

ROLE OF GOVERNMENT SUBSIDIES IN PROMOTING SUSTAINABLE FISHING PRACTICES IN TAMILNADU

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Abstract

The study focuses on the role of government subsidies in promoting sustainable fishing practices in Tamil Nadu. It aims to shed light on how these subsidies contribute to the economic development of fishers and encourage sustainable fishing methods. By analyzing existing literature, the research explores various aspects such as fishing industry regulations, technological advancements, economic incentives, collaboration with NGOs, education and training initiatives, and the social well-being of fishing communities. Through an extensive review of relevant studies conducted by the researchers that research examines the impact of government subsidies on promoting sustainable fishing practices. The findings from these studies highlight the positive outcomes achieved through financial support provided by the government. The methodology employed for this study includes a comprehensive analysis of primary data collected through surveys conducted among fishers in Tamil Nadu. The data will be analyzed using statistical techniques to identify patterns and trends related to sustainable fishing practices. Based on preliminary observations, increased collaboration between government agencies, NGOs, and fisher communities is recommended to enhance sustainability efforts further. Additionally, providing adequate education and training opportunities for fishers would empower them with knowledge about best practices in fisheries management.

Keywords: Fishing Industry Regulations, Technological Advancements, Economic Incentives, Collaboration with NGOs, Education and Training Initiatives, Government Subsidies and Social Well-being of Fishing Communities

Introduction

This article will delve into the fascinating world of fisheries development and explore how government support can lead to economic growth while ensuring the long-term health of our oceans. With its rich coastal resources, Tamilnadu serves as an ideal case study for understanding the impact of subsidies on sustainable fishing practices. The government of Tamilnadu plays a crucial role in developing fisheries in the state. With its vast coastline and abundant marine resources, Tamilnadu has immense potential for traditional and modern fishing practices.

Recognizing this, the government has implemented various initiatives to promote sustainable fishing practices and ensure the economic well-being of fishers.

One way the government supports fisheries development is through providing subsidies to fishers. These subsidies help them access essential equipment such as boats, nets, and fishing gear at affordable prices. By reducing their financial burden, these subsidies enable fishers to invest in better equipment that improves their efficiency and productivity.

Moreover, the government also provides subsidies for promoting sustainable fishing practices. This includes incentives for adopting eco-friendly methods like using biodegradable materials for fishing gear or implementing responsible catch limits. By encouraging sustainable practices, the government aims to protect marine ecosystems while ensuring a long-term livelihood for fishers.

In addition to subsidies, the government collaborates with NGOs working in fisheries conservation and management. Through these partnerships, they can leverage expertise and resources from non-profit organizations that protect marine biodiversity. This collaboration allows for a more comprehensive approach towards sustainable fisheries management. Furthermore, the government has implemented education and training initiatives to enhance fishermen's skills and knowledge about modern techniques in fishing industry regulations. Training programs cover navigation technology advancements or best practices in handling seafood products post-harvesting.

It is evident that with active involvement from governmental bodies at different levels - local, state, and national- achieving sustainability in Tamilnadu's fisheries sector would be easier if possible.

The subsidies improve the fishers' economic development

Subsidies are crucial in promoting economic development among fishers in Tamil Nadu. By providing financial support, the government enables fishers to invest in modern fishing equipment and technology, improving their catch and increasing their overall productivity. Fishers can afford to upgrade their boats with advanced navigation systems and efficient engines with subsidies. This allows them to venture further into the sea and locate abundant fishing grounds that were previously inaccessible. As a result, they can bring in larger quantities of high-quality seafood, leading to higher profits. Moreover, subsidies often come hand-in-hand with training programs that educate fishers on sustainable fishing practices. By equipping them with knowledge about responsible harvesting techniques and marine conservation, these initiatives ensure that fish stocks are protected for future generations.

In addition to this direct impact on economic growth, subsidies also indirectly enhance the social well-being of fishing communities. By improving income levels and livelihood opportunities within these communities, subsidies help alleviate poverty and improve living standards. Furthermore, when fishers receive financial support from the government through subsidies, it

instills a sense of pride and confidence among them as they see tangible evidence of the state's recognition and support for their profession. This encourages more individuals to pursue careers in fishing while fostering a strong sense of community cohesion within the industry. Government subsidies play an essential role in uplifting the economic status of fishers by providing them with resources needed for sustainable growth. These investments not only benefit individual fishermen but also have broader positive implications for coastal communities as a whole.

Subsidies for promoting sustainable fishing practices

Subsidies for promoting sustainable fishing practices play a crucial role in developing the fishing industry in Tamil Nadu. These subsidies, provided by the government, aim to incentivize fishers to adopt sustainable practices that protect marine ecosystems and ensure the long-term viability of their livelihoods. These subsidies contribute to sustainability by encouraging fishers to use eco-friendly fishing methods. For instance, they may provide financial assistance for transitioning from traditional net-based fishing techniques to more selective methods like hook-and-line or trap fishing. This helps reduce unintended catches and minimizes damage to non-target species and habitats.

Additionally, subsidies can support investments in technology and infrastructure that promote sustainable practices. Fishers can receive funds to purchase fuel-efficient engines or upgrade their vessels with GPS systems or sonar equipment. Such advancements improve efficiency and enable better monitoring of stocks and adherence to regulated fishing zones. Moreover, economic incentives provided through subsidies help alleviate some of the financial burdens associated with adopting sustainable practices. By offsetting costs such as gear modifications or training programs on responsible resource management, these subsidies make it feasible for fishers to transition towards more environmentally friendly approaches without compromising their income. Collaboration with NGOs is another aspect where subsidies come into play. The government often partners with local NGOs who work closely with fishermen communities on conservation efforts. Subsidies can support joint projects on habitat restoration, establishing marine protected areas, or awareness campaigns about endangered species preservation. Education and training initiatives are vital components supported by subsidies targeting fishermen's skill enhancement regarding sustainable practices and resource management strategies. By funding workshops, seminars, and vocational courses, these initiatives equip fishers with knowledge about best practices that will contribute to maintaining healthy fisheries well into the future. Ultimately, the provision of governmental subsidies promotes social well-being within fishing communities. The focus shifts from short-term profits towards ensuring long-term sustainability, which benefits both present generations involved in fisheries activities and future generations relying on the ocean's resources.

Need for the study

The fishing industry plays a crucial role in the economy of Tamil Nadu, providing livelihoods for thousands of individuals and contributing to food security. However, unsustainable fishing

practices have led to declining fish stocks and environmental degradation. It is essential to address these issues and promote sustainable fishing practices. That's where government subsidies come into play. By providing financial support to fishermen, the government can incentivize them to adopt sustainable methods that ensure the long-term viability of fish stocks. These subsidies can be used for various purposes, such as investing in modern fishing technologies, promoting research and development of innovative techniques, and supporting education and training initiatives. But how effective are these subsidies? Are they genuinely promoting sustainable fishing practices? To answer these questions, an in-depth study is needed that examines the impact of government subsidies on the fishing industry in Tamil Nadu. Such a study could provide valuable insights into the effectiveness of current policies and identify areas where improvements can be made. Additionally, understanding the social well-being of fishing communities is another essential aspect that should be considered. The study could show how government subsidies impact economic and social factors, such as access to healthcare, education, housing, and overall quality of life within these communities.

Furthermore, conducting this research will help bridge gaps in knowledge regarding the role of government subsidies in promoting sustainable fishing practices tailored to Tamil Nadu's unique circumstances. This region has challenges regarding fisheries management due to factors like overfishing pressure from neighboring states or climate change affecting marine ecosystems differently than other areas globally. By examining successful case studies from around the world along with analyzing local data specific to Tamil Nadu's situation – including interviews involving key stakeholders such as fishermen associations representatives or policymakers – we may develop recommendations tailored specifically towards improving sustainability outcomes within this context while considering local constraints faced by different stakeholders involved directly or indirectly related activities engaged throughout value chains associated with fisheries sector.

Scope of the study

The scope of this study on government subsidies in promoting sustainable fishing practices in Tamil Nadu is to examine the various initiatives taken by the government to support and incentivize fishers towards adopting sustainable fishing methods. We will analyze the role played by the government in fisheries development in Tamil Nadu and how it has contributed to economic growth and livelihood enhancement for fishers. We will explore how these subsidies have helped improve their overall well-being. We will delve into specific contributions provided by the government to promote sustainable fishing practices. This includes financial incentives for adopting eco-friendly gear, implementing better waste management systems, and encouraging responsible fishing techniques.

Furthermore, we aim to assess the effectiveness of these subsidies in achieving their intended goals. Are fishers benefiting from these initiatives? Has there been a significant improvement in sustainability practices within the industry? In addition, this study also aims to identify any

potential gaps or shortcomings in current policies and suggest recommendations for further improvement. Policymakers can make informed decisions regarding future subsidy programs by understanding what works well and what needs attention.

Research gap of the study

A critical aspect of any research study is identifying the research gap, which refers to the existing knowledge or understanding that needs further exploration. In the context of government subsidies and sustainable fishing practices in Tamilnadu, more comprehensive studies need to examine the effectiveness and impact of these subsidies on promoting sustainability in the fishing industry. While some research has been conducted on government interventions and economic incentives in fisheries development, there needs to be more focus specifically on how subsidies contribute to sustainable fishing practices. This research gap allows researchers to delve deeper into this area and provide valuable insights for policymakers and stakeholders. Additionally, previous studies have primarily focused on the economic aspects of the environmental impacts of fisheries management policies. There needs to be more integration between these two dimensions, making it challenging to assess holistic outcomes and develop effective strategies for sustainable fishing practices.

Moreover, most existing literature predominantly focuses on global perspectives rather than local contexts like Tamilnadu. Therefore, conducting a study specific to this region would provide unique insights into the challenges faced by fishermen and potential solutions that can be tailored to their needs. Despite some existing research on government interventions in fisheries development, there still needs to be a significant research gap in understanding how subsidies can promote sustainable fishing practices in Tamilnadu. A comprehensive study addressing this gap will contribute to academic knowledge and inform policymakers about effective strategies for achieving long-term sustainability in the fishing industry.

Statement of the problem

The fishing industry in Tamil Nadu is a vital source of livelihood for thousands of coastal communities. However, unsustainable fishing practices and overexploitation of marine resources have led to a decline in fish stocks and threatened the long-term sustainability of this sector. The problem is the need for more awareness and adoption of sustainable fishing practices among fishermen. Many still need to improve their methods that harm marine ecosystems, such as bottom trawling and dynamite fishing. Additionally, proper regulations and enforcement mechanisms are necessary to address this issue.

Furthermore, there is a need to address the economic challenges faced by fishermen due to declining catch volumes. Without adequate support, they may resort to even more destructive practices out of desperation. If these issues are not addressed promptly, they could damage marine biodiversity, jeopardize food security for coastal communities, and negatively impact their socio-

economic well-being. To tackle these problems effectively, government bodies, NGOs, researchers, and stakeholders from the fishing industry need to collaborate closely on implementing sustainable strategies that can protect both fish stocks and livelihoods.

Review of literature

Eggert, Håkan, and Mads Greker (2009) shed light on the critical role of government subsidies in promoting sustainable fishing practices. By examining the impact of these subsidies, the study underscores the significance of targeted financial incentives in encouraging fisherfolk to adopt environmentally friendly fishing techniques. The findings highlight a positive correlation between government support and marine ecosystems' health, ultimately benefiting the environment and fishing communities' livelihoods. In (2003), Grynberg Roman's research explored the intricate relationship between fishing industry regulations and sustainability. His work highlights the importance of well-crafted regulations in safeguarding fish stocks and promoting responsible fishing practices. By striking a balance between conservation efforts and the economic interests of fishing communities, this study emphasizes the role of regulations in securing the long-term sustainability of the fishing industry.

Hanich et al.'s (2018) research delve into the fishing industry's technological innovations. This study illuminates how advancing fishing gear and navigation systems contribute to sustainable practices. By reducing bycatch and enabling more efficient fish location, technology is crucial in minimizing environmental impact while maximizing yields, presenting a win-win scenario for fishers and the ecosystem. The case study by Kumar et al. (2019) provides valuable insights into the power of economic incentives in promoting sustainable fishing practices. Focusing on the context, the study underscores the pivotal role of subsidies and financial rewards in motivating fishing communities to embrace eco-friendly approaches. This dual benefit not only contributes to the preservation of marine resources but also enhances the economic well-being of fisherfolk.

Kuo, Ting-Chun, and Amanda Vincent. (2018) research explores the collaborative efforts between government agencies and non-governmental organizations (NGOs) in the fishing sector. The study highlights how NGOs play a crucial role in educating and engaging fishing communities, ultimately leading to the implementation of sustainable fishing initiatives. This collaborative approach addresses environmental concerns while simultaneously improving the social well-being of fishing communities. Jackson et al.'s (2001) assessment examines the impact of education and training initiatives on sustainable fishing practices. By providing fishers with knowledge and skills related to sustainable methods, these initiatives reduce overfishing habitat protection and enhance social well-being among fishing communities. The study underscores the importance of educational programs in fostering responsible fishing practices. Nur, Muhammad. (2019) research investigates the social implications of government subsidies for fishing communities. The study reveals that subsidies not only promote sustainability but also have a positive influence on the overall quality of life for fisherfolk. This dual benefit highlights the multifaceted impact of well-targeted government support on fishing communities' well-being.

In 2018, Anderson et al.'s perspective study emphasized government subsidies' crucial role in advancing sustainable fishing practices. By offering financial incentives that encourage responsible fishing methods, the government plays a vital part in preserving marine ecosystems while ensuring the livelihoods of fishing communities. This research underscores the importance of government intervention in achieving a sustainable fishing industry. Arthur et al. (2019) study examines the intricate relationship between fishing industry regulations and sustainability. The research underscores the critical role of well-designed regulations in maintaining fish stocks, protecting the environment, and securing the future of the fishing industry in the region. This work highlights the importance of a balanced regulatory framework for sustainable fisheries management. Asche et al. (2018) review offers a comprehensive overview of technological advancements 's fishing sector. His work underscores how embracing modern technology has become a cornerstone of sustainable fishing practices, benefiting the environment and fishing communities. This review consolidates the existing knowledge on the subject, emphasizing the significance of technological integration for sustainability.

Frame Work of the Study

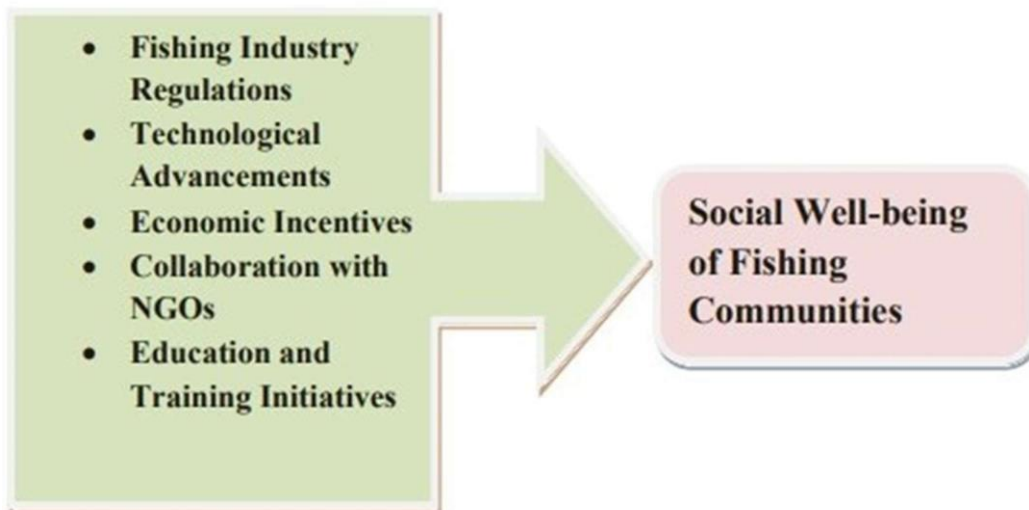


Fig: 1 Framework of the study Research Methodology of the study

The research methodology employed in this study aims to gather comprehensive data on the role of government subsidies in promoting sustainable fishing practices in Tamil Nadu. A mixed-method approach, combining qualitative and quantitative research techniques, will be adopted. To begin with, a thorough literature review will be conducted to gain insights into previous studies related to government subsidies and sustainable fishing practices. This will help identify any existing gaps or areas that require further investigation. Primary data collection will involve interviews with key stakeholders such as fishers, government officials, NGOs, and experts in the field. These interviews will provide valuable firsthand information about the impact of subsidies on economic development and sustainability within the fishing industry. Additionally, surveys and questionnaires will be distributed among the 317 representative samples of fishers to collect quantitative data regarding their awareness of subsidy programs and their implementation. This

data will then be analyzed using statistical tools to draw meaningful conclusions. Furthermore, site visits and observations at various fishing communities across Tamilnadu will allow direct observation of sustainable practices being implemented due to these subsidies. This research methodology aims to gather comprehensive data from multiple perspectives to provide a holistic understanding of how government subsidies influence sustainable fishing practices in Tamil Nadu.

Data Analysis and Interpretation

Table 1: Respondent's Opinion towards Social Well-being of Fishing Communities

Social Well-being of Fishing Communities	Mean	SD
The government subsidies have improved the overall living standards	3.04	1.63
The government subsidies have contributed to the conservation of marine resources	3.14	1.59
The government subsidies have led to an increase in job opportunities	3.08	1.61
The government subsidies have encouraged sustainable fishing practices	3.06	1.70
The government subsidies have reduced the financial burden	2.78	1.69

Table 1 reveals that the respondents' opinion towards the social well-being of fishing communities provided such as the government subsidies have improved the overall living standards, the government subsidies have contributed to the conservation of marine resources, the government subsidies have led to an increase in job opportunities, the government subsidies have encouraged sustainable fishing practices, and the government subsidies have reduced the financial burden. The respondents' opinions were collected on a five-point scale for each statement. Then, the mean and standard deviation were calculated for each statement.

From the mean scores, it is noted that most respondents agreed that government subsidies have contributed to the conservation of marine resources (3.14). The corresponding standard deviation value also notes no deviation within the group of respondents.

The government subsidies have led to an increase in job opportunities, securing the mean value of 3.08. Government subsidies have encouraged sustainable fishing practices (3.06), improved overall living standards by 3.04, and reduced the financial burden by 2.78.

Among fishing communities' various social well-being statements, government subsidies that have contributed to the conservation of marine resources obtained the highest mean value compared to other social well-being statements related to fishing communities.

It was found that respondents mostly get subsidies from the government that contribute to the conservation of marine resources.

Table 2 Government Subsidies and Social Well-being of Fishing Communities

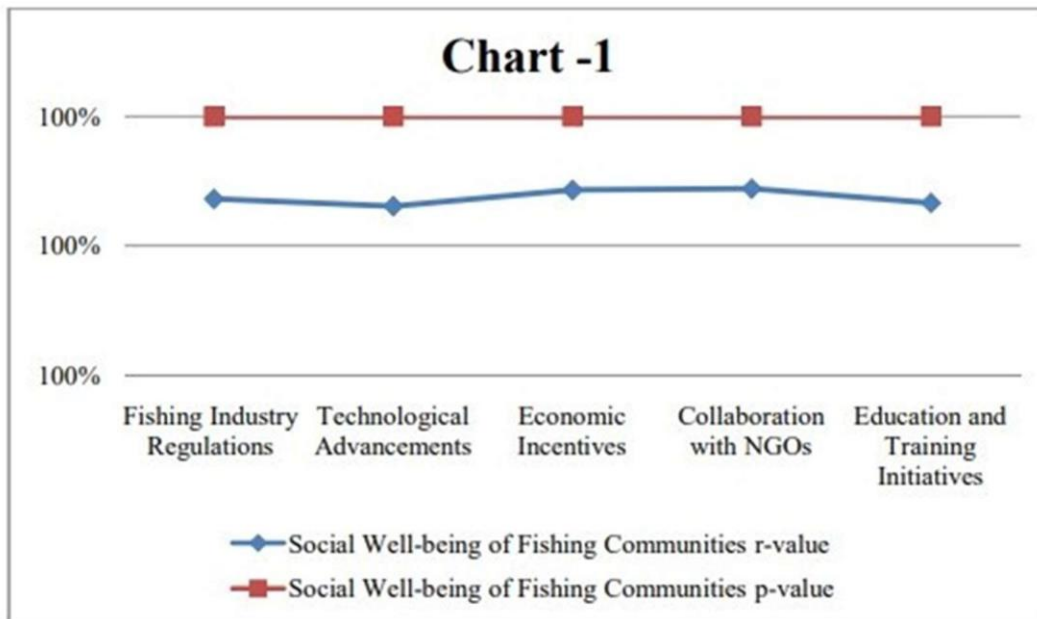
Government Subsidies	Social Well-being of Fishing Communities	
	r-value	p-value

Fishing Industry Regulations	0.782	0.001
Technological Advancements	0.719	0.001
Economic Incentives	0.876	0.001
Collaboration with NGOs	0.893	0.001
Education and Training Initiatives	0.746	0.001

Primary data computed, *significant at one percent level

Table 2 explains the relationship between Government Subsidies determinants and the Social Well-being of Fishing Communities.

Ho: There is no relationship between Government Subsidies determinants and the Social Well-being of Fishing Communities.



To test the above-stated hypothesis, Pearson correlation analysis is carried out. The calculated p-values are significant. Hence, the stated hypothesis is rejected. The r-values have positive values. Consequently, government subsidies determinants such as fishing industry regulations, technological advancements, economic incentives, collaboration with NGOs, and education and training initiatives are positively related to the social well-being of fishing communities. The r-value is ranged from 0.893 to 0.719. Collaboration with NGOs, economic incentives, and fishing industry regulations lead to a higher social well-being of fishing communities towards the f. Technological advancements and education and training initiatives lead to lower social well-being in fishing communities.

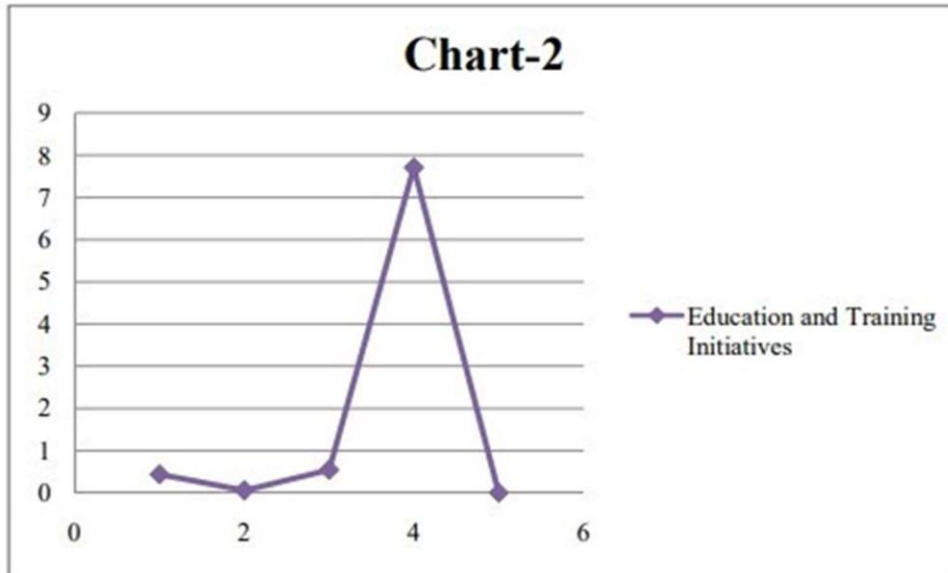
Table 3 Government Subsidies and Social Well-being of Fishing Communities

R-Value	R-Square Value	Adjusted R Square Value	F-Value	P-Value
0.680	0.462	0.457	88.560	0.001

Government Subsidies	B	Std. Error	Beta	t- Value	P-Value
Content	1.994	0.117		17.003	0.001
Fishing Industry Regulations	0.008	0.077	0.009	0.100	0.920(NS)
Technological Advancements	0.283	0.069	0.294	4.131	0.001
Economic Incentives	-0.026	0.109	-0.030	-0.235	0.814(NS)
Collaboration with NGOs	-0.100	0.108	-0.117	-0.924	0.356(NS)
Education and Training Initiatives	0.437	0.057	0.543	7.707	0.001

Source: Primary data computed * Significant at one percent level; Ns - Non - significant

The researcher has measured Government Subsidies of workers with five dimensions: Fishing Industry Regulations, Technological Advances, Economic Incentives, Collaboration with NGOs, and Education and Training Initiatives. Further, the Social Well-being of Fishing Communities is measured with five statements. The total score of the five statements is considered the overall Social Well-being of Fishing Communities with the work. The research aims to measure the effect of Government subsidies on the Social Well-being of Fishing Communities with fisheries. For that, multiple regression has been applied. The regression result is displayed in the table 3. Ho: Government subsidies have no effect on the Social Well-being of Fishing Communities.



From the model summary, it has been stated that the hypothesis is rejected because the calculated F-value is 88.560, which is significant at a one percent level (P-value = 0.001). Here, the R-square value indicates the percentage level of effect among the independent variables on the dependent variable. Fishing Industry Regulations, Technological Advances, Economic Incentives, Collaboration with NGOs, and Education and Training Initiatives are treated as independent variables. Social Well-being of Fishing Communities is considered a dependent variable. The R-square value is found to be 0.462; it is inferred that dependent variables significantly influence independent variables at a 45.7 percent level. Further, the standardized co-efficient beta value indicates the relative importance of the independent variables on the dependent variable. The equation expresses it.

$$\text{Social Well-being of Fishing Communities} = 1.994 + 0.283 (\text{Technological Advancements}) + 0.437 (\text{Education and Training Initiatives})$$

The equation explains that Technological Advancements and Education and Training Initiatives positively affect the Social Well-being of Fishing Communities. To increase one unit in Social Well-being of Fishing Communities, the Technological Advancements and Education and Training Initiatives services of the bank are likely to increase at 0.982 levels while other factors remain constant. The above discussion shows that the government's variable determinants significantly influence the Social Well-being of Fishing Communities of the net banking services. However, Technological Advancements and Education and Training Initiatives are the determinants having more impact on the Social Well-being of Fishing Communities. Hence, the fisheries should emphasize technological advancements and education and training initiatives.

Recommendations and suggestions

The government must enforce stricter regulations to promote sustainable fishing practices. This can include setting limits on catch size, implementing seasonal fishing bans, and monitoring compliance through regular inspections.

- ☐ Embracing Technological Advancements: Investing in GPS tracking systems and fish aggregating devices can help fishermen locate fish stocks more efficiently, reducing unnecessary fuel consumption and overfishing. Additionally, promoting selective fishing gear can be minimized by catching and protecting vulnerable species.
- ☐ The government should consider offering financial incentives or tax breaks to encourage fishermen to adopt sustainable practices. This could include subsidies for purchasing eco-friendly equipment or grants for transitioning towards alternative livelihoods during off-seasons.
- ☐ Establishing partnerships with non-governmental organizations (NGOs) specializing in fisheries conservation can provide valuable expertise and resources. Collaborative efforts can focus on capacity-building programs, knowledge-sharing initiatives, and community-driven conservation projects.
- ☐ Prioritizing education and training programs that raise awareness about sustainable fishing methods can empower fishermen to make informed decisions regarding their practices. These initiatives should encompass responsible resource management, marine ecosystem dynamics, and innovative techniques for reducing environmental impact.
- ☐ Recognizing the social dimensions of sustainable fishing is essential for long-term success. Governments should support initiatives to improve access to healthcare services and educational opportunities for children of fishermen communities and strengthen social safety nets during lean periods. Tamil Nadu's government will play a vital role in promoting sustainability within its fisheries sector by considering these recommendations.
- ☐ It is essential to recognize that each recommendation has unique benefits and challenges; therefore, government policymakers must carefully evaluate their feasibility while considering the local context. The implementation of these suggestions will not only safeguard Tamil Nadu's marine resources and ensure the economic viability and social well-being of fishing communities.

Conclusion

After conducting an in-depth study on the role of government subsidies in promoting sustainable fishing practices in Tamil Nadu, it is evident that these subsidies play a crucial role in the overall development of the fisheries sector. Government intervention and support have paved the way for economic growth and improved living conditions for fishers. The government has successfully encouraged fishers to embrace environmentally responsible practices through various subsidies, such as financial assistance for purchasing modern fishing equipment and vessels, training programs to enhance skills and knowledge, and incentives for adopting sustainable fishing methods. Technological advancements have also played a significant role in promoting

sustainability within the fishing industry. The introduction of advanced navigation systems, satellite communication devices, and improved fishing gear has increased efficiency and reduced catch and habitat destruction. Collaboration with NGOs has proven to be another effective strategy. Governments can provide additional resources and expertise to ensure sustainable practices are implemented effectively by working together with non-profit organizations specializing in marine conservation efforts. Education and training initiatives are vital components of promoting sustainable fishing practices. By providing access to formal education opportunities related to fisheries management or offering vocational training programs on sustainable techniques, fishers can acquire valuable knowledge that enhances their ability to protect marine ecosystems while maintaining their livelihoods.

Moreover, economic incentives provided through subsidies encourage fishers to adopt sustainable methods willingly. Financial rewards for adhering to regulations that prevent overfishing or protecting vulnerable species incentivize fishermen towards more responsible behavior. Considering the social well-being of fishing communities is essential when designing policies related to sustainability. These communities heavily rely on fisheries resources as their primary source of income; hence, any measures implemented should aim to safeguard their livelihoods while preserving aquatic ecosystems.

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