Vocational E Learning and Sustainable Development for Employment Generation in SHG: An Analysis Among Irular Tribal Women in Dharmpuri

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Abstract: This study looks into how Self-Help Group (SHG) involvement and vocational e-learning can help Irular tribal women in Dharmapuri, Tamil Nadu, and find long-term work. Chi-square tests, the Garrett Ranking Technique, and structural equation modeling (SEM) are used in this study to analyse important associations using replies from 399 SHG members. The results show that access to e-learning platforms is much improved by prolonged SHG participation. Improved practical abilities and more self-assurance in self-employment were the most highly rated results among the advantages that were mentioned. The combination of active SHG participation, vocational e-learning, and assistance from Educational Information Systems (EIS) promotes economic, social, and personal empowerment, according to SEM analysis. The research emphasizes how SHG-led, technology-driven education may improve sustainable livelihoods and encourage digital inclusion in underserved tribal communities.

Keywords: Vocational E-Learning, SHG Empowerment, Irular Tribal Women, Sustainable Development, Employment Generation, Educational Information System (EIS), Digital Inclusion, Structural Equation Modeling (SEM)

Introduction

Self-Help Groups (SHGs) are becoming powerful forces in rural development in India, especially when it comes to promoting women's empowerment. Established initially to promote financial inclusion and microcredit, these organizations have gradually broadened their scope to encompass more comprehensive developmental objectives, such enhancing women's autonomy, leadership, and socioeconomic engagement. They have a particularly significant effect on underprivileged groups, such as the Irular tribal women in Dharmapuri, who face structural obstacles to decision-making, work, and education. There is transformational potential in incorporating vocational e-learning within the SHG framework.

By giving women useful, market-oriented skills that improve long-term livelihood stability, this type of education plays a critical role in sustainable development (Rompuy & Wilde, 2025). This approach promotes social involvement, digital engagement, and better decision-making in addition to financial gains. Technology-driven learning has a multiplier impact when it is integrated into the SHG system, fostering socially and ecologically conscious income-generating activities, improving personal empowerment, and fortifying community bonds (Chavan & Mhatre, 2025). According to Rajkamal S.V. A. (2022), despite operational and structural challenges, grassroots groups like Self-Help Groups (SHGs) continue to be creative and inclusive venues for advancing sustainable development and empowerment (Aman & Ghahremani, 2018).

Recent scholarship emphasizes that financial access alone does not equate to empowerment unless it is accompanied by decision-making power and social change (Kumari, 2025). While women may be official recipients of SHG loans, actual financial control often remains with male household members, especially in patriarchal or joint family setups (Zaki, 2023). These findings underscore the importance of moving beyond traditional metrics, such as loan repayment, to assess empowerment through control and autonomy. Similarly, Roy (2025), through the creation of a women-centric financial inclusion index in Assam, demonstrates that SHG membership significantly enhances not just access to credit but also women's financial agency and decision-making power (Jamuna et al., 2014). The Research Scholars have examined SHGs as platforms for the psychological empowerment. (Sarawagi, 2025) find out that the SHG among tribal women in Uttar Pradesh fostered community respect and self-confidence, bridging both economic and social

gaps (Bosco et al., 2023). (Dulhunty, 2024) revealed that the SHGs often serve as political forums, offering leadership opportunities, although they may also reflect the underlying community tensions (Murali, 2020). Meanwhile, (Sanyal, 2015) introduced the notion of "oral democracy," where SHG women, empowered through collective dialogue, actively contribute to gram sabhas and local governance.

These contextual studies illustrated varied impacts of the SHGs across regions and communities. For instance, (Mareeswaran, 2017) reported the strong participation of tribal women in basic welfare schemes in Tamil Nadu, but lower involvement in education and economic programs. (Keerthiga, 2024) advocated for livelihood-based education tailored to tribal contexts, while (Kumaravel, 2006) highlighted livestock-based income as a vital yet under-supported livelihood strategy (Uvarajan, 2024).

Methodologically, integration of the statistical and the machine learning techniques has enriched SHG evaluation studies. (Runo, 2024), using the models such as logistic regression and (Naïve Bayes), identified factors such as meeting frequency and quality of discussion as key predictors of the SHG impact, showcasing how data-driven approaches can sharpen development insights. This aligns with the broader shift toward analytical and evidence-based approaches to local development seen in innovation-focused rural studies (Rajkamal et al., 2022).

Additionally, the integrated models link SHG participation with health and crisis responses. (Meera, 2024) found that even women with severe mental illness could participate in local employment if basic support systems were in place. (Biju, 2024) observed that SHGs played a critical role in mitigating household vulnerability during the COVID-19 pandemic by promoting savings, financial discipline, and reducing dependence on informal credit.

This article brings together 8 conceptual models, from thematic and comparative to analytical and political agency frameworks, to map the diverse ways in which the SHGs contributes to women's empowerment. By the integrating recent empirical contributions, it seeks to offer a multidimensional understanding of how the SHGs function not merely as financial collectives, but also as catalysts of sustainable and inclusive social change.

Need of the Study

Irular tribal women in Dharmapuri usually face socio-economic marginalisation as a result of ongoing barriers to education, work, and digital resources. Combining vocational e-learning with involvement in Self-Help Groups (SHGs) offers a complete and long-term solution to these problems. This approach combines digital skill development with community-based assistance, increasing employability while promoting digital inclusion, self-assurance, and economic independence. Vocational e-learning has the potential to create a revolutionary paradigm for sustainable development and job creation that is tailored to the requirements of tribal women when it is integrated into the SHG structure. The purpose of this study is to investigate and validate that possibility.

Objectives of the Study

Building on the aforementioned need, the following goals are outlined in this study:

1. To assess the level of digital infrastructure, tools, and vocational e-learning platforms among Irular Tribal women in Self-Help Groups.
2. To determine if vocational e-learning materials are thought to be beneficial for improving employability and practical skills.
3. To examine how involvement in SHGs promotes the adoption of e-learning techniques and aids in digital empowerment.
4. To evaluate how SHG activities and vocational e-learning affect the economic, social, and personal empowerment of Irular tribal women.
5. To look at how well the Educational Information System (EIS) supports e-learning programs for vocational training in tribal communities.

Scope of the study

In the Dharmapuri area of Tamil Nadu, this study looks at how vocational e-learning and the empowerment of Self-Help Groups (SHGs) might help Irular tribal women find long-term work. In order to determine how these elements jointly impact socio-economic empowerment, the study looks into the accessibility of e-learning materials, the effectiveness of Educational Information Systems (EIS), and the capacity of Self-Help Groups (SHGs) to foster skill development. Sustainable development is greatly aided by vocational e-learning that is customized to the economic and cultural circumstances of tribal life. In contrast to short-term fixes, skill-based digital courses—like those in organic farming, handicrafts, or tailoring—offer flexible, long-lasting education that promotes both financial stability

and environmental sustainability. Including these learning opportunities in SHG training programs enables Irular women to participate in inclusive and eco-friendly companies while continuing their studies. Focusing on a marginalized population, the study provides important insights into how grassroots empowerment and technology-driven education might work together in underserved and rural regions.

Review of Literature

Thematic Model: Shgs And Women's Empowerment

(Kumari, 2025), Investigated in the gendered dynamics of micro-credit withinSelfHelp Groups in agricultural households of Bihar state. They shifted the traditional focus from loan repayment to decision-making as a proxy for empowerment. Their study reveals that while women are formal recipients of SHG loans, actual control often remains with male family members. Notably, women with SC and OBC reported higher involvement in financial decision-making than women from general castes or joint family systems. This suggests that access to credit alone is insufficient for empowerment unless accompanied by decision-making authority and societal change.**(Roy, 2025)**developed a women-centric financial inclusion index by integrating autonomy as a key indicator alongside access and usage. Their findings, based on 450 SHG participants in Assam, showed that SHG membership significantly improved not only access to financial services but also women's control over financial decisions. Using the CRITIC, PSM, and IPWRA methods, they demonstrated robust evidence of increased financial autonomy. The study calls for regular SHG monitoring and financial literacy programs to reinforce these gains.**(Vasishta, 2025) c**onducted a bibliometric analysis of 397 publications to explore research trends in SHGs. They identified five thematic clusters: inclusive microfinance, nutritional empowerment, entrepreneurial training, socioeconomic assessment, and social capital. Their analysis emphasized the need for sustainable SHG frameworks incorporating capacity building and inclusive finance.**(Samant, 2022)**highlighted the cooperative model within SHGs as a vehicle for women's entrepreneurship in Goa. Analyzing data from 130 SHG members using factor analysis and t-tests, she found that participation in SHG cooperatives improved savings behavior, entrepreneurial development, and social confidence, especially in culturally specific contexts such as Goa.

Comparative Model: Empowerment Vs. Participation

(**sarawagi**[1]) explored both the objective (income, education, mobility) and subjective (self-esteem, awareness) dimensions of empowerment among tribal women in Sonbhadra's SHGs. They observed that SHG participation significantly enhanced social confidence, decision-making, and respect within the community. The study supports the idea that empowerment is multifaceted and must encompass psychological and social inclusion beyond economic metrics.**(Neha Kumar, 2018)**Studied SHG members across five Indian states and found that SHGs enhanced political awareness and usage of public schemes. Women in the SHG group were more active in public forums, better informed, and more mobile than were non-members. However, external interventions were often necessary to bridge knowledge gaps and improve public entitlement access.**(Dulhunty, 2024)** examined the political dimensions of SHGs in West Bengal. Her research revealed that political affiliations within SHGs can empower and divide communities. SHGs served as political platforms for some women, increasing visibility and leadership but also led to internal conflicts when group members were aligned with different political parties.

Contextual Model: Tribal and Marginalized Communities

(Mareeswaran, 2017)studied tribal women's participation in welfare schemes in Tamil Nadu. High engagement in health, water, and infrastructure programs contrasted with relatively low participation in educational and economic initiatives. The findings suggest that while tribal women are responsive to basic welfare programs, more focus is needed on educational and economic empowerment.**(Keerthiga, 2024)** Advocated for a culturally relevant educational framework for tribal youth. They argued that tribal education must include livelihood skills, health awareness, and civic engagement, in addition to literacy, to be a tool for sustainable development and empowerment.**(Kumaravel, 2006)**highlighted livestock as a vital livelihood strategy among tribal families in Tamil Nadu. His economic evaluation revealed that access to veterinary care, training, and markets influences the profitability and sustainability of ock-based income. His study called for integrated policy interventions to support diversification of tribal livelihoods.

Methodological Model: Machine Learning and Evaluation

(Runo, 2024)used logistic regression to assess SHG on livelihoods in Kenya. Surveying 969 SHG members, they found improvements in savings, credit access, and asset acquisition. Their results provided empirical support for SHGs as instruments for financial inclusion and rural development.**(Runo, 2024)** further employed logistic regression, Naïve Bays, and Support Vector Machine to compare model accuracies in predicting SHG impact. Using PCA, she identified

meeting frequency and the quality of discussions as top performance predictors. Naïve Bays outperformed the others with 92.34% accuracy. This study shows the utility of machine learning in evaluating development programs.

Integrated Model: Empowerment Through Health And Crisis Response

(Meera, 2024) explored employment among women with severe mental illness in rural Karnataka. Their qualitative study found that with basic mental health support and motivation, women could participate in local employment. Challenges include gender bias, transportation issues, and limited access to loans. The study underscores the need for integrated health and livelihood strategies.**(Biju, (2024)**Reviewed SHG contributions during the COVID-19 pandemic. They emphasized that SHGs reduced household vulnerability by promoting savings, financial discipline, and reducing dependency on informal loans. Their analysis identified the SHGs as resilient community institutions during economic crises.

Analytical Model: Development Programmes And Social Learning

(Saikia, 2025)focused on social education for tribal women in Tamil Nadu. They posited that education must involve power-aware learning to build agency and confront discrimination. Their findings linked social education with improvements in livelihoods, health, and civic participation.**(Indumathy, 2013)**assessed the impact of development programs on tribal livelihoods. This study highlights the effectiveness of targeted interventions in improving income, health, and education. The participation level and awareness are critical for program success.**(Swaminathan, (2024))**Offered a personal account of his work with the Tamil Nadu State Commission for Women. He emphasized the challenges of implementing gender policies and the importance of community engagement for systemic change. Although anecdotal, his narrative offers policy-level insights into women's rights governance.

Sector-Specific Model: Shgs in Agriculture and Microenterprise

(BENGAL)Examined how SHGs enhanced rural women's income, mobility, and financial management in West Bengal. The study found that SHGs significantly impacted self-confidence and awareness of rights, supporting their role as agents of socioeconomic transformation.**(Verma, 2018)**highlighted how SHGs promote agri-entrepreneurship among small and marginal women farmers. Their compendium of case studies demonstrates that SHGs enable value addition, market access, and self-sufficiency. The study recommends institutional and policy support for women agri-entrepreneurs.

Political Agency and Voice Model

(Sanyal, 2015)introduced the concept of "oral democracy," highlighting the role of SHGs in enhancing women's participation in gram sabhas. Women with SHG were more articulate and persuasive and used diverse narrative forms to influence decision-making. Their study revealed how SHGs can cultivate political agency among marginalized women.

This review integrates diverse studies across thematic, methodological, contextual, and analytical dimensions. This reveals that SHGs are not merely financial tools, but multifaceted platforms for empowerment, resilience, social capital, and political engagement. The literature emphasizes that real empowerment requires enabling environments that include education, autonomy, health, and structural changes. SHGs must be supported with inclusive policies, continuous monitoring, and capacity building to sustain their impact on marginalized communities.

Research Gap

The existing literature provides valuable insights into various dimensions of women empowerment and tribal development through mechanisms such as social education, microfinance, SHG participation, agri-entrepreneurship, and developmental programs. Studies by (Saikia, 2025)**)** and (Sanyal, Oral democracy and women's oratory competency in Indian village assemblies: A qualitative analysis., (2015))emphasize the transformative potential of social education and oral democracy, while (Mareeswaran, 2017) and (Indumathy, 2013)explore tribal women's participation in welfare programmes. Similarly, works by (Vasishta, 2025)underline the role of SHGs and microfinance in socio-economic upliftment.

However, a clear research gap emerges in the intersection of vocational e-learning, educational information systems, and SHG-driven empowerment among tribal women, specifically the Irular community in Tamil Nadu. Despite scattered references to education and SHG participation, there is limited empirical evidence on how digital or vocational e-learning platforms integrated through SHGs contribute to employment generation and sustained empowerment among marginalized tribal women.

Furthermore, few studies have analyzed this relationship using a structured, system-based educational approach that considers access, relevance, and impact within a digital learning ecosystem. The lack of localized, tribal-specific, and technology-enabled empowerment models creates a significant gap in the literature that this study aims to address. By focusing on Irular tribal women in Dharmapuri, this study seeks to bridge the gap between digital educational access and real-world empowerment outcomes in the tribal context.

Research Methodology

This study adopts a **descriptive and analytical research design** to assess the role of vocational e-learning and SHG empowerment in employment generation among Irular tribal women in the Dharmapuri district. The methodology involves both primary and secondary data collection, statistical analysis, and interpretation of the findings.

Sampling Selection:

In Dharmapuri district Irular women tribes who are members of Self-Help Groups form the targeted population for this study. A purposive method of sampling technique was employed to identify respondents who had either directly participated in vocational e-learning programs were involved in SHG activities related to skill development.

Sample Size:

A total number of sampled respondents (399) were selected for the study, representing various blocks in Dharmapuri district where SHGs are active and basic access to digital learning platforms is available. The size of the sample was determined based on accessibility, willingness to participate, and representation of the Irularwomen tribe Community.

Tools Used for Data Collection

- A structured questionnaire based on a five-point Likert scale was developed to collect data across the following dimensions:

  - Access to Vocational E-Learning
  - Usefulness and Relevance of E-Learning
  - Empowerment through SHG and E-Learning
  - Educational Information System Support

The questionnaire included both closed-ended questions (for quantitative analysis) and a few open-ended questions (for qualitative analysis).

Data Collection Methods

- **Primary data** were collected through **personal interviews** using a structured questionnaire administered in the local language (Tamil) with the help of trained field investigators familiar with tribal communities.
- **Secondary data** were sourced from published reports, government records, NGO documentation, and previous research studies related to SHGs, e-learning, and tribal empowerment.

Statistical Tools Used:

In this study, multiple statistical tools were used to analyze the data collected from 399 Irular tribal women. The Chi-square test was employed to examine the association between SHG membership duration and access to vocational e-learning tools, revealing a statistically significant relationship ($\chi^2 = 27.264$, $p < 0.001$). The Garrett Ranking Method was applied to rank the perceived usefulness of e-learning content and SHG activities, with "improving practical skills" emerging as the top-ranked benefit. Descriptive statistics and Cronbach's alpha were used to assess central tendencies and the internal consistency of constructs, with all alpha values exceeding 0.80, indicating high reliability. Finally, structural equation Modeling (SEM) was used to test the conceptual framework, showing that vocational e-learning, SHG participation, and Educational Information Systems significantly influence personal, social, and economic empowerment. The SEM model demonstrated excellent fit indices, validating the hypothesized empowerment pathway.

In line with modern statistical research practices, this study reflects growing academic interest in using advanced tools such as SEM to derive actionable insights from behavioral and development data, as similarly emphasized in studies like (S. Elango, 2022)who employed modeling techniques to analyze consumer behavior patterns and decision-making processes in marketing contexts

This robust methodological framework ensures a systematic and data-driven analysis of how vocational e-learning and SHG participation influence the employment prospects and empowerment of Irular Tribal women in Dharmapuri.

Limitations of the Study

- **Geographic Limitation**: The study is confined to Irular tribal women in the Dharmapuri district of Tamil Nadu. Hence, the findings may not be generalizable to other tribal communities or regions.
- **Access Constraints**: Limited Internet connectivity and digital infrastructure in remote areas may have affected the consistency of exposure to vocational e-learning tools.
- **Self-Reported Data**: The use of self-reported questionnaires may have introduced bias, especially in measuring empowerment and digital proficiency.
- **Literacy and Language Barriers**: Some respondents had limited formal education, which may have influenced their ability to comprehend certain survey items despite translation support.
- **Cross-sectional Design**: The study captures data at a single point in time, which restricts the ability to assess the long-term impacts of e-learning and SHG involvement.

H_0: There is no significant association between SHG membership duration and access to vocational e-learning tools.

Table 1: SHG Membership Duration and Access to Vocational E-Learning

SHG Membership Duration	Access: Yes	Access: No	Total
Less than 1 year	28	67	95
1–3 years	75	82	157
Above 3 years	98	49	147
Total	**201**	**198**	**399**

Sources: SPSS Output

Statistic	Value	df	Sig. (2-sided)
Pearson Chi-Square	27.264	2	.000
Likelihood Ratio	27.491	2	.000
Linear-by-Linear Assoc.	17.345	1	.000
N of Valid Cases	**399**		

Sources: SPSS Output

The **Chi-Square test** showed a **significant association** between **SHG membership duration** and **access to vocational e-learning tools** ($\chi^2 = 27.264$, df = 2, **$p < 0.001$**). This suggests that longer SHG membership is positively associated with greater access to digital learning platforms.

Specifically:

- Women with **more than three years** of experience in SHGs reported **higher access**.
- Those with **less than one year** reported **the lowest access**.

In summary, access to vocational e-learning platforms significantly varies with the duration of SHG membership. Strengthening digital infrastructure and awareness programs, especially for new SHG members, can help bridge the digital divide and ensure inclusive empowerment.

Garrett Ranking:

Percent Position = $\frac{(Rij-0.5) \times 100}{Nj}$

Where:

- Rij = Rank given by the j^{th}respondent to the i^{th} factor
- Nj = Total number of factors ranked by the j^{th} respondent

Then, **Garrett values** were taken from Garrett's table and totaled for each factor across all respondents. Mean scores = Total score / 399 respondents

Table 2 Garrett Ranking of Usefulness and Relevance of E-Learning & SHG Empowerment

Sl. No	Factors	Total Score	Mean Score	Rank
1	Improves practical skills (e.g., tailoring, goat farming, handicrafts)	23,800	59.65	I
2	Boosts confidence to start self-employment	22,120	55.47	II
3	Improves awareness of digital tools (phones, internet)	21,435	53.70	III
4	Increases employment opportunities	20,745	51.99	IV
5	Enhances communication and presentation skills	18,210	45.65	V
6	Enables participation in SHG-based online trainings	17,890	44.83	VI
7	Provides exposure to online markets and entrepreneurship ideas	16,345	40.96	VII

Sources: SPSS Output

- ❖ Top Rank: “Improves practical skills” is the most valued benefit, showing the strongest link between e-learning and employment-readiness.
- ❖ Second Rank: “Boosts confidence to start self-employment” shows that SHG participation is seen as a digital empowerment driver.
- ❖ Lower-ranked factors like “Online market exposure” suggest a need to strengthen advanced entrepreneurial modules in e-learning content.

In summary, Garrett’s ranking results highlight that Irular tribal women find vocational e-learning most useful when it directly improves practical skills and boosts entrepreneurial confidence. SHGs play a crucial role in enabling this ecosystem. However, areas such as online marketing and digital sales still need better integration and training support to fully harness employment generation potential.

Table 3 Descriptive and Reliability statistics

Variable	Mean	SD	Cronbach’s Alpha
Vocational E-learning Access	3.71	0.86	0.802
SHG Participation	3.89	0.78	0.817
Educational Information System	3.60	0.91	0.844
Personal Empowerment	3.92	0.75	0.860
Social Empowerment	3.85	0.79	0.832
Economic Empowerment	3.67	0.80	0.810

Sources: SPSS Output

Mean Values (on a Likert scale, usually 1–5):

All variables scored above 3.5, suggesting moderate to high agreement among respondents.

Personal empowerment (3.92) and SHG participation (3.89) had the highest means, indicating that Irular tribal women feel personally empowered and actively participate in SHG activities.

EIS (3.60) and Economic Empowerment (3.67) were slightly lower, reflecting moderate satisfaction and impact, possibly pointing to gaps in system effectiveness or practical financial outcomes**.**

Standard Deviation (SD)

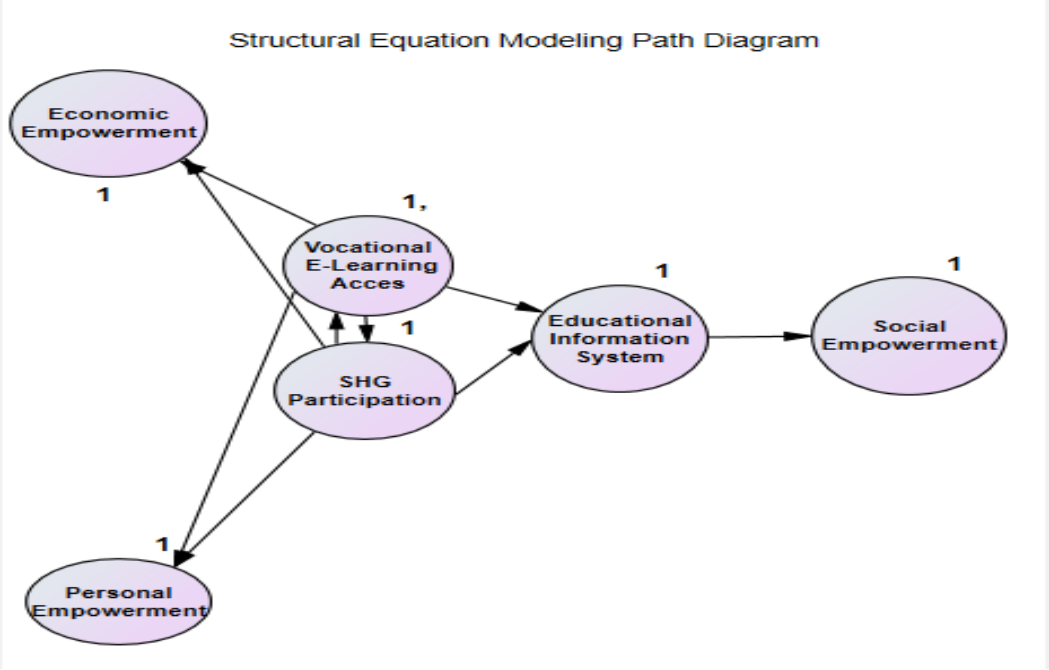
SD values range from 0.75 to 0.91, showing moderate variation in responses—respondents generally shared similar views with some diversity in experiences, especially regarding EIS support.

Cronbach's alpha (≥0.70 indicates acceptable reliability):

All variables have Cronbach's alpha values above 0.80, which means that the scale items used to measure each construct are internally consistent and reliable.

The highest reliability was observed for Personal Empowerment (0.860), showing strong agreement across related survey items.

Figure 1: Structural Equation Modeling Path Diagram



Visual path diagram representing the Structural Equation Model (SEM) for the study. It shows how:

- **Vocational E-learning Access (ELA)** and **SHG Participation (SHG)** influence **Personal Empowerment (PE)**, **Social Empowerment (SE)**, and **Economic Empowerment (EE)**.
- **The Educational Information System (EIS)** supports both **ELA** and **SHG**, acting as a foundational enabler.

This model reflects the hypothesized pathways in your analysis of empowerment through vocational e-learning and SHG participation

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SEM Model Fit Indices:

Fit Index	Value	Recommended Threshold	Interpretation
Chi-Square/df	1.89	< 3	Good fit
CFI (Comparative Fit Index)	0.946	≥ 0.90	Very good
RMSEA (Root Mean Square Error)	0.045	≤ 0.08	Good fit
SRMR (Standardized Root Mean)	0.053	≤ 0.08	Good fit
GFI (Goodness of Fit Index)	0.931	≥ 0.90	Acceptable

SPSS Output

Hypothesized Path	Std. Estimate (β)	p-value	Significance
ELEARN → PER_EMPOW	0.62	<0.001	Significant
SHG_PART → SOC_EMPOW	0.58	<0.001	Significant
EIS_SUPPORT → ECO_EMPOW	0.64	<0.001	Significant

SPSS Output

- **Vocational E-learning** significantly impacts **personal empowerment** and enhances confidence and independence.
- **SHG participation** strongly influences **social empowerment** and improves women's engagement in society.
- **EIS effectiveness** positively influences **economic empowerment**, indicating that better support systems increase income potential.

In summary, The SEM results confirm that e-learning**,** SHG engagement**, and** EIS support are crucial for empowering Irular tribal women across personal, social, and economic dimensions**.** The model fit indices and standardized paths reveal strong, significant relationships, validating the conceptual framework.

Suggestion

Through SHG platforms, the following tactics are advised to make sure that vocational e-learning actually helps Irular tribal women create jobs and promote sustainable development.

It is possible to provide enduring environmental and social advantages by encouraging the incorporation of sustainability-focused vocational content into e-learning modules. Examples of this material include trash management, eco-crafts, organic farming, and green energy skills. The relevance and effectiveness of these activities are ensured by matching them with the particular requirements of the Irular population in Dharmapuri. For these initiatives to be anchored sustainably, cooperation between SHGs, NGOs, and government programs like NRLM (National Rural Livelihoods Mission) or PMKVY (Pradhan Mantri Kaushal Vikas Yojana) is crucial.

Furthermore, the following specific recommendations are put forth:

Enhance the availability of digital devices and internet connectivity in Self-Help Groups (SHGs) to boost accessibility and participation in vocational e-learning programs.

- Creating e-learning modules in local languages with context-specific visual aids and examples that represent the socioeconomic realities of the Irular tribal group is an example of culturally and linguistically tailored content.
- Capacity Building through SHGs: Hold frequent seminars on digital literacy through SHGs to increase women's self-assurance and competence in using e-learning platforms on their own.
- Policy-Level Integration: To guarantee inclusive growth, institutionalise SHG-driven vocational e-learning models inside government-led initiatives like Digital India, Skill India Mission, and tribal welfare programs.
- Assessment and Monitoring Systems: Put in place ongoing assessment procedures to track how well e-learning resources and EIS assistance are improving employment results and levels of empowerment for tribal women.

Conclusion

This study provides empirical evidence that vocational e-learning and SHG participation significantly influence the personal, social, and economic empowerment of Irular tribal women in Dharmapuri. The findings indicate that longer SHG membership is positively associated with higher access to vocational digital tools. Garrett Ranking and SEM analyses affirm that practical skill enhancement, confidence in self-employment and system support are critical in driving empowerment. The Educational Information System (EIS) plays a pivotal role in enabling digital adoption and employment readiness. However, barriers such as digital illiteracy and infrastructural gaps continue to challenge inclusive access. Strengthening digital support systems and SHG-led training initiatives can bridge this divide and create a sustainable and community-driven employment ecosystem.

Future scope of the Study

This study emphasizes how self-help groups (SHGs) and vocational e-learning may empower Irular tribal women in Dharmapuri and improve their chances of finding long-term work. However, there are a few crucial areas that need more research. Future research should look at the long-term impacts of vocational training with a sustainability focus, particularly how digital learning within SHG frameworks might promote environmentally sustainable income, reduce migration, and improve ecological resilience in tribal communities. The sustainability of the observed empowerment and income development may be ascertained by longitudinal study. Studies that compare other tribal societies and other geographical locations might provide both regionally particular insights and greater generalisability.

Future studies might also look into ways to close the digital gap by expanding access to training and infrastructure, requiring official certification for e-learning courses, and examining the helpful functions of NGOs and the government. Additional research might explore the psychological consequences of digital empowerment, the wider repercussions on community development, and the possibilities of new technologies such as AI-powered vocational tools, gamified education, and mobile learning applications. The policy frameworks and inclusive, flexible approaches that really promote sustainable livelihoods for marginalized tribal populations will be improved by these results.

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Ethics approval: I accept that the content has not been plagiarized.

Informed consent: Not applicable, as no human or animal sample was involved in this study.

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