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Woman Led Farmer Empowerment through Grow the Farmer Initiative - A Case Study of NGO Siruthuli

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ABSTRACT: Farmer empowerment and woman resilience being the benchmark for any developed society, this research paper analyses the activities undertaken by a woman led NGO Siruthuli in empowering the farmers through expert trainings in the domains of crop planning, marketing, logistics and sustainable farming and its impact on the economic gains of farmers. The primary data from the respondents was collected from 153 respondents through a structured questionnaire that focused on understanding the perceptions of the farmers before and after training. The findings showed that across all the constructs, the after training mean scores were significantly higher, particularly with reference to sustainable farming support and crop planning and input support. About fifty percentage of the variation explained through the structural equation model, reveal that among the different domains of training, sustainable farming with specific focus on zero budget farming and water resource management significantly contributed to the livelihood with increased farming income and improved yield. This research paper highlights the fact that by offering customized and smaller group trainings to farmers, the NGO led by the women leader is meaningfully contributing in enhancing the livelihood of farmers in the region.

1.INTRODUCTION:

Agriculture is one the major sector contributing to development of the nation. With 65% of the of the workforce employed, yet its contribution to GDP is only 18% (Bais & Bahadur, 2023), This highlights the imminent need for enhancing the skills and capabilities of famers to undertake farming with better confidence, and adaptability (Shankaraa et al., 2023). By improving their knowledge and skills, empowerment programs enable the farmers to undertake productive farming (Rugumamu, 2014), as it enables them to make informed decisions, enhancing their livelihood security and economic gains. Mwololo et al. (2021) states that empowering the farmers leads to three enabling pathways which includes income gains, production gains and leadership gains. Learning and knowledge gained through the training programs improves the competence of the farmers that is reflected in their farming skills improving the financial and social capital (Carr et al., 2015).Motivated by saving time, resources and the joy of peer learning, farmers prefer to attend the training programs when they identify programs that are focusing on the latest aspects of agriculture coupled with hands on learning (Franz et al., 2010).

Apart from challenges of changing climatic conditions and access to finance, farmers face the challenge of planning the cropping season, market linkages, storage & logistics and employing the right type of mechanisation **(**Mandala et al., 2021) to improve their agricultural produce. Recognising this imminent need, the government have implemented schemes such as the Pradhan Mantri Kaushal Vikas Yojana (PMKVY), Krishi Vigyan Kendras (KVKs) etc to impart skill and capacity training to farmers. (Nehru, 2022). Apart from the government agencies, non-governmental organisations with fewer bureaucratic procedures and greater operational flexibility, (Jayadatta, 2023), engage in empowering the farmers through training programs and workshops (Patel, 2018). As NGO's are formed through voluntary and collective commitment for societal cause, they are motivated to

engage the right expertise and implement ideal programs for empowering the farmers. (Borah et al., 2019). Focussing on increasing the awareness and imparting expertise, NGO's involved in farmer empowerment provide training programs to facilitate the required resources, create market linkages and promote sustainable agricultural practices (Murali Mohan & Roy, 2025).

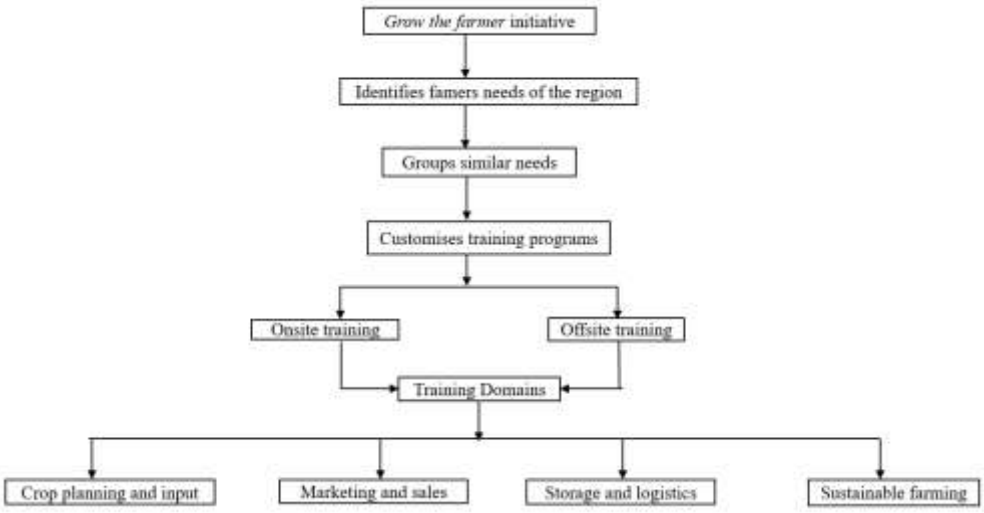
Amid the various NGO's focussed on enhancing the rural economy, Women led NGO's play a predominant role in enhancing the agrarian livelihoods (Meher, Pattnaik, & Digal, 2025), by offering training programs on technology adoption (Hossain et al. 2024) and delivering right inputs for human and community development activities (Akpabio, 2009). In South India, among the various NGO's in the domain of environmental conservation, *Siruthuli* is one of the prominent NGO's functioning in Coimbatore, focussing on the holistic development of the region since 2003. Led by the Managing Trustee Ms.Vanitha Mohan, *Siruthuli* (which means a small drop) emphases on the holistic development of the region by concentrating on 5 pillars – restoring the water bodies, afforestation, waste management, spreading awareness and empowering the farmers through *Grow the Farmer* initiative. Through its collective and community led approach, the NGO, led by the Women leader (conferred with the Abdul Kalam Seva Ratna award for excellence in selfless community service) has been prioritising on restoring the ecological balance of the region.

1.1 About *Grow the farmer* initiative

Among the different domains of focus, *Grow the farmer* initiative of *Siruthuli* aims at enriching the famers in the region through multiple deliverables. By organising training programs and workshops focussing on smaller farmer groups, the NGO offers expert support in the domains of crop planning, marketing and sales, storage and logistics and enabling sustainable farming.

By collaborating with farmer associations and local bodies, *Siruthuli* identifies the training requirements of the farmers in a locality, which is then grouped based on similarity. Then a customised training content is developed following a bottom-up approach, which is then executed through the apex team of experts from *Siruthuli*. To enable better learning, a blended approach is followed and the trainings are offered onsite or offsite depending on the requirements of the program. Prioritising hands-on sessions and demonstrations, the programs are organised for a smaller group of 15 to 20 members to ensure effective content delivery. Apart from follow-up, refresher programs are also conducted to ensure effective execution.

Figure1: About *Grow the farmer* Initiative of *Siruthuli*



Being a successful program in strengthening and uplifting the livelihood of farmers, this research is undertaken to answer the following research questions

- What are the farmers perceptions before and after taking part in *Grow the farmer* initiative
- What is the impact of the *Grow the farmer* initiative on the livelihood and economic gains of farmers

1.2 Literature review

Several studies have analysed the impact of farmer training and workshops on their empowerment. Singh et al. (2020) analysing the vocational training programs offered by Krishi Vigyan Kendras present that there is a significant upgradation in the economical and psychological gains of the rural women beneficiaries. Geetha and Geetha Devi (2008) examined the training offered by BAIF – NGO for farmers in sericulture, and has identified that it improved the yield through diffusion of technology. Mohd Noor and Dola (2011) analysing the influence of positive impact of training of Malaysian farmers involved in livestock, present that an improvement in work quality and the farming income. Analysing the effectiveness of the farmers training program using Kirkpatrick's training evaluation model, Khan et al. (2014) reveal a significant improvement in socio economic status. Attipoe et al. (2021) studying the impact of extension programs by NGO's highlight the improvement in overall productivity and farming income of cocoa farmers.

Apart from various studies focussing on the after impact of training programs by NGO's, research have also been done to understand the impact on farmer empowerment before and after intervention. Rasanjali et al., (2021, analysing the before and after impact of the in–service farmer training revealed a substantial improvement in technological knowledge in crop cultivation post intervention. Nirosha, Mansingh, & Nisha, (2025) by joining the Women Farmer Producer Organizations (WFPO) there was a significant enhancement in socio-economic status and overall livelihood after membership. (De et al., 2022) analysing the before and after effect of farmer FIRST program, presents an overall improvement in financial, social and natural assets of the farmers compared to before participation. Swarnam et al. (2025) analysing the before and after impact of the Homestead Integrated Farming System, presents that the tribal women farmers gained more financial and social independence after the intervention. Sendilkumar (2012) examined the before and after impact of GALASA programme on farmers involved in paddy cultivation and established a significant improvement in the sustainable farming practices after intervention. Jumiyati et al. (2024) analysing the before and after impact of the shallot farmers empowerment program by the NGO Muhammadiyah present that compared to pre-training, the farmers were able to handle their farms better which increased their farm income after attending the training program.

Eventhough there are studies focusing on the impact on the farmers before and after intervention by NGO's, specific focus on understanding the impact of famer empowerment programs organised by Women led NGO's and more specifically, a comparison of the impact of before and after intervention is lacking, which is addressed in this research paper.

1.3 Conceptual Framework:

1.3.1 Crop planning and input support:

Being the first domain of training, *Siruthuli* offers expert training to farmers for taking informed decisions on selecting the right crops and inputs, based on the climate, soil and water availability. Studies on crop planning and its impact on economic gains is well established. Muleke et al. (2022) reveal that planning on the crop types with low water requirements directly influences the economic gains of farmers. (Ibrahim et al., 2019) studying the maize farmers present that advisory services on the cropping patterns enables them to improve the agricultural productivity. Mkhonto and Musundire (2019) observed that knowledge sharing on the right inputs needed for farming, enables farmers to gain additional income through sustainable production. Shah et al. (2021) establish that creating awareness on crop rotation improves the soil health, reducing the incidence of weeds and insect attacks. On the basis of the above studies, the hypothesis is presented as

H1 : Crop planning and input support positively influence livelihood and economic gains

1.3.2 Marketing and sales support

Tran et al. (2025) present that by extensive participation in market accessibility and linkages programs, farmers' income improved significantly. Raghuraja and Devaraja (2022) analysing the mango farmers report that by gaining knowledge of direct marketing strategies, their share of profit improved significantly. Lesala et al. (2025) studying the small-scale farmers highlight that by incorporating market-oriented production techniques in training, farmers gain better economic stability. Thakur et al. (2023) highlighted that lack of market consultancy and information resulted in higher expenses and poor transportation for farmers. By gaining access to markets at the national and international level, a significant improvement is noted in the objective and subjective wellbeing of the farmers (Li et al., 2023). With the relation between market knowledge and income well established, the following hypothesis is proposed.

H2: Marketing and sales support positively enhances the livelihood and economic gains of farmers

1.3.3 Storage and Logistics support:

Improved transportation empowers the farmers to improve their productivity due to lesser wastage and spoilage (Ajiboye & Afolayan, 2009). Kumar and Kalita (2017) present that by improving the knowledge on storage and transportation enables the farmers to minimise the losses arising from post-harvest, thereby improving self-reliance. Patil and Kulkarni (2023) analysing the storage practices, reveal that without adequate knowledge of the institutional storage facilities, farmers are compelled to market their agricultural produce at lesser prices, incurring losses. Ruhinduka, Alem, Eggert, and Lybbert (2020) studying the rice farmers establish that the right decisions on storage and transportation influence their post-harvest choices and doubling their income. With well-established evidence of the importance of empowering the farmers with the right knowledge on storage and logistics, the following hypothesis is proposed

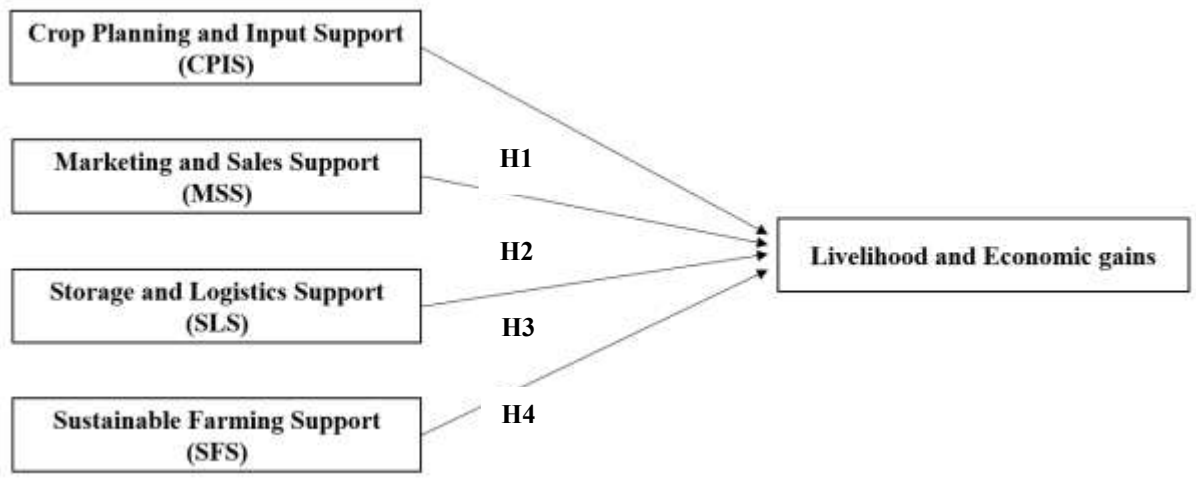
H3: Storage and logistics support influences livelihood and economic gains

1.3.4 Sustainable farming support:

With sustainable farming gaining dominance with changing climatic conditions researches have been done on the importance of enabling the farmers to do sustainable farming. Bhuiyan and Maharjan (2022) prove that empowering farmers on sustainable pest management has improved farm income. Kidane et al. (2025) studying the small-scale maize farmers by sharing knowledge on organic farming practices, the farmers gained better income. Setsoafia et al. (2022) present that knowledge sharing on sustainable water and soil and conservation improves farming income and stability. (Berger et al., 2025) analysing about zero budget natural farming, prove that the profits and crop yield of farmers have doubled. Based on the above research, and one of *Siruthuli's* domain of training, the following hypothesis is presented

H4: Sustainable farming support influences livelihood and economic gains

Based on the research, the following research model is proposed.



2.MATERIALS AND METHODS

2.1 Sample size:

To assess the before and after impact of the trainings given to farmers in *Grow the farmer* initiative, the population of 1014 farmers who have attended the training programs, were considered for the study. To have realistic results, from the total population, 419 farmers who have attended the training and refresher programs more than 5 times were considered as the sampling frame. Using Cochran's formula with finite population correction (95% confidence level and 5% error margin), the resultant sample size was 201 respondents. All the 201 respondents were considered for the study. However, due to inconsistent response, seasonal and occupational factors, the final sample consisted of 153 respondents, from whom the data collection was done.

2.2 Data collection

The primary data from the farmer respondents was collected through a well-structured questionnaire. The questions were based on the content of training across the domains of crop planning and input, marketing and sales, storage and logistics, and sustainable farming. Focussing on understanding the before and after perceptions of farmers regarding *Grow the Farmer* training programs, and its impact on the economic and livelihood, all the statements were evaluated by the respondents using a likert scale with 5 points. Additionally, open-ended questions were also included to understand the expectations of the respondents to improve the initiative.

3.RESULTS & DISCUSSION

Table 1: Demographic profile of farmer respondents

Demographic Variables	Description	No of respondents	Percentage
Age	<30	12	7.8
	30-45	35	22.9
	46-60	90	58.8
	>60	16	10.5
Gender	Male	135	88.2
	Female	18	11.8
Landholding size	Less than 1 Acre	4	2.6
	1–2.5 Acres	20	13.1
	2.5–5 Acres	59	38.6
	Above 5 Acres	70	45.7
Major crop cultivated	Coconut	54	35.3
	Sugarcane	36	23.5
	Fruits (Banana, Mango etc)	23	15.0
	Vegetables (Tomato, Brinjal etc)	20	13.1
	Pulses	12	7.8
	Others	8	5.3
Years of farming experience	Less than 5 Years	5	3.3
	5–10 Years	23	15.1
	10–20 Years	36	23.5
	Above 20 Years	89	58.1
Association with Siruthuli's *Grow the farmer*	Less than 2 years	29	18.9
	2-5 Years	42	27.5
	Above 5 Years	82	53.6

Table 1 reveals the demographic profile of respondents. Majority (58.8%) of respondents were aged 46-60 years, and were majority of male farmers (88.2%). The farmers (45.7%) had a landholding size of 2.5 to 5 acres with coconut as the major crop cultivated (35.3%). Majority (58.1%) of the farmer respondents had 20 plus years of farming practice and were associated with *Siruthuli* for more than 5 years (53.6%).

To examine the study constructs are empirically distinct from each other, discriminant analysis was done and the outcomes are presented in Table 2

Table 2: Discriminant Validity - Heterotrait–Monotrait (HTMT) Ratio of Correlations

Factors	CPIS	MSS	SLS	SFS	LEG
Crop Planning & Input Support (CPIS)	1.000				

Marketing &Sales Support (MSS)	0.034	1.000			
Storage & Logistics Support (SLS)	0.028	0.053	1.000		
Sustainable Farming Support (SFS)	0.033	0.042	0.032	1.000	
Livelihood & Economic Gains (LEG)	0.353	0.175	0.228	0.526	1.000

With the threshold limit of 0.85 (Henseler, Ringle, & Sarstedt, 2015) ensuring the distinctness of the concepts, the analysis revealed that all HTMT values of all the factors range between 0.028 to 0.526, supporting discriminant validity.

To analyse whether the internal consistency and the accuracy of the statements is adequately representing the constructs before and after training, the reliability, validity, mean score and standard deviation was calculated which is presented in Table 3

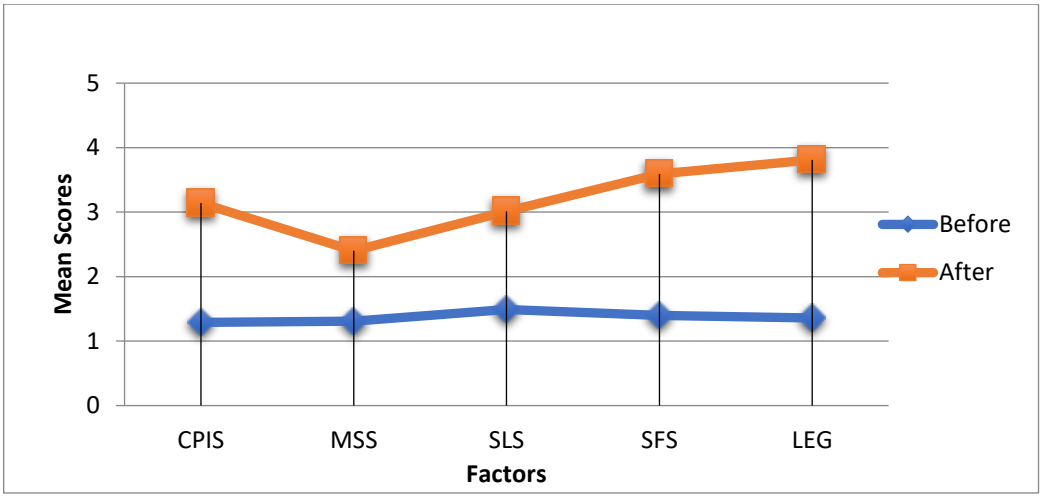
Table 3: Reliability, validity, mean scores and standard deviation of the measures

Factors	Intervention	Cronbach's Alpha (α)	AVE	CR	Mean Score	SD
Crop Planning & Input Support	Before	0.759	0.372	0.746	1.294	0.059
	After	0.764	0.813	0.958	3.142	0.008
Marketing &Sales Support	Before	0.756	0.380	0.750	1.306	0.021
	After	0.890	0.885	0.943	2.403	0.285
Storage & Logistics Support	Before	0.911	0.387	0.751	1.493	0.033
	After	0.837	0.888	0.946	3.014	0.304
Sustainable Farming Support	Before	0.883	0.378	0.750	1.403	0.077
	After	0.706	0.889	0.947	3.589	0.406
Livelihood & Economic Gains	Before	0.793	0.349	0.758	1.365	0.095
	After	0.927	0.887	0.945	3.809	0.435

Analysing the reliability and validity results across the factors before and after training, the findings reveal that Cronbach's alpha scores (0.756 to 0.911) and composite reliability (CR) score (0.746 to 0.758) meet the minimum threshold of 0.70 (Cheung et al., 2024) before intervention. However with lesser exposure to structured programs for empowerment, the AVE values were below 0.50 resulting in weaker convergent validity before the training. Also the before training mean values (1.294–1.493), indicate a lower support and gains for the respondents. However, after attending the training programs offered by *Siruthuli,* Cronbach's alpha (0.706–0.927), composite reliability (0.943–0.958) & AVE values (0.813–0.889) surpassed the benchmark with a significant improvement in the means scores also (2.403–3.809) across all the factors. Overall, the results indicate the effectiveness of the onsite and offsite training programs offered by *Siruthuli.*

The comparative mean scores before and after the training is presented in the Figure 2

Figure 2: Comparative mean scores - before and after training



The line graph clearly reveals a positive improvement in the gains of farmers across all the constructs, leading to improved livelihood and economic gains (LEG), with sustainable farming (SFS) and crop planning and input support (CPIS) demonstrating larger gains compared to marketing and sales (MSS) and storage and logistics support (SLS). Interactions with farmers revealed that, most of the training programs organised by the government, farmer associations and Tamil Nadu Agricultural University focussed on marketing and logistics support, limiting its scope for an additional impact. However, due to customised, smaller group trainings with focus on crop planning based on the water availability of the region enabled them to do sustainable farming.Hence the farmers perceived that the gains in these two dimensions (CPIS & SFS) were more than MSS and SLS.

To confirm that the statements given for each construct aptly measures the intended factors, confirmatory factor analysis was done and the results are presented in table 4

Table 4: Confirmatory factor analysis

Factors	Indicators	Standardized factor loading (β)	Decision
Crop Planning & Input Support - CPIS	Crop guidance	0.884	Good
	Input knowledge	0.894	Good
	Water usage	0.896	Good
	Choice of varieties	0.923	Good
	Soil health	0.910	Good
Marketing & Sales Support -MSS	Marketing strategy	0.871	Good
	Customer outreach	0.889	Good
	Pricing strategy	0.887	Good
	Channel awareness	0.894	Good
	Market awareness	0.884	Good
Storage & Logistics Support- SLS	Storage knowledge	0.882	Good
	Logistics training	0.865	Good

	Product handling	0.903	Good
	Waste Control	0.905	Good
	Surplus handling	0.891	Good
Sustainable Farming Support-SFS	Organic farming	0.883	Good
	Bio-input support	0.884	Good
	Water conservation	0.891	Good
	Cost saving	0.880	Good
	Sustainable farming	0.903	Good
Livelihood & Economic Gains - LEG	Harvest quality	0.897	Good
	Economic gains	0.885	Good
	Income avenues	0.899	Good
	Yield satisfaction	0.887	Good
	Improved Livelihood	0.884	Good
	Farming optimism	0.874	Good

Table 4 presents the factor loadings for all the identified domains of training reveal that all the constructs have strong convergent validity. The factor loading scores of CPIS (0.884 to 0.923), MSS (0.871–0.894), SLS (0.865- 0.905), SFS (0.880- 0.903) and LEG (0.874 - 0.899) are above the threshold of 0.7 (Griffiths et al., 2022) indicate, that the statements used to measure the four factors are well represented confirming that the measurement model is reliable and each factor is well represented by its observed indicators.

Examining the model fit indexes of the CFA, the chi-square value of 1.07 ($\chi^2/df = 1.07$) being below the recommended cutoff of 2, indicates an excellent relative fit. The incremental fit indices- CFI (0.995) and TLI (0.985) reveal a good model fit with a threshold of 0.90. The RMSEA value of 0.021, along with its 90% confidence interval (0.01–0.0388), is within the acceptable range, representing a realistic estimate error. The SRMR value of 0.0346 measuring the correlation matching is below the acceptable threshold of 0.08 (Ximénez et al., 2022), supporting a good fit. Overall, the combination of the fit indices reveals the measurement model offers a valid depiction of the underlying latent constructs.

To understand the influence of the independent variables (CPIS, MSS, SLS &SFS) on the dependent variable of livelihood and economic gains, a structural equation modelling was done and the results are below

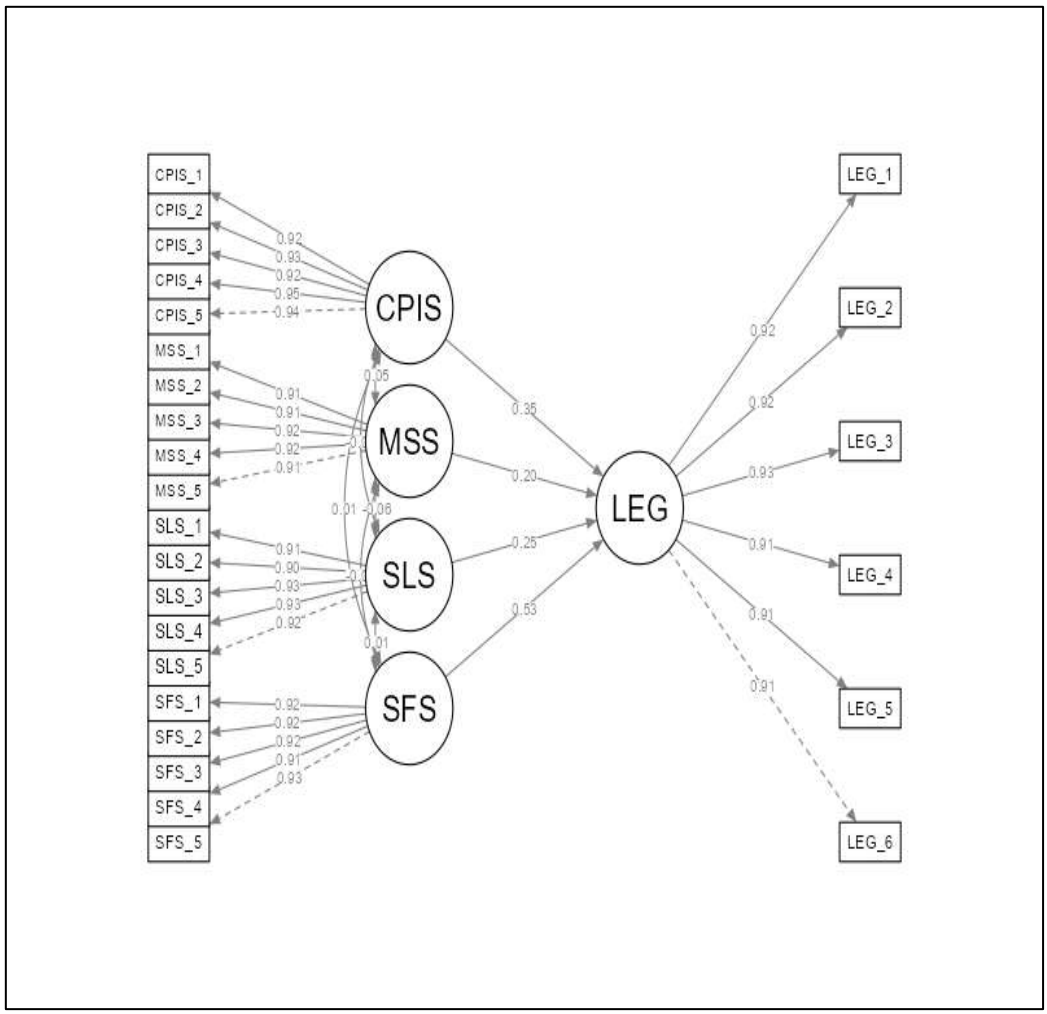
Table 5: SEM - Model Fit Indices

Fit index	Value	Recommended Threshold	Decision for the model
Chi Square value	297.7	-	-
P-value	0.811	> 0.05	-
χ^2/df	1.03	<2 (Good); <3 (Acceptable)	Good
CFI	1.000	> 0.95 (Excellent)	Excellent
TLI	1.000	> 0.95 (Excellent)	Excellent
RMSEA	0.03	≤ 0.06 (Good)	Good

RMSEA 90% CI	0.036-0.079	Lower ≤ 0.08	Good
SRMR	0.034	≤0.08 (Good)	Good

The indexes representing model fit demonstrate a robust fit to the data, as indicated by (χ^2/df = 1.03; CFI = 1.000; TLI = 1.000; RMSEA = 0.03 with 90% CI = 0.04–0.08; SRMR = 0.034). These values fall within the recommended thresholds, confirming that the proposed structural model adequately represents the observed covariance structure.

Figure 3: The structural equation model depicting structural relationships



The SEM path diagram depicts the structural relationships between the independent variables— Crop Planning & Input Support (CPIS), Sustainable Farming Support (SFS), Marketing & Sales Support (MSS) and Storage & Logistics Support (SLS)— and the dependent variable, Livelihood & Economic Gain (LEG). Each latent construct is represented by five statements, all of which demonstrate acceptable factor loadings (ranging between 0.8 to 0.95). Thus, the results indicate that the statements presenting the different aspects of training are reliable and adequately measure the corresponding latent variables.

Table 6: Structural equation model results

Hypothesis	Structural Path	Unstandardized Estimate (B)	Standard Error	z-value	p-value	Standardized Estimate (β)	Decision
H1	CPIS → LEG	0.353	0.0633	5.57	0.000	0.351	Supported

H2	MSS→LEG	0.199	0.0680	2.93	0.003	0.197	Supported
H3	SLS→LEG	0.254	0.0725	3.50	0.000	0.252	Supported
H4	SFS→ LEG	0.533	0.0587	9.09	0.000	0.532	Supported

The structural model results indicate that the proposed predictors significantly influence the dependent variable, accounting for an R^2 of 0.504, reflecting a moderate level of explanatory power. All path coefficients were examined using standardized estimates (β), standard errors, and corresponding p-values. The analysis revealed that the variable sustainable farming support (SFS) had a significant positive effect on the dependent variable Livelihood & Economic Gain ($\beta = 0.532$, $p < .01$), representing that training given to farmers in this construct was highly beneficial in improving their economic gains. Similarly, the variable crop planning and input support (CPIS) demonstrated a meaningful influence on the dependent variable ($\beta = 0.351$, $p < .01$), highlighting its substantial role in the model. The variables Marketing & Sales Support (MSS) and Storage & Logistics Support (SLS) also exhibited a significant relationship ($\beta = 0.197$ & $\beta = 0.252$, $p < .01$), suggesting contribution to the prediction of the outcome. Overall, the significant standardized paths support the hypothesized relationships and confirm that the independent variables collectively exert a meaningful impact on the dependent construct within the SEM framework.

3.1 Discussions and managerial implications:

The ambitious plan of the government Viksit Bharat, to make India a developed nation by 2047, places farmer empowerment in the forefront to enable an inclusive and sustainable economic growth (Hamid et al., 2024). Among the different institutions engaged in building farmer resilience, Woman led non-governmental organisations play a predominant role in enhancing the farmers livelihood. This study analysing the farmer training activities undertaken by *Siruthuli*- a woman led NGO reveal that farmers are satisfied with the training content, as it is customised based on their practical needs (Tefera et al., 2021). Further the positive results of the study highlight the fact that smaller group training with peers, combined with hands on sessions and demonstrations are well received by the farmer participants (Sutherland & Marchand, 2021). As an NGO actively involved in the reviving and restoring the water bodies, the representatives of *Siruthuli* travel across several rural regions which enables them to understand the training needs of the farmers better. By designing the training content based on the expectations of the farmers and delivering the content in their preferred location, *Grow the farmer* initiative has enhanced participation, contributing to the success of the program. Also with a comprehensive database of trainees, *Siruthuli* ensures that the trainees are updated through refresher programs.

The open-ended question on the most effective program revealed that, even though all the training programs were effective, the training on zero budget farming, sustainable water usage, soil health and pest control were more beneficial. The question on the expectations of the farmers regarding improving the initiative revealed that support in the form of guidance about the new government schemes, documentation for getting subsides and other monetary or non-monetary funding will help the respondent farmers to reduce procedural barriers. Also the respondents interested in latest technologies, expected more training sessions on mobile advisory services and precision farming to enable them to do productive farming.

The study analysing the impact of the training programs by the NGO *Siruthuli*, has major policy implications. The results of the study highlight the need for offering integrated training programs that focussing on any one domain in isolation. The study also emphasis on the importance of customised long-term engagement rather than a short-term delivery with specific focus on the demands of the farmers of a particular region. The study also throws light on the importance of creating awareness about the government policies and procedures benefitting farmers. With clear gains of *Grow the farmer* initiative identified, this research provides a case of a scalable model that can be replicated in other regions.

4. CONCLUSION:

With an imminent need to empower the agrarian community, the *Grow the farmer* initiative of *Siruthuli* demonstrates the need for improving the farmer resilience in the important domains of crop planning, marketing, logistics and sustainability. Started with the mission of enabling the holistic growth of the region, this initiative by the woman leader has differentiated itself by

prioritising farmer empowerment through customised, participatory and an all-inclusive approach. The study also reinforces that a deeper community engagement and a bottom-up approach adopted will yield beneficial results. Farmer and women empowerment being the two main pillars of Viksit Bharat 2047, initiatives like *Grow the farmer* amplify the fact that Women's natural inclination towards community engagement and grass root inclusion will contribute towards a meaningful rural transformation.

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AUTHOR CONTRIBUTION:

D.Divya prabha: Conceptualisation, data collection and formal writing

D.Ramya : Data analysis and Interpretation

CONFLICT OF INTEREST:

There is no conflict of interest among the authors in publishing this research article

ETHICS STATEMENT:

Ethics statement is not required for the study

DATA AVAILABILTY STATEMENT:

The data supporting the findings of the study is available from the curresponding author and is available on request.

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