

Keywords: *Economic Empowerment, Rural Women, Information and Communication Technology (ICT)*

INTRODUCTION

In an era of rapid technological advancements, Information and Communication Technology (ICT) has emerged as a significant tool for socio-economic transformation across the globe. The role of ICT in promoting development, especially among marginalized populations, has received increasing attention in recent decades. Globally, ICT is recognized as a catalyst for economic empowerment, particularly among rural women who have historically been excluded from mainstream development processes. The United Nations (2020) emphasized that ICTs are essential for achieving gender equality and empowering all women and girls, highlighting their ability to improve access to education, markets, health services, and social networks.

At the global level, ICT has proven to be an effective tool for bridging gender gaps in economic opportunities. Initiatives like the Women and the Web Alliance and Digital Literacy programs have enabled women in developing regions to access information, develop entrepreneurial skills, and improve their livelihoods (World Bank, 2016). Studies conducted in African and Southeast Asian countries have shown that women who gain access to ICT tools are more likely to engage in income-generating activities and contribute to household and community-level development (Gillwald et al., 2010).

In the Indian context, ICT has become a powerful enabler of development, especially under government initiatives such as Digital India and the National Rural Livelihoods Mission. These programs aim to promote digital literacy and provide rural populations with access to digital infrastructure, with a particular focus on women's empowerment (Ministry of Electronics and Information Technology [MeitY], 2021). India's growing rural mobile and internet penetration has opened up new avenues for economic participation among women, including e-commerce, digital banking, and online skill development (Jain & Ghosh, 2022).

Even though these developments, the adoption of ICT among rural women in India faces challenges such as digital illiteracy, patriarchal norms, inadequate infrastructure, and limited access to devices. These constraints are particularly pronounced in southern states like Tamil Nadu, where rural women often encounter intersectional barriers linked to caste, class, and education. However, Tamil Nadu has made significant strides in implementing ICT-based schemes targeting rural women, such as the Amma e-Village Centers, TNSWAN (Tamil Nadu State Wide Area Network), and initiatives by the Tamil Nadu State Rural Livelihoods Mission (TNSRLM) (Tamil Nadu Planning Commission, 2020).

In Tamil Nadu, rural women have increasingly begun using ICT tools for self-help group (SHG) coordination, market access, online financial transactions, and agricultural advisories. These applications of ICT have positively influenced their income generation, decision-making power, and social mobility. Yet, the actual

impact of ICT on their economic empowerment remains under-researched, especially with regard to the socio-cultural and infrastructural contexts of rural Tamil Nadu.

Thus, the study aims to explore the role of ICT in fostering economic empowerment among rural women in Tamil Nadu, identifying both opportunities and constraints. Through an in-depth analysis, it seeks to contribute to the broader discourse on gender, technology, and rural development.

REVIEW OF LITERATURE

A review of literature is an essential part of any research study. It not only provides a theoretical foundation and framework but also helps identify trends, patterns, and gaps in existing studies. In the context of ICT and women's economic empowerment, the literature reveals a growing interest in examining how digital tools can bridge gender disparities and improve rural livelihoods.

Gurumurthy and Chami (2014) argue that ICTs can be transformative tools when used in community-based interventions aimed at marginalized women. Their analysis of ICT-enabled empowerment in rural India shows that digital technologies can lead to collective agency and community participation. Similarly, Rani and Surya (2019) examined how mobile-based micro-entrepreneurship helped rural women access markets and increase their earnings. Their findings highlight the importance of mobile connectivity in facilitating economic independence among rural women.

Kumar and Patnaik (2016) found that women in rural Odisha who participated in ICT-based training programs reported increased confidence and digital skills, which enabled them to engage in home-based businesses. Bhatt and Sharma (2021) observed a similar trend in Gujarat, where ICT tools helped rural women improve record-keeping for SHG activities, leading to better loan management and business planning. These studies underline how ICTs play a crucial role in enhancing economic decision-making capabilities.

Some scholars have emphasized structural and infrastructural barriers. For example, Kelkar and Nathan (2005) highlight how caste and gender hierarchies restrict women's access to ICTs in rural South India. They argue that empowerment is contingent not only on access but also on control over technology. Anand and Joshi (2020) also draw attention to the digital divide, noting that rural women often lack access to devices and internet connectivity, further marginalizing them in the digital era. They suggest targeted interventions and inclusive policies for sustainable ICT adoption.

Case studies specific to Tamil Nadu add rich contextual insight. Devi and Meenakshi (2017) studied ICT use among SHGs in Villupuram District, finding that computer and internet training increased women's participation in microenterprises. Similarly, Saravanan (2018) documented how e-agriculture platforms helped rural women farmers in Thanjavur District access market prices and weather updates. These practical benefits contributed directly to enhanced incomes and farming decisions. International perspectives offer comparative value. Hafkin and Huyer (2007) presented a cross-country analysis showing that ICT interventions in rural areas must be context-specific to ensure inclusivity and sustainability. Warschauer (2003) posited that without addressing literacy, infrastructure, and content relevance, ICT interventions may reproduce existing inequalities rather than alleviate them.

Although, these valuable insights, several gaps persist. Few studies delve into the long-term economic outcomes of ICT use among rural women. Moreover, limited literature exists on how socio-cultural factors in Tamil Nadu, such as caste dynamics, household norms, and institutional support influence ICT adoption and impact. This research aims to fill these gaps by providing an in-depth exploration of ICT-enabled economic empowerment among rural women in Chengalpattu District of Tamil Nadu.

Objectives Of The Study

1. To examine the level of economic empowerment among rural women through ICT in the study area.
2. To provide actionable suggestions for enhancing the level of economic empowerment among rural women through the effective use of Information and Communication Technology (ICT) based on the findings of the study.

Research Design

According to Creswell (2009), research design is a structured plan that integrates philosophical assumptions, strategies of inquiry, and specific methods to conduct research. Similarly, Kumar (2011) emphasizes that research design serves as a guide for effectively answering research questions. The study adopts a descriptive

research design to analyze the level of economic empowerment among rural women in Chengalpattu District by using ICT. Descriptive research systematically examines existing conditions, practices, and trends (Best & Kahn, 2006), making it suitable for understanding the role of ICT in women's empowerment.

Sources Of Data

Primary Data: Primary data is collected through surveys from rural women in Chengalpattu district of Tamil Nadu regarding economic empowerment through Information and Communication Technology.

Secondary Data: Secondary data is sourced from scholarly research, government reports, and census data to supplement the findings.

Research Tools

A structured interview schedule based on "Economic empowerment through ICT among women" included 15 statements by using the five-point Likert scale (Not at all, To a small extent, To some extent, To a great extent and To a very great extent) ensuring a comprehensive understanding of ICT's role in empowerment.

Reliability And Validity

The study ensures reliability through Internal Consistency Reliability using Cronbach's Alpha, which yielded 0.85 for Economic Empowerment through ICT indicating good reliability. Validity is established through expert review, pilot testing, and alignment with theoretical frameworks. The structured interview schedules comprehensively address economic empowerment through ICT, ensuring accurate and consistent data collection while capturing the experiences of rural women in Chengalpattu District.

Universe Of The Study

Chengalpattu district of Tamilnadu, established on November 29, 2019, was carved out from the erstwhile Kancheepuram district in Tamil Nadu, India. Spanning 2,945 square kilometers, it consists of eight blocks: Acharapakkam, Chithamur, Kattankulathur, Lathur, Maduranthagam, St. Thomas Mount, Thirukalukundram, and Thiruporur. With 359 village panchayats, the district's rural regions face significant challenges in education and digital literacy. As per the 2011 Census, the population of the area now constituting Chengalpattu was 2,556,423. While industrial growth thrives near urban centers, rural communities rely on agriculture, emphasizing the importance of ICT for improving educational access and socio-economic empowerment.

Sampling Design

To ensure fair representation from different regions within Chengalpattu District, a multistage sampling technique was employed to select the villages and respondents.

First, Chengalpattu District was divided into four geographical regions: North, South, East, and West. Four blocks were randomly selected from the district's eight administrative blocks, ensuring balanced geographical coverage. The selected blocks were Kattankulathur (North), Thirukalukundram (South), Chengalpattu (East), and Maduranthakam (West).

From each block, two villages were randomly chosen to capture rural diversity. The selected villages were Venkatapuram and Thenmelpakkam (Kattankulathur), Konathi and Orathur (Thirukalukundram), Sembakkam and Paranur (Chengalpattu), and Konerikuppam and Chithathur (Maduranthakam).

In the final stage, female respondents aged 18 years and above were randomly chosen from each selected village. Eligible participants were those who either owned a mobile phone or regularly used one within their household. Approximately 5.25% of the female population in each village was sampled, resulting in a total of 380 respondents. The sampling design ensured diverse representation and a comprehensive understanding of economic empowerment through ICT of rural women in Chengalpattu District.

Analysis And Interpretation

Information and Communication Technology (ICT) plays a crucial role in enhancing the economic empowerment of women using ICT tools, women gain access to job opportunities, market information, financial services, and entrepreneurial resources. ICT enables women to start businesses, improve skills, and increase income, leading to greater financial independence. It also bridges economic gaps by connecting women to wider markets and networks, promoting sustainable livelihoods. Economic empowerment through ICT not only improves individual well-being but also contributes to community and national development.

Table 1: Descriptive Statistical Analysis of Economic Empowerment through ICT among Rural Women

S.No	Statements	N	Mean	SD	Mean Rank

1	Do you have your own source of income?	380	4.79	0.77	1
2	Can you make financial decisions independently?	380	2.65	1.57	9
3	Do you use mobile banking or digital payment methods?	380	3.80	1.40	3
4	Has ICT helped you in finding job opportunities?	380	2.03	1.40	10
5	Have you taken loans or financial support using ICT platforms?	380	4.34	1.22	2
6	Do you feel economically secure in managing your household expenses?	380	2.68	1.56	8
7	Has ICT improved your ability to start and manage a business?	380	2.75	1.55	7
8	Do you have access to information about financial schemes for women?	380	3.20	1.95	6
9	Do you sell or promote any products/services online?	380	1.03	0.01	13
10	Has ICT increased your household income?	380	0.95	0.01	15
11	Do you use ICT to learn new economic skills (e.g., farming, tailoring, handicrafts)?	380	1.39	1.03	11
12	Does ICT help you track your financial transactions easily?	380	3.73	1.41	4
13	Do you use ICT to connect with customers and expand your business?	380	1.03	0.05	13
14	Has ICT helped you reduce costs in running your business or household?	380	1.07	0.01	12
15	Do you participate in online financial literacy programs or training?	380	3.22	1.77	5

Source: Primary data

Table 1 presents the mean and standard deviations of the factors contributing to economic empowerment through ICT among rural women. The table consists of 15 questions; each evaluated using a five-point Likert scale. The mean values range from 4.79 to 0.01, highlighting variations in the responses. The calculated standard deviation ranges from 1.93 to 0.00, indicating the degree of variability in responses.

The respondents reported "having their source of income," which secured the highest mean value (4.79) and ranked 1st, indicating significant financial independence. "Taking loans or financial support using ICT platforms" secured a mean value of 4.34 and ranked 2nd, reflecting ICT's role in providing financial assistance. Also, "using mobile banking or digital payment methods" had a mean value of 3.80 and ranked 3rd, suggesting the adoption of digital financial services. ,"tracking financial transactions easily" had a mean value of 3.73 and ranked 4th", participating in online financial literacy programs or training" received a mean value of 3.22 and ranked 5th. Highlighting efforts to improve financial knowledge through ICT. "Having access to information about financial schemes for women" secured a mean value of 3.20 and ranked 6th, reflecting moderate awareness of financial opportunities. "Improved ability to start and manage a business" had a mean value of 2.75 and ranked 7th, indicating the role of ICT in entrepreneurship. Economic decision-making capabilities were lower, securing a mean value of 2.68 and ranking 8th, suggesting limited financial autonomy. Making financial decisions independently" had still lower scores of 2.65 ranked 9th.ICT helped you in finding job opportunities" secured mean value of 2.03 and ranked 10th and "ICT to learn new economic skills like farming, tailoring, handicrafts" secured mean value of 1.39 and ranked 11th in the order. The mean value 1.07 was recorded for statements, "ICT helped you reduce costs in running your business or household and ranked 12th,"using ICT to connect with customers and expand business," both secured 1.03 mean value and ranked 13th and the lowest mean value 0.95 was recorded for statement "ICT helping reduce costs in running business or household".

From the standard deviations, it is evident that there is considerable variation in the degree of economic empowerment experienced by the respondents through ICT.

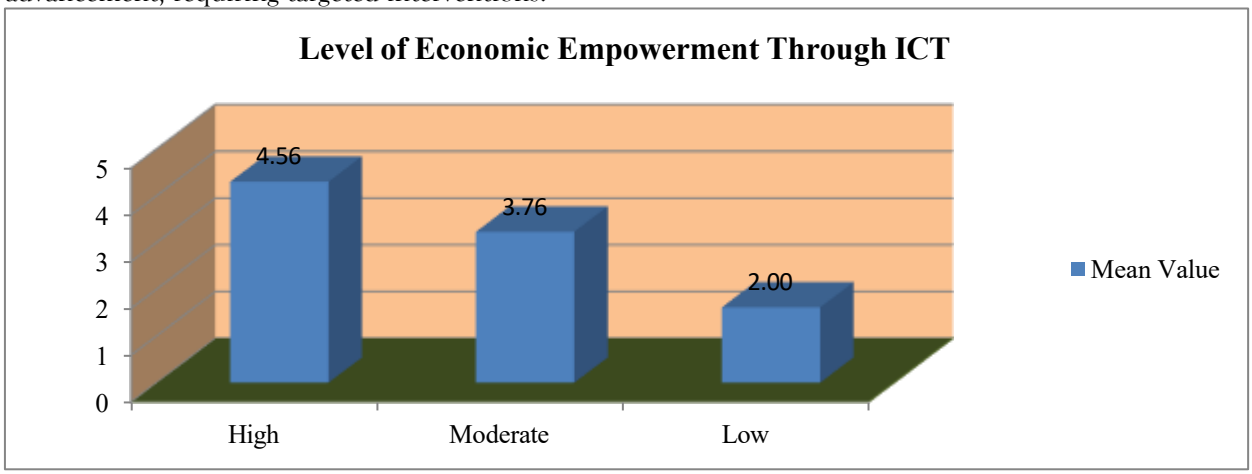
Therefore, while ICT has significantly contributed to "income generation," "financial transactions," and "access to financial support," challenges remain in areas such as "entrepreneurial growth," "economic decision-making," and "digital commerce." Future interventions should focus on enhancing ICT-driven financial literacy and expanding digital business opportunities for rural women.

Table 2: Cluster Analysis of Economic Empowerment through ICT among Rural Women

Level	Frequency (No. of Statements)	Mean Value	Percentage (%)
High	2	4.56	13.33%
Moderate	2	3.76	13.33%
Low	11	2.00	73.33%

Source: Primary data

The K-Means cluster analysis categorizes economic empowerment through ICT into three levels. A high level of empowerment was observed in 13.33% of statements, with a mean value of 4.56, indicating significant ICT benefits for some women. A moderate level accounted for 13.33% (mean = 3.76), while a low level was recorded in 73.33% (mean = 2.00), highlighting major challenges in leveraging ICT for economic advancement, requiring targeted interventions.



Graph. 1: Level of Economic Empowerment through ICT among Rural Women

Table 3: One-Way ANOVA and T-Test Analysis on Economic Empowerment among Women through ICT in the Study Area based on Demographic Variables

Factor	Age Group	N	Mean	SD	F-Value	P-Value
Economic Empowerment Through ICT	18 to 30 Years	31	2.89	1.31	5.647	0.0011
	31-40 Years	118	3.11	1.48		
	41-50 Years	112	3.58	1.37		
	Above 50 Years	119	3.83	1.28		
	Total	**380**	**3.34**	**1.41**		
Economic Empowerment Through ICT	**Marital Status**	**N**	**Mean**	**SD**	4.683	0.0098
	Married	356	3.50	1.40		
	Unmarried	18	3.15	1.47		
	Widow	6	2.88	1.34		
	Total	**380**	**3.18**	**1.43**		
Economic Empowerment Through ICT	**Educational Qualification**	**N**	**Mean**	**SD**	5.216	0.0023
	Illiterate	16	2.87	1.34		
	Primary Education	158	3.14	1.47		
	Secondary Education	61	3.49	1.40		

	Higher Secondary Education	35	3.77	1.31		
	Graduation and above	110	4.04	1.12		
	Total	**380**	**3.58**	**1.38**		
Economic Empowerment Through ICT	**Occupation Status**	**N**	**Mean**	**SD**	4.895	0.0032
	Coolie	203	2.88	1.35		
	Desk Top Publishing Assistant	9	3.15	1.48		
	Farmers	30	3.50	1.41		
	Housewife	42	3.78	1.31		
	Agent in LIC	49	4.05	1.12		
	Teacher	47	4.21	0.98		
	Total	**380**	**3.50**	**1.38**		
Economic Empowerment Through ICT	**Monthly Family Income**	**N**	**Mean**	**SD**	6.225	0.0007
	Below 10,000	179	3.48	1.23		
	10,000 - 20,000	94	3.80	1.14		
	20,000 - 30,000	42	4.00	1.11		
	Above 30,000	65	4.20	0.96		
	Total	**380**	**3.88**	**1.11**		
Economic Empowerment Through ICT	**Type of Family**	**N**	**Mean**	**SD**	4.533	0.0123
	Nuclear	259	3.71	1.21		
	Joint	121	3.95	1.28		
	Total	**380**	**3.80**	**1.22**		

Source: Primary data

The One-Way ANOVA was used to test whether socio-demographic variables significantly influence economic empowerment through ICT among rural women in Kerala. For each factor, the following null hypothesis was tested: There is no significant difference in economic empowerment through ICT across the groups within the variable.

The null hypothesis for age was rejected ($F = 5.647$, $p = 0.0011$), indicating a significant difference. Empowerment levels increase with age, from a mean of 2.89 (SD = 1.31) among women aged 18–30 to 3.83 (SD = 1.28) for those above 50, suggesting older women benefit more from ICT use.

The null hypothesis for marital status was also rejected ($F = 4.683$, $p = 0.0098$). Married women reported the highest economic empowerment (mean = 3.50, SD = 1.40), while widows reported the lowest (mean = 2.88, SD = 1.34), showing marital status influences ICT use for economic purposes.

Education significantly impacts ICT-based empowerment ($F = 5.216$, $p = 0.0023$), leading to the rejection of the null hypothesis. The mean empowerment score rises with education level—from 2.87 (SD = 1.34) among illiterate women to 4.04 (SD = 1.12) among graduates and above—highlighting the role of education in effective ICT engagement.

There is a statistically significant difference across occupational groups ($F = 4.895$, $p = 0.0032$), hence the null hypothesis is rejected. Teachers (mean = 4.21, SD = 0.98) and LIC agents (mean = 4.05, SD = 1.12) report higher empowerment compared to coolies (mean = 2.88, SD = 1.35), showing formal and skilled employment enhances ICT benefits.

Economic empowerment varies significantly with income ($F = 6.225$, $p = 0.0007$), resulting in rejection of the null hypothesis. Women from higher-income households (above ₹30,000) reported higher empowerment (mean = 4.20, SD = 0.96) than those from low-income households (below ₹10,000; mean = 3.48, SD = 1.23), emphasizing the role of financial stability.

The null hypothesis for family type was rejected ($F = 4.533$, $p = 0.0123$). Women from joint families (mean = 3.95, SD = 1.28) reported slightly higher empowerment than those from nuclear families (mean = 3.71, SD = 1.21), indicating better support systems in joint family settings.

All null hypotheses were rejected, indicating that age, marital status, education, occupation, income, and family structure significantly influence rural women's economic empowerment through ICT in Kerala. These

findings highlight the importance of socio-demographic contexts in shaping access to and benefits from digital tools, pointing to the need for targeted interventions for less advantaged groups.

Findings Of The Study

1. Older women show higher economic empowerment through ICT, with mean scores increasing steadily by age, highlighting age as a key influencing factor.
2. Married women experience greater economic benefits from ICT compared to unmarried or widowed women, indicating spousal and household support may influence ICT usage.
3. Higher education levels significantly enhance economic empowerment through ICT, proving education is a strong enabler of digital literacy and economic engagement.
4. Women in skilled and formal occupations, like teaching and LIC agency, show greater ICT-based empowerment than those in unskilled jobs like coolie work.
5. Economic empowerment through ICT improves with higher monthly family income, suggesting financial stability enhances access and effective use of digital resources.
6. Women from joint families report slightly better economic empowerment through ICT, possibly due to shared resources, support, and cooperative decision-making within households.

Suggestions

1. The government, community organizations, and educational institutions should collaborate to deliver targeted ICT training for young and unskilled rural women to enhance their economic opportunities and digital participation.
2. They should ensure digital tools and internet access are affordable and accessible for women from low-income households, promoting inclusive digital empowerment and reducing the rural digital divide.
3. Educational institutions must integrate ICT modules into adult and continuing education programs, especially focusing on less-educated and older rural women to increase their digital and economic capabilities.
4. Community networks and self-help groups should be empowered to facilitate peer-to-peer learning and collective ICT use, encouraging economic initiatives and support among rural women.

CONCLUSION

The study clearly reveals that Information and Communication Technology (ICT) plays a pivotal role in facilitating economic empowerment among rural women in Chengalpattu District. The findings demonstrate that ICT has significantly contributed to income generation, access to digital financial services, and increased financial literacy, particularly among older, educated, and economically stable women. The research highlights disparities across age groups, educational qualifications, and occupational status, with teachers, LIC agents, and women from higher-income households reporting greater empowerment. However, the majority of respondents experienced a low level of empowerment, signaling barriers such as digital illiteracy, limited entrepreneurial opportunities, and inadequate access to ICT infrastructure. Notably, socio-demographic factors such as education, marital status, and family structure were found to significantly influence ICT utilization. To maximize ICT's transformative potential, targeted interventions must bridge the digital divide, promote inclusive training, and create enabling environments that support rural women's economic autonomy and sustainable livelihoods.

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