International Journal of Engineering Research & Management Technology
ISSN: 2348-4039
March-2014 Volume 1, Issue-2
Email: editor@ijermt.org www.ijermt.org

EXAMINE FACTORS INFLUENCING LIVELIHOODS, INCOME, AND SOCIO-ECONOMIC WELL-BEING OF FISHERMEN

Dr.Suraj Kumar Gobhil

Asstt.Professor(Economics)

Govt.E.V.P.G.College Korba Distt - Korba (C.G)

Abstract

This study examines the factors influencing the livelihoods, income, and socio-economic well-being of fishermen. The fishing industry, crucial for the sustenance of many coastal communities, faces numerous challenges that impact the economic and social status of fishermen. Key factors include environmental conditions, access to fishing resources, market dynamics, policy and regulatory frameworks, and socio-cultural aspects. Environmental factors such as climate change, pollution, and overfishing significantly affect fish stocks and thus the productivity and income of fishermen. Access to resources, including fishing rights and the availability of modern equipment, also plays a critical role in determining fishing efficiency and profitability. Market dynamics, including the demand for fish, pricing mechanisms, and competition, influence income levels. Policies and regulations, both national and international, impact fishing practices, access to waters, and sustainability measures. Compliance with these regulations often requires investments that can strain the financial capabilities of small-scale fishermen. Socio-cultural factors, such as community support, traditional practices, and education levels, also affect the socio-economic well-being of fishermen. Education and training can enhance skills and knowledge, leading to better management practices and alternative income opportunities. The study highlights the need for integrated approaches that consider environmental sustainability, economic viability, and social equity to improve the livelihoods and well-being of fishermen. It calls for policies that support sustainable fishing practices, provide financial and technical assistance, and promote alternative livelihoods to ensure the resilience and prosperity of fishing communities.

Keywords: *Influencing, Livelihoods, Fishermen*

Introduction

Fishing is a critical economic activity that supports the livelihoods of millions of people worldwide, particularly in coastal regions. It not only provides a source of income but also ensures food security and sustains the socio-cultural fabric of many communities. However, fishermen face numerous challenges that affect their economic and social well-being, ranging from environmental and ecological issues to market and regulatory pressures. Environmental factors, such as climate change, pollution, and overfishing, have a profound impact on marine ecosystems, leading to fluctuations in fish stocks and, consequently, the income of fishermen. These changes can be abrupt and unpredictable, posing significant risks to the stability of fishing communities. Additionally, the degradation of marine habitats further exacerbates the vulnerability of fishermen who rely heavily on the health of these ecosystems for their livelihoods. Access to fishing resources is another critical factor. Issues such as restrictive fishing rights, limited access to modern fishing gear and technologies, and competition for resources can significantly influence the productivity and efficiency of

fishing operations. Small-scale fishermen, in particular, often struggle with inadequate infrastructure and lack of access to financial resources, hindering their ability to invest in better equipment and techniques. Market dynamics play a crucial role in determining the income levels of fishermen. The demand for fish, price fluctuations, and competition from both local and international markets can significantly affect the profitability of fishing activities. Fishermen often find themselves at the mercy of market forces, with limited bargaining power to secure fair prices for their catch. Regulatory frameworks, encompassing both national and international policies, have a substantial impact on fishing practices. Regulations aimed at ensuring sustainable fishing practices and protecting marine environments often require compliance with standards that can be financially and logistically challenging for fishermen, especially those operating on a small scale. Navigating these regulatory landscapes requires resources and knowledge that may not always be accessible to all fishermen. Socio-cultural factors, including education, community support, and traditional practices, also influence the well-being of fishermen. Education and training can empower fishermen with better skills and knowledge, enhancing their capacity to adopt sustainable practices and explore alternative income-generating opportunities. Strong community networks and support systems can provide a safety net, fostering resilience in the face of economic and environmental uncertainties. This study aims to explore these diverse factors comprehensively, analyzing how they interplay to shape the livelihoods, income, and socio-economic well-being of fishermen. By understanding these dynamics, the study seeks to identify strategies and policies that can promote sustainable fishing practices, enhance economic viability, and improve the overall quality of life for fishing communities. Through an integrated approach that balances environmental sustainability, economic needs, and social equity, it is possible to build resilient and thriving fishing communities for the future.

Research Methods

Population and Sample

According to Professor Dr. Suryana (2012), the population is a generalized territory that is made up of objects or subjects that have specified quantities and qualities that have been determined by researchers in order to learn and then eventually withdraw from the study. It is for this reason that the population of this study is comprised of fishermen from the East Belitung and Central Bangka Districts.
All of the features and numbers that are possessed by the population are known as samples. When the population is big, it is doubtful that researchers will learn all that is present in the community owing to limited resources, energy, and time. As a result, samples are picked from the population that is representative of the study objectives (Bateman et al., 2012). Based on the Yamane, Isaac, and Michael formulae, the following are the results of the determination of the samples used in this study:

$$n = \frac{N}{1+N(e)^2} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Description:

n = Number of samples required

N= Population number

e = Error Rate sample (sampling error), usually set to 1% or 5%

Then samples of fishermen acquired for East Belitung district taken as many as 181 respondents with the formula:

$$n = \frac{300}{1,825} = 181 \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Hence samples of fishermen acquired for in central Bangka District were taken as many as 57 respondents with the formula:

$$n = \frac{66}{1,665} = 57 \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Data source

This study makes use of primary data, which is collected through interviews and the distribution of a questionnaire to fisherman. This is a detailed explanation of the use of quantitative analysis in conjunction with the route analysis approach. The analysis of this pathway has the ability to print or test the causal that is to be lowered, and it does not have the ability to lower the causal theory (Mordukhovich & Nam, 2013). Path analysis is a method that displays the pattern of causative interactions that exist between a number of different pees. Table 1 contains the respondent's profile, which may be viewed there.

Table 1. Respondents profile

		East Belitung Disrict		Central Bangka District		Total	
Variabel	**Component**	**N**	**%**	**N**	**%**	**N**	**%**
Types of fishermen	Crew's	78	43%	0	0%	78	33%
	Fisherman motorboat	65	36%	27	47%	92	39%
	Traditional fisherman	38	21%	30	53%	68	28%
Age	20-29 years old	8	4%	13	23%	21	9%
	30-39 years old	63	35%	15	26%	78	33%
	40-49 years old	87	48%	12	21%	99	42%
	50-59 years old	21	12%	15	26%	36	15%
	>60 years old	2	1%	2	4%	4	2%
Education	No School	27	15%	27	47%	54	23%
	Elementary School	108	60%	23	40%	131	55%
	Junior High School	36	20%	2	4%	38	16%
	Senior High School	10	6%	4	7%	14	6%
	Diploma Degree	0	0%	1	2%	1	0%
Experience	4-10 years	5	3%	13	23%	18	8%
	10-15 years	11	6%	7	12%	18	8%
	15-20 years	39	22%	7	12%	46	19%
	20-25 years	62	34%	4	7%	66	28%
	25-30 years	27	15%	7	12%	34	14%
	30> years	37	20%	19	33%	56	24%

Source: data processed, 2009

Results

Testing requirement Analysis

Before moving on to the analysis of the data, it is necessary to first evaluate the data for normality, linearity, and homogeneity. Both the skewness ratio and the kurtosis ratio are utilized in the calculation of the normalcy test. The results of the normalcy test are in table 2, which may be viewed here.

Table 2. Normality Test Using The Skewness and Kurtosis Ratio

Variabel	The Skewness ratio	The Kurtosis ratio	Conclusion
Income	0,918 (at-2 to + 2)	0,692 (at-2 to + 2)	Normal data distribution
Experience	-0,328 (at-2 to + 2)	-0,712 (at-2 to + 2)	Normal data distribution
Education	0,958 (at-2 to + 2)	1,615 (at-2 to + 2)	Normal data distribution
Hour	-0,678 (at-2 to + 2)	-0,782 (at-2 to + 2)	Normal data distribution

Source: data processed, 2009

When doing a regression analysis, multicholinerity refers to the presence of substantial linear correlations between an independent set of variables. If the value of the Variance Inflation Factor (VIF) is greater than 10, and if the VIF is greater than 10, then it is possible to identify multicholinerity in a regression model.

Table 3. Multicholinerity Test

Variabel	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Experience	0,988	1.012
Education	0,984	1.016
Hour	0,993	1.007

Source: data processed, 2009

Calculates the correlation value between variables by using the formula:

$$r_{xy} = \frac{(n\sum_{i=1}^{n} XiYi) - (n\sum_{i=1}^{n} Xi)(n\sum_{i=1}^{n} Yi)}{\sqrt{\{(n\sum_{i=1}^{n} Xi)^2 - (\sum_{i=1}^{n} Xi)^2\}\{(n\sum_{i=1}^{n} Yi)^2 - (\sum_{i=1}^{n} Yi)^2\}}} \text{ with } i = 1,2,3,4,\ldots\ldots,160\ldots\ldots\ldots\ldots\ldots(10)$$

So that acquired matric correlation between variables as follows:

$$R = \begin{vmatrix} 1 & 0,137 & 0,062 & 0,150 \\ 0,137 & 1 & 0,-100 & 0,039 \\ 0,062 & -0,100 & 1 & 0,72 \\ 0,150 & 0,39 & 0,72 & 1 \end{vmatrix} \quad \text{.....(11)}$$

Equation of structure and magnitude of influence

Calculation of influence coefficient value (b) variable and path coefficient test as follows:

Table 4. Calculation result and test coefficient of path

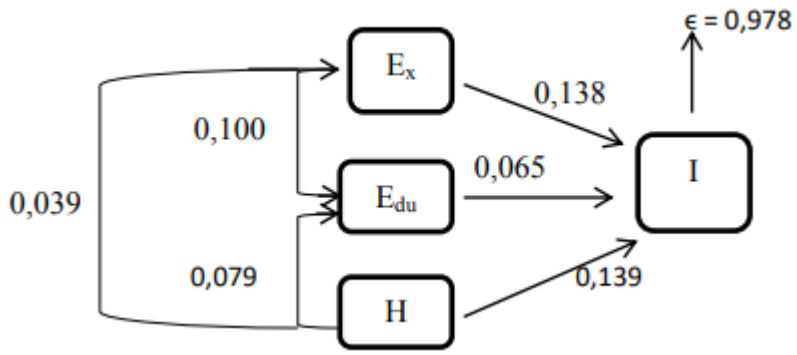
Path	Beta (β)	Sig
ρIEx	0,138	0,032
ρIEdu	0,065	0,310
ρIH	0,139	0,31

As can be seen in table 4, the regression findings indicate that the amount of experience possesses a significant value. The amount of experience has a positive and substantial influence on fishermen's wages, as demonstrated by the beta value coefficient of 0.138 and the fact that 0.032 is less than the significance threshold of 0.05. In addition, the beta coefficient value of 0.065 suggests that education has a favorable influence on fishermen's salaries, but that this effect is not statistically significant. The significance level of 0.310 is more than 0.05. On the other hand, labor hours have a significant value. Because the value of the beta coefficient is 0.139 and the value of 0.031 is less than 0.05, it can be concluded that the working hours of fisherman have a positive and substantial impact on their revenues.

Synopsis of the Model It was determined that the coefficient of determination, often known as R Square or R2, is 0551. The calculation of R Square may be done manually by transforming the line coefficient matrix C, I, and I into a matrix of rows. After that, the R Square can be determined by utilizing the column matrix Y. Finally, the R Square can be determined by utilizing the formula that involves the path coefficient of another variable that is not included in the model, ρY1e.

$$\rho Y_1 e = \sqrt{(1 - 0,044)} = 0,978 \text{.....(12)}$$

Based on the result of the line coefficient and R2 coefficient of pathway, the result of path analysis can be explained in the following framework:



Source: data processed, 2009

Figure 1. Path analysis of the research result

Pathway coefficient influences experience on incomes.

For the purpose of calculating the value of the route coefficient, it is important to note that because there is only one exogenous variable, Ex, and one endogenous variable, I, the path coefficient is equal to the magnitude of the correlation coefficient between the two variables, which is 0.138. As a consequence of the F-count being 4.538, which is higher than the F-table value of 2.643, the null hypothesis (H0) is rejected during the appropriateness testing of the model. Given that the t-test value of 2.153 is higher than the table value of 1.969, the null hypothesis (H0) is likewise rejected. The influence of experience on fishermen's salaries is measured at a significance level of five percent, which means that it is significant.

According to the findings of the path analysis that has been conducted between the level of experience of fishermen and their income, it has been determined that the income level of a fisherman will be even greater if they have the longest experience. According to the findings of study, the longest amount of experience that they have is thirty years. As a result of this experience, fisherman may get more familiar with the weather conditions at sea, already have a large number of crew members, have the financial resources, and even begin to transition to selling directly to the market because there are many relationships. There is a correlation between the findings of this study and those discovered by Primyastanto et al. (2012), Abd. Rahim and Dwi Hastuti (2013), and Ridha (2012).

Pathway coefficient influences education on incomes.

The computation of the value of the path coefficient is based on the fact that there is only one external variable, Edu, and one endogenous variable, I. The path coefficient is equal to the size of the correlation coefficient between the two variables, which is 0.065. As a result of the F-count value of 0.898 being lower than the F-table value of 2.643, the null hypothesis (H0) is accepted in the process of assessing the adequacy of the model. Additionally, the null hypothesis (H0) is accepted because the t-test value of 1.017 is lower than the table value of 1.969. On the other hand, there is no correlation between the amount of education of fisherman and the salaries of fishermen at a significance level of 5%. It is not the education level of fisherman that directly contributes to a rise in their salaries to increase. As a result of fisherman's lack of understanding regarding the need of preserving and enhancing children's education, the degree of poverty among fishermen is impacted by the education of fishermen. There is a higher likelihood that fishermen will rely on intermediaries in order to obtain financial assistance (Pancasasti, 2008; Velentina, 2008; Vibriyanti, 2009). As contrast to conserving money for the requirements of their children who are attending school, fishermen have a tendency to spend more money on necessities such as purchasing cigarettes and fuel (Putri et al., 2008). Furthermore, the typical level of education that fisherman possess is that of an elementary school, and some of them do not even attend school at all. As a result of the findings of research interviews, it is not necessary for individuals to have a high level of education in order to become fishermen. It is sufficient for them to study with parents who are also fishermen.

Pathway coefficient influences hour on incomes.

The value of the route coefficient is calculated since there is only one exogenous variable H and one endogenous variable I. Therefore, the path coefficient is equal to the magnitude of the correlation coefficient

between the two variables, which is 0.139. As a result of the F-count value of 5.398 being higher than the F-table value of 2.643, the null hypothesis (H0) was rejected during the assessment of the model's appropriateness. The null hypothesis (H0) is rejected as well since the t-test value of 2.174 is higher than the table value of 1.969. At a significance level of five percent, this means that there is no relevance between the amount of time fisherman spend working and the amount of money they make. According to Azizi et al. (2012), the earnings of fishermen increase in proportion to the length of time they spend at sea. Fishermen in the Central Bangka District and the East Belitung District start going out to sea around 19.00 at night and return to shore at a time that is determined by the tides at the river mouth. This time might range anywhere from 5:00 to 10:00, depending on the condition of the tides. At a minimum of twenty-four hours and a maximum of 240 hours, the longest working hour is equivalent to ten days. There are two types of fisherman: those who have been fishing for a long time and those who have motorized vessels and crews. Traditional fishermen are those who have been sailing for twenty-four hours.

Conclusion

Many other environmental, economic, regulatory, and socio-cultural elements interact in intricate ways to impact fishermen's livelihoods, income, and socio-economic well-being. The report emphasizes the need for comprehensive and coordinated strategies to tackle the complex problems encountered by fishing communities. Overfishing, pollution, and climate change are some of the environmental problems that are affecting fish populations, which in turn is affecting fishermen's revenue and productivity. Sustainable fishing techniques and environmental conservation initiatives are necessary to mitigate these consequences and ensure that marine habitats are preserved for future generations. For fishing operations to be efficient and profitable, access to resources is crucial. The economic sustainability of fishermen depends on providing them with modern equipment, financial resources, and equitable fishing rights, particularly those working on a small scale. Fishing operations may be made far more productive and environmentally friendly by investing in infrastructure and technology. The income levels of fisherman are greatly affected by market phenomena, such as demand, price, and competition. Fair pricing and consistent revenues can be achieved by giving fishermen more leverage in negotiations through cooperatives, improved market intelligence, and direct access to markets. Sustainable development and the reality experienced by fisherman should be considered in regulatory frameworks. So that small-scale fishers aren't unduly hit hard by rules, policies should be made to help them comply by providing financial and technical aid. The creation and execution of effective policies need close cooperation between fishing communities, governments, and industry players. The prosperity of fisherman is greatly affected by socio-cultural elements including education, community support, and traditional customs. Fishers can be better equipped to embrace sustainable techniques and seek out alternative occupations through education and training initiatives. In times of economic or environmental crisis, having strong community networks may give critical support and resilience. Ultimately, a holistic strategy that incorporates ecological preservation, financial assistance, and social justice is necessary to enhance the economic security, standard of living, and overall success of fishermen. The long-term viability of fishing as an important cultural and economic activity may be assured by tackling the many issues that influence fishing communities. This will increase resilience, boost prosperity, and protect fishing for future generations. It is imperative that communities, industry stakeholders, and policymakers collaborate on plans to help fishing towns throughout the world grow in all aspects.

References

[1] Azizi, A. A., Kumala Putri, E. I., & Fahrudin, A. (2012). Analisis FaktorFaktor Yang Mempengaruhi Perubahan Pendapatan Nelayan Akibat Variabilitas Iklim. Jurnal Sosial Ekonomi Kelautan Dan Perikanan, 12(2), 225. https://doi.org/10.15578/jsekp.v12i2.5320

[2] Bateman, B. W., Dunn, S. P., Emmett, R. B., Field, A. J., Hagemann, H., Hammond, J. D., Hebert, R. F., Hodgson, G. M., & Kuiper, E. (2012). List of Contributors. List of Contributors. P019–P019. https://doi.org/10.1039/9781788010115-fp019

[3] Christopher T.S. Ragan. (2009). Ragan Microeconomics, Sixteenth Canadian Edition. https://doi.org/10.1017/CBO9781107415324.004

[4] Cleff, T. (2009). Applied Statistics and Multivariate Data Analysis for Business and Economics. In Applied Statistics and Multivariate Data Analysis for Business and Economics. https://doi.org/10.1007/978-3-030- 17767-6

[5] Dwinda dahen, lovelly. (2013). Analisis Pendapatan Nelayan Pemilik Payang Di Kecamatan Koto Tangah Kota Padang. Economica, 5(1), 46–53. https://doi.org/10.22202/economica.2013.v5.i1.891

[6] Esa, G., & Putra, A. B. (2013). Analisis Faktor-FAktor yang Mempengaruhi Produksi dan Pendapatan Nelayan di Desa Batununggul Kecamatan Nusa Penida. E-Jurnal EP Unud, 8 [5], 1092–1121.

[7] Gujarati, D. N. (2004). Basic Econometrics (fourth edi). 8. Ioan, C., Ioan, G., & Ioan, G. (2013). The Complete Theory of Cobb-Douglas Production Function. Acta Universitatis Danubius. OEconomica, 11(1), 74– 114.

[8] Irawan, B., Suryana, A., Pasaribu, S. M., & Syukur, M. (). Sistem Bagi Hasil dan Dampak Motorisasi Penangkapan Ikan Terhadap Pendapatan Nelayan di Langkat Sumatera Utara. Forum Penelitian Agro Ekonomi, 6(1), 26. https://doi.org/10.21082/fae.v6n1.1988.26-35

[9] Juariyah, B. dan S. (2010). Jurnal Ekonomi & Pendidikan, Volume 7 Nomor 1, April 2010. Jurnal Ekonomi & Pendidikan, 7(April), 58–81.

[10] Kesuma, A., Desy, P., & Dalimunthe, Y. (2008). Analisa Teori Life Cycle pada Rumah Tangga Nelayan di Propinsi Kepulauan Bangka Belitung. 1.

[11] Mankiw, N. G. (n.d.). Principles of Economics, 8th ed.

[12] Marfirani, R., & Adiatma, I. (2012). Pergeseran Mata Pencaharian Nelayan Tangkap Menjadi Nelayan Apung Di Desa Batu Belubang. Prosiding Seminar Nasional Pengelolaan Sumberdaya Alam Dan Lingkungan Semarang, 11 September 2012 Pergeseran, September, 105–114. ergeseran Mata Pencaharian%0ANelayan Tangkap Menjadi Nelayan Apung Di Desa Batu Belubang

[13] Nurprihatin, F., & Tannady, H. (2012). Pengukuran Produktivitas Menggunakan Fungsi Cobb-Douglas Berdasarkan Jam Kerja Efektif. JIEMS (Journal of Industrial Engineering and Management Systems), 10(1). https://doi.org/10.30813/jiems.v10i1.36

[14] Pancasasti, R. (2008). Peluang Kemiskinan Nelayan Tradisional (Studi Kasus : Rumahtangga Nelayan Tradisional Di Kecamatan Kasemen Kabupaten Serang Propinsi Banten) RANTHY PANCASASTI.