

Sustainability Dimensions of Regenerative Business: Study on Niravu Farmer Producer Company

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ABSTRACT

Countries all over the world are giving higher importance to sustainable development in all aspects of life. This has led to many business organisations towards adopting regenerative business model and create a positive environment, economic and social impact in society. The present paper explores sustainable dimensions of Niravu farmer producer company which is a regenerative business model initiated in Kozhikode, Kerala. The paper tries to find the relationship between various factors of sustainable dimensions of regenerative business model. They tools used for the study include Kendall Tau correlation, Mann Whitney test, and Kruskal Wallis test. The finding shows that Niravu farmer producer company as a regenerative business model is contributing towards environmental sustainability through their organic farming, biodiversity conservation, reduction in use of chemical inputs and improved soil quality. The findings also shows that Niravu contributing towards economic sustainability through larger market share in this category. Niravu has initiated locally at a Kozhikode has also contributed towards improved quality of life of its members and social sustainability.

Keywords: Environment sustainability, Economic sustainability, Niravu Farmer Producer Company, Regenerative business, Social sustainability

INTRODUCTION

In today's global business era, sustainability in business practices have now higher importance. Beyond sustaining, there is a growing need to regenerate the planet's ability to meet present and future needs. This has given rise to the field and idea of regeneration(Jan Konietzko,2023). In the upcoming years, our earth may experience a depletion in it's natural resources (Ankita Das,2024). The companies are recognizing the need for sustainability in business by adopting sustainable business practices. sustainability has emerged as priority for business concerns due to growing environmental concerns and depletion of natural resources. The urbanization, industrial expansion, and consumption patterns created ecological challenges like biodiversity loss, climate change and scarcity of resources. Protection and safety of environment is a shared responsibility of the society, and the business organisations have an important role in it (pacific University,2016). The organizations are changing their role in preservation of environmental sustainability. The main objective of sustainability is to satisfy the needs of present generation without compromising the ability of future generations to meet their own needs (WCED,1987). It has developed a change in business idea of short term profit maximization to responsible and ethical value creation. Regenerations means restore, renew and replenish ecosystems, communities and economies. These concepts encourage a transformation in production and consumption, making businesses to adopt practices that generate positive environmental outcomes. . The term regeneration has increasingly been used in many fields such as architecture, agriculture, energy, design, tourism etc.(Ankitha das,2023). Many of the multi-national companies have been shifting to regeneration in the fields of agriculture, energy etc.

Relating to the context, small and local initiatives plays very notable role in promoting regenerative and sustainability practices. Present study explores the role of Niravu Farmer Producer Company, Kozhikode in Kerala as a regenerative business. This paper examines how Niravu Farmer Producer Company contribute to three key dimensions; environmental sustainability, economic sustainability and social sustainability. The study tries to bring a comprehensive attainment of how the local and small scale business can function as regenerative model and give insights to other business.

REVIEW OF LITERATURE

Organizations with regenerative business focus on planetary health and social wellbeing as they create and deliver value at multiple stakeholder levels like nature, society, customers, suppliers and shareholders. They create a net positive impact across all stakeholder level(Jan Konietzko,2023). Niravu organic village offers a valuable insight into how a community led model can successfully integrate organic farming with sustainable living(Soniyo Yomichan,2019). Regenerative businesses offer a path towards a more responsible future by incorporating strategies and focus on restoring the natural and social system. There are core characteristics related to size of regenerative organisations, the sectors they operate in, collaborative networks ,value creations and types of strategies they employed(Ankita Das,2024). Business theories like stewardship theory can guide a shift to regeneration, and it introduced a simple action framework that other small businesses can use to start their own regenerative journey (Savindi Caldera,2022). Regenerative businesses emphasize interdependence between humans and nature (Linda Drupsteen,2024). Regeneration is not about environmental action but a holistic transformation of how a business operates. Business changing to regenerative business takes time and effort. It requires a leadership style that embraces decentralized decision making, supporting and encouraging the involvement of team members at all levels(Shirley Sheehan,2025).

Business organisations to become sustainable and incorporate sustainable marketing practices which is constituted on three dimensions; environmental, social and economic. There is a positive relationship between organisation incorporating sustainable marketing practices and their sustainability(Sandeep Sawant,2017). Firms adopting circular economy strategies achieved improvements in environmental performance through reduced material consumption and emissions, while strengthening financial performance. Resource efficiency, waste reduction, product life extension and closed loop systems contribute to economic, environmental and social outcomes(Shivaramkrishn Agarwal,2025). Circular business models can contribute positively to sustainable development by enhancing resource productivity, reducing waste and emissions and creating new economic opportunities(Namita Kapoor,2021). Organisational sustainability is guided by various factors such as mission, vision, planning, human resource management, marketing strategies, business practices and others(Jyothi s,2012). Sustainability of FPO may provide empirical evidence and information that guide in the formation of policies. To achieve the sustainability of FPO, the three pillars are to be taken into consideration such as social, economic and environmental factors(Jagadeesh Pandian v). sustainability of FPO is judged based on perceptions of member farmers on different sustainability criteria(Shreya Anand,2024). The reviews indicates that regenerative and sustainable business practices positively contributes to environment protection, social and economic development, resource conservation and long-term development. Most of the studies are based on large organisations and a limited research on local businesses in rural villages. The research gap of the study is understanding how community led initiatives works as regenerative business and it's contribution into sustainable development.

STATEMENT OF THE PROBLEM

There is growing importance for regenerative business in addressing the problems such as environmental degradation, economic sustainability, use of resources etc. The adoption and effectiveness of regenerative business in community led village are remain unexplored. The Niravu Farmer Producer Company, Kozhikode is an organisation that focuses on organic farming, waste management, energy conservation, and water conservation. While the organisation's activities are closely related to regenerative business practices, there is a need to explore how they contribute to economic, environment and social regeneration. This study aims to explore how Niravu Farmer Producer Company satisfies the characteristics of regenerative business, whether they works to bring positive changes and benefits to society, and also considering their impact on people,

nature and society. The following research questions has been developed: “Whether Niravu FPCs activities have contributed to environmental sustainability? Do Niravu FPCs activities related to economic sustainability? To what extend Niravu FPC contribute to social sustainability?”

RESEARCH OBJECTIVES

1. To examine the activities of Niravu towards environment sustainability.
2. To study the activities of Niravu towards economic sustainability.
3. To examine the activities of Niravu towards social sustainability.
4. To determine whether demographic factors such as age, gender and qualification affect the sustainability perceptions of Niravu’s members.

RESEARCH METHODOLOGY

It is a descriptive and analytical research focuses on sustainable dimensions and activities of Niravu FPC, Kozhikode in Kerala. The Niravu Farmer producer company, Kozhikode is an organisation that focuses on organic farming, waste management, energy conservation, and water conservation as its basic projects. Through the different activities and projects the organisation improves the farmers livelihoods and strengthening community participation. It was launched by a residential association, comprising 101 residents in a ward of Vengeri village of Kozhikode district. Vengeri being declared as first organic village in Kerala in 2008. In the year of 2016 the Niravu association converted it into a farmer producer company which is registered under the Companies Act of 2013(www.niravu.org). The population of the study includes shareholders and directors of Niravu FPC. Both primary and secondary data are used for the study. Primary data collected through a structured questionnaire with a sample of 100.secondary data collected from official website of Niravu FPC. Kendall’s Tau correlation analysis, Mann Whitney test and Kruskal Wallis tests are used for data analysis.

DATA ANALYSIS AND INTERPRETATION

Table 1 Demographic Profile of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	75	75
	Female	25	25
Age	18-30	12	12
	30-40	15	15
	40-50	20	20
	Above 50	53	53
Educational qualification	Below SSLC	4	4
	SSLC	14	14
	Plus two	18	18
	Graduation	36	36
	Post graduation	18	18
	Others	10	10
Monthly income	Below 15000	28	28
	15000-50000	43	43
	50000-100000	22	22
	Above 100000	7	7

Source: Primary data

Out of total 100 respondents, 75% are male and 25% are female. It highlights the difference in gender distribution, male respondents are dominating the sample. majority of proportion belongs to above 50 years

(53%). It indicates that more than half of samples are belongs to old age group. The second largest age group is 40 – 50 years (20%). They are representing the mature adults who are experienced and economically stable. The majority of respondents are graduates (36%). This indicates that respondents are well educated and experienced. Post-graduation is completed by 18% of respondents. Hence a total of 54% respondents have higher educational qualifications. The large proportion of respondents comes under the category of 15000-50000 income level (43%). This indicates that majority of respondents falls under low to medium level income groups. Only 7% respondents earns income above 100000, it indicates high income groups are very low.

Table 2 Kendall's Tau Correlation of environmental sustainability towards Niravu's activities

Variables	Kendall's Tau (r) with environment protection	Sig (p value)
organic farming	0.295**	0.001
Biodiversity	0.344**	0,000
Reduction in use of chemical inputs	0.369**	0.000
Quality of soil	0.043	0.663

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data

A Kendall tau-b correlation analysis was conducted to examine the relationship between environmental protection and Niravu's activities such as organic farming, biodiversity, reduction in use of chemical inputs, and quality of soil. The analysis shows more positive correlations between variables. The data reveals that organic farming has positive correlation with environmental protection (sig. =0.295, p=0.001). It indicates higher the results of organic farming practices because it associated with better environment protection. Reduction in use of chemical input is positively correlated with environmental protection(sig.=0.369, p <0.001). The biodiversity has a significant positive correlation with environment protection (sig.= 0,344, p<0.001). Higher biodiversity levels are influenced by environment protection activities. The association between soil quality and environment protection is significant (sig.=0.043, p=0.663) and it is weaker than other factors.

Table 3 Kendall Tau Correlation of economic sustainability and Niravu's activities

Variables	Kendall's Tau b with profitability	Sig (p value)
Input cost	0.251	0.006
Support for marketing and selling	0.224	0.019
Value addition activities	0.326	0.000
Crop yield	0.464	0.000

Source : Primary data

The relationship between economic sustainability activities of Niravu and profitability are analysed using a Kendall's tau b analysis. The four variables include input costs, support for marketing and selling, value addition activities and crop yield. The analysis shows there is a positive correlation between many of the variables. A positive and statistically significant correlation exists between input cost and profitability (sig. =0.251, p=0.005. There is a moderately positive and significant correlation exists between profitability and crop yield (sig.=0.464, p <0.001). This indicate farmers having high crop yield contributes to higher profitability. A positive and significant relation exists between support for marketing products and profitability(sig.= 0.326, p< 0.001). It reveals that farmers getting support from organisation for marketing and selling products helped to improve the overall productivity. The crop yield have a positive and significant relationship with profitability (sig.=0.464, p < 0.001). The major correlations are statistically significant at 0.01 and 0.05 levels, and providing evidence for the variables are contributing to economic sustainability.

Table 4 Kendall Tau Correlation of social sustainability and Niravu's activities

Variables	Kendall's tau b with improved quality of life	Sig (p value)
Awareness	0.469	0.000
Training programs	0.299	0.002
Cooperation	0.193	0.047

** . Correlation is significant at the 0.01 level (2-tailed).

* .Correlation is significant at the 0.05 level (2-tailed).

Source : Primary data

Kendall's tau-b analysis was conducted to understand the relationship among social sustainability activities and overall quality of life of members. He social sustainability activities of Niravu includes awareness of members, training programs and cooperation among members. There is a statistically significant and moderate positive relationship between awareness and overall quality of life (sig.= 0.469, $p < 0.001$). This indicates that members of Niravu who have greater awareness on health, environment and social issues due to programmes conducted by Niravu have also experienced improvements in their overall quality of life. The quality of life and training programmes have a moderate positive relationship among them (sig.=0.299, $p=0.002$). This reveals that effective training programs contribute to higher quality of life. There is a weak but significant positive relationship exists between quality of life and cooperation among members (sig.= 0.193, $p=0.047$). The cooperation among members contributes to improved quality of life. Correlations are statistically significant at 0.01 level, it shows the positive relationships between variables.

Table 5 Mann-Whitney Test for showing the difference in sustainability dimensions based on gender of respondents

Environmental Sustainability	Male	75	50.24	3768.00
	Female	25	51.28	1282.00
	Total	100		
Economic sustainability	Male	75	53.05	3978.50
	Female	25	42.86	1071.50
	Total	100		
Social sustainability	Male	75	48.50	3637.50
	Female	25	56.50	1412.50
	Total	100		

Test Statistica

	Envi	Eco	Soc
Mann-Whitney U	918.000	746.500	787.500
Wilcoxon W	3768.000	1071.500	3637.500
Z	-.157	-1.542	-1.218
Asymp. Sig. (2-tailed)	.875	.123	.223

a. Grouping Variable: Gender of the respondents

Sorce: Primary data

The Mann Whitney U test was used to determine whether there is significant differences between male and female respondents in terms of environmental, economic and social sustainability factors. The mean values indicate male and female have similar responses in case of environmental sustainability factors. The p value = 0.875 is greater than 0,05. Hence there is no significant difference between male and female respondents related to environmental sustainability factors. In terms of economic sustainability, the mean value of male

respondents is moderately higher than female respondents. The p value= 0.123 and is greater than 0.05, it is not statistically significant. This suggests that gender does not significantly influence the economic sustainability perceptions among the respondents. In terms of social sustainability female respondents mean value scored higher than male respondents. They may have perceived slightly better social sustainability outcomes than males. The p value =0.223 is greater than 0.05, hence the result is not statistically significant. Gender does not significantly affect social sustainability perceptions.

Table 6 Kruskal Wallis Test for showing difference in sustainability dimensions across different age group of respondents

	Age of the respondents	N	Mean Rank
Environmental Sustainability	18 – 30	12	58.08
	30 – 40	15	48.13
	40 – 50	19	50.03
	above 50	53	48.69
	Total	99	
Economic sustainability	18 – 30	12	52.75
	30 – 40	15	30.20
	40 – 50	19	50.05
	above 50	53	54.96
	Total	99	
Social sustainability	18 – 30	12	31.00
	30 – 40	15	55.73
	40 – 50	19	56.92
	above 50	53	50.20
	Total	99	

Test Statistics

	Environmental sustainability	Economic sustainability	Social sustainability
Chi-Square	1.156	9.076	7.230
Df	3	3	3
Asymp. Sig.	.764	.028	.065

a. Kruskal Wallis Test

a. Grouping Variable: Age of the respondents

Source : Primary data

A Kruskal Wallis test was conducted to determine the whether there is significance difference among sustainability factors (environmental, economic and social) in Niravu across different age group members(18 - 30, 30-40, 40-50, 50 above). The results shows that there is no significant difference in environmental sustainability perception among different age groups ($p = 0.764 > 0.05$). The mean values are moderately different in different age categories. But it does not significantly influence respondents' views on environmental sustainability. There is a significance difference in age groups in case of economic sustainability. The p value= 0.028 and is less than 0.05. This indicates at least one age group differs significantly from economic sustainability perception. The changes in mean values show that age category have stronger perception in economic sustainability. In case of social sustainability the p value is 0.065 and is greater than 0.05. hence the difference is not statistically significant. The test result reveals that age influences the economic sustainability dimensions. Age does not have a significant impact on environment and social sustainability.

Table 7 Kruskal Wallis Test for showing difference in sustainability dimensions based on educational qualifications of respondents

	Qualification of respondents	N	Mean Rank
Environmental sustainability	below SSLC	4	30.50
	SSLC	14	48.86
	Plus two	18	43.50
	Graduation	36	48.75
	PG	18	59.61
	Others	10	63.30
	Total	100	
Economic sustainability	below SSLC	4	52.00
	SSLC	14	44.29
	Plus two	18	48.69
	Graduation	36	55.18
	PG	18	56.06
	Others	10	35.00
	Total	100	
Social Sustainability	below SSLC	4	51.00
	SSLC	14	54.07
	Plus two	18	35.92
	Graduation	36	55.01
	PG	18	52.39
	Others	10	51.90
	Total	100	

Test Statistics

	Environmental sustainability	Economic sustainability	Social sustainability
Chi-Square	7.036	5.320	5.968
Df	5	5	5
Asymp. Sig.	.218	.378	.309

a. Kruskal Wallis Test

b. Grouping Variable: Qualification of respondents

Source : Primary data

A Kruskal Wallis test was used to determine whether there is any statistically significant differences in environmental, economic and social sustainability views of respondents with different educational qualifications (below SSLC, SSLC, plus two, graduation, PG, others). The results indicate that there is no significant difference in environment sustainability views of respondents and different educational qualifications. The p value = 0.218 > 0.05, hence qualification does not have any influence on environmental factors. In case of economic sustainability the p value = 0.378 and it is greater than 0.05, hence there is no significant difference between economic sustainability perception and qualification of members. Irrespective of educational qualifications, respondents' views are similar in terms of economic sustainability of Niravu. The social sustainability factors p value is 0.309 and is greater than 0.05. It indicates educational qualification does not significantly affect the social sustainability factors of Niravu. The test results revealed that qualifications of members do not significantly affect the environment, economic and social sustainability factors of Niravu.

FINDINGS AND FUTURE PERSPECTIVE

The major findings of the study revealed that respondents were predominately old age groups (above 50 years), well educated (36% graduates) and are economically stable. The male representation (75%) in respondents is three times greater than females, indicating active involvement of male in Niravu FPC. The results reveal that Niravu FPC effectively contributed to environmental, economic and social sustainability through its regenerative business practices. The Kendall's tau correlation analysis shows that organic farming, reduced use of chemical inputs, biodiversity, and soil quality have significant positive relationships with and environmental protection. This indicates that improvements in environmentally sustainable farming practices contribute to the overall environmental sustainability of Niravu FPC.

The findings reveal that most economic sustainability variables are positively and significantly correlated with one another. Effective management and reduction of input costs contribute to increased profitability, while higher crop yield significantly improves farmers' profitability. The results also indicate that organizational support for marketing and selling agricultural products, value addition activities has a strong positive relationship with profitability.

Similarly, the results reveal that all four social sustainability variables are positively and significantly related. The training programmes conducted by Niravu, members' awareness regarding health, environmental, and social issues and also contribute to improving their overall quality of life. Further, the positive relationship between training programmes and cooperation among members indicates that effective training strengthens unity and collective participation. Overall, awareness, quality of life, and cooperation collectively enhance the social sustainability of Niravu FPC. The gender of respondents does not significantly influence members' perceptions of environmental, economic, or social sustainability. Similarly, educational qualification has no significant influence on sustainability perceptions. However, age does not significantly influence environmental and social sustainability perceptions, whereas it has a significant influence on members' perceptions of economic sustainability.

This paper "Sustainability Dimensions of Regenerative Business: A Study on Niravu Farmer Producer Company (FPC)" studies the environmental, economic and social sustainability dimensions of Niravu FPC. The paper concludes that Niravu FPC successfully functions as a regenerative business model by integrating environmental conservation, economic development and social well-being. The main activities of Niravu FPC contribute in achieving various sustainability dimensions such as environmental, economic and social sustainability. By strengthening women's participation, encouraging youth involvement and enhancing income-generating opportunities, Niravu can further improve its sustainability performance and serve as a replicable model of regenerative business for other farmer producer organisations and community-based enterprises.

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