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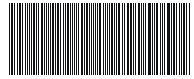
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Chief Editor

Dr. Jitendra Kumar Sundaray

Co-Editor

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*Research Trends in Fisheries
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Volume - 11

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Contents

Chapters	Page No.
1. Socio-Economic and Household Consumption Expenditures of Small-Scale Fishers between Urban and Rural Coastal Areas <i>(Abd. Rahim, Diah Retno Dwi Hastuti, Firmansyah and Ulfah Syam)</i>	01-18
2. Live Feeds in Aquaculture <i>(V. Mohan Raj)</i>	19-35
3. Food and Feeding Habit of Freshwater Catfish <i>Mystus dibrugarensis</i> from Upper Brahmaputra Basin, Assam <i>(Dr. Bhenila Bailung)</i>	37-49
4. Periphyton: An Emerging Technology to Sustainability in Aquaculture <i>(Abinaya P)</i>	51-62
5. Laboratory Evaluation of Sensitivity of the Freshwater Tropical Worm, <i>Branchiura sowerbyi</i> Beddard, 1892 to Crude Leaf, Bark and Seed Kernel Extracts of Neem (<i>Azadirachta indica</i> A. Juss) <i>(Kishore Dhara, Prithwish Sarkar, Shubhajit Saha and Himadri Guhathakurta)</i>	63-82
6. Wastewater: An Emerging Economic Asset <i>(M.F. Panthi, N.K. Suyani, R.J. Vasava and Varsha Likhar)</i>	83-92
7. Historical Background of Viral Invasions in Aquaculture <i>(R. Dinesh, P. Sivasankar, C. Anand and J. Stephen Sampath Kumar)</i>	93-107
8. Community Structure of Benthic Flagellates and Factors Controlling Their Abundance and Distribution along South East Coast of India, Bay of Bengal <i>(Sangeeta Mishra and Debasish Mahapatro)</i>	109-124
9. Updated Systematic Account of Fish Diversity in the Chilika Lagoon (1916 to 2021) with 73 New Records <i>(Debasish Mahapatro, S.S. Kadam, Sangeeta Mishra, R.K. Mishra and S. Panda)</i>	125-157

Chapter - 1
Socio-Economic and Household Consumption
Expenditures of Small-Scale Fishers between
Urban and Rural Coastal Areas

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Chapter - 1

Socio-Economic and Household Consumption Expenditures of Small-Scale Fishers between Urban and Rural Coastal Areas

Abd. Rahim, Diah Retno Dwi Hastuti, Firmansyah and Ulfah Syam

Abstract

Even though the fisher's residence is close together in one coastal area, the changes in small-scale fisher's household expenditures on food and non-food consumption in coastal areas tend to be different, thus giving decisions on household consumption expenditure the factors that consume them. Research conducted in the west coast area of Makassar City and Takalar District aims to estimate the factors that influence small-scale fishermen's household consumption expenditure. The basic method of research is an explanatory method with multiple linear regression econometric analysis. Respondents of small-scale fishers' households were selected simple random as many as 67 Makassar City and 49 Takalar District. The findings show that food consumption expenditure tends to be greater than that of fishers in Makassar City. On the other hand, fishers in Takalar District have less food consumption than non-food. Small-scale fishermen's food and non-food consumption expenditures in Makassar City are positively influenced by household income, age of fishermen, and the number of family dependents, while the education of fishermen's wives does not have a significant effect. In another case in Takalar District, household income and fisher's wife education do not have a significant effect, while only the fishermen's age and the number of dependents on household consumption expenditures positively affect. Household expenditure can be suppressed from non-food consumption patterns. Food as a source of family nutrition can nourish the body and work to catch more fish so that household consumption expenditure is of higher quality.

Keywords: differences in consumption expenditure, small-scale fishers, coastal areas

I. Introduction

Coastal communities have rights to common property resources that provide benefits and efficiency from the sustainability of existing resources ^[1]. They have a distinctive culture with their dependence on coastal resources in carrying out their economic activities ^[2]. The household economy is family income and household consumption expenditure ^[3], which influences coastal communities' welfare ^[4], mainly small-scale fishermen. In Indonesia, small-scale fishers are dominated by small-scale fishers. 95% are traditional fishermen with simple fishing gear and have fishing grounds not far from the coast ^[5]. They are characterized as poor and marginalized fishermen ^[6]. However, as a small-scale subsector, fisheries can support the livelihoods and well-being of more than 500 million people worldwide and as an essential source of income in the development of countries ^[7].

According to ^[8], every household tries to maximize utility in consuming goods and services with income and price levels as constraints. Household decisions about how much to consume or store are microeconomic questions because they relate to individual economic units ^[9]. Household consumption expenditure is a primary indicator of economic welfare ^[10] and the most critical component of national income and aggregate demand ^[11]. Household consumption expenditure refers to all goods and services purchased by private households ^[12] in the amount desired and spent to meet their basic needs such as food, clothing, housing, transportation ^[9] and certain commodities ^[13].

Household consumption expenditure of small-scale fishers on the west coast in urban areas (Makassar City) and rural areas (Takalar District) tends to be irrational in its management compared to the fishermen's living conditions. However, Takalar District is directly adjacent to Makassar City as the capital of South Sulawesi province. However, fisher's household expenditures in Takalar District tend to focus more on non-food consumption than fishers households in Makassar City, focusing more on food consumption. Changes in consumption patterns every year affect it. Economically, changes in consumption expenditure are influenced by changes in income ^[14], while changes in household consumption expenditures are influenced by age, income, marital status, insurance, and household size ^[15].

Research on fishermen's household consumption expenditures has been carried out in many countries, such as the impact of co-management on

fisheries household income and spending in Bangladesh ^[16]. The assessing household expenditure of fishers in India ^[17]. Food consumption patterns among rural fishery households for poverty alleviation in North Central Nigeria ^[18]. Comparison of fishermen's household economic situation in Chumphon Province (Thailand) at any given time based on the location of marine protected areas with the Chumphon Islands Marine National Park ^[19]. Assessing fishermen's poverty is measured from household consumption expenditure in Malaysia ^[20]. Income equality and household expenditure of fishers in the Volta Basin in Ghana ^[21]. However, these findings have not yet discussed the regional differences between cities and regencies in coastal areas regarding the socio-economic (household income, age, education, and number of family members) effects on small-scale fishermen household consumption expenditures using the consumption expenditure function approach.

II. Study of the research area

The Makassar City and Takalar District are part of the province of South Sulawesi (Figure 1). Makassar City has 15 Districts, while Takalar District has 9 sub-districts ^[22]. The research area is Tamalate Sub-District, Bayombong Village and Galesong Sub-District, Mappakalombo Village, each directly adjacent to the West Coast Coastal area.

Astronomically, Makassar City is located between 119°24'17'38' East Longitude and 5°8'6'19' South Latitude ^[23], while Takalar District is located between 5°30'- 5°38' South Latitude and 119° 22 ' - 119° 39' East Longitude ^[24]. The area of Takalar District is 566.61 km², or a percentage of the province's area of 1.21%, while Makassar City, as the capital of South Sulawesi province, is 199.26 km² or 0.43%. The provincial capital distance is 45 km to Takalar District, while Makassar City is only 5 km ^[22].

Based on geographical position, Makassar City has regional boundaries, namely the north (bordering Maros District), the south (Gowa District), the west (Makassar Strait), and south (Maros District). The boundaries of Takalar District are in the east (Gowa and Jeneponto Districts), north (Gowa District), west (Makassar Strait), and south (Flores Sea) (Badan Pusat Statistik Provinsi Sulawesi Selatan, 2020). In the research area, especially Tamalate District, Makassar City has boundaries located in the North (Mariso, Mamajang and Rappocini Sub-Districts), South (Gowa District), South (Takalar District), and West (Makassar Strait) ^[23]. Furthermore, Galesong Sub-District, Takalar District, is located in the north (Galesong Utara Sub-District), East (Gowa District), south (South Galesong District), and west (Makassar Strait) ^[24].

Climate Makassar City and Takalar District have tropical climatic conditions, which are tropical monsoon climate, this is indicated by the contrast of the average amount of rainfall in the rainy season and the dry season. Makassar City has a rainy season that usually lasts from November to March and the dry season lasts from May to September with an average annual rainfall ranging from 2,700-3,200 mm. In another case, Takalar District has the rainy season between November and April, and the dry season in October and August with an average annual rainfall ranging from 2,300-3,100 mm [22].

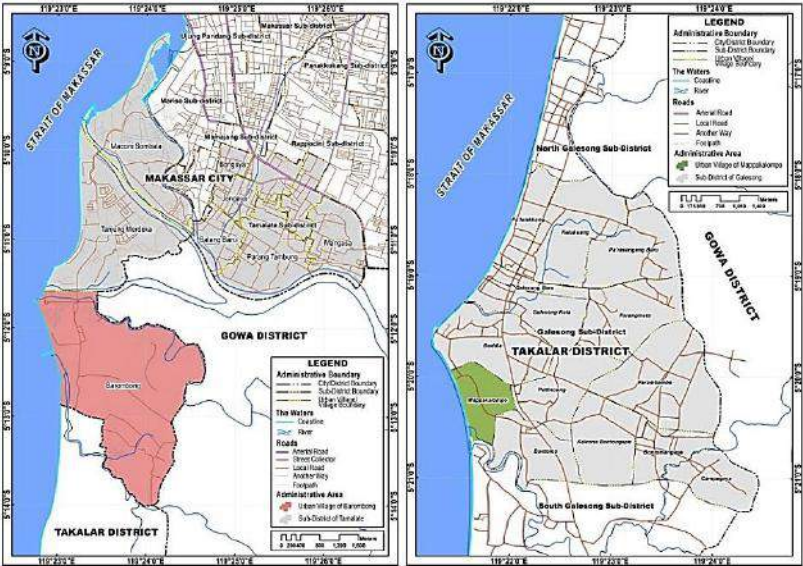


Fig 1: Map of Makassar City and Takalar District, Province South Sulawesi, Indonesia

III. Household consumption expenditure function

This research was conducted on the West Coast, South Sulawesi Province, Indonesia, especially Takalar District (Galesong Sub-district, Mappakalombo Village) and Makassar City (Tamalate Sub-District, Bayombong Village). Based on the time dimension using cross-section data sourced from primary data. The sample of respondents consisted of 49 fisher’s household from Takalar District and 67 from Makassar City. The research method used is explanatory by estimating the comparison of small-scale fishermen’s dwellings to the factors that influence household consumption expenditure.

The fishermen’s household consumption expenditure function is proxied by the consumption expenditure function. The specification of the

econometric model of the Keynesian consumption function is a positive relationship between consumption expenditure and income [25] mathematically written as follows:

$$C = \beta_0 + \beta_1 Y \quad \dots (1)$$

Where: C is consumption expenditure, β_0 is intercept, β_1 is regression coefficient or model parameter or slope, Y is income. Furthermore, the uncertainty relationship between economic variables is used by the econometric model in equation (1) to become

$$C = \beta_0 + \beta_1 Y + \mu \quad \dots (2)$$

Where: μ is a disturbance error and a random (stochastic) variable with probability properties and characteristics. Based on equation (2), estimation of the factors that affect the household consumption expenditure of small-scale fishers using the multiple regression equation estimation model is as follows:

$$CHESCFMC = \beta_0 \pi SCF^{\beta_1} AgSCF^{\beta_2} EdWf^{\beta_3} QFM^{\beta_4} \mu_1 \quad \dots (3)$$

$$CHESCFTD = \beta_5 \pi SCF^{\beta_6} AgSCF^{\beta_7} EdWf^{\beta_8} QFM^{\beta_9} \mu_2 \quad \dots (4)$$

Furthermore, to facilitate the calculation of equations (3) and (4), the double log equation or natural logarithm is used as follows:

$$CHESCFMC = \beta_0 + \beta_1 \pi SCF + \beta_2 AgSCF + \beta_3 EdWf + \beta_4 QFM + \mu_1 \quad \dots (5)$$

$$CHESCFTD = \beta_5 + \beta_6 \pi SCF + \beta_7 AgSCF + \beta_8 EdWf + \beta_9 QFM + \mu_2 \quad \dots (6)$$

Where *CHESCFMC* is the household consumption expenditure of Small-scale fisherman of Makassar City (IDR). *CHESCFTD* is the household consumption expenditure of Small-scale fisherman of Takalar District (IDR). β_0 and β_5 is the intercept. β_1, \dots, β_4 and β_5, \dots, β_9 is the regression coefficient. πSCF : household income of small-scale fishermen (IDR). *AgSCF* is the age of small-scale fishermen (year). *EdWf* is fishermen's wife's education (years). *QFM* is the number of dependent family members (people).

IV. Socio-economic and household consumption expenditure

The socio-economic household of small-scale fishers in the West coast area consists of household income, age of fishermen, education of fishermen's wife, and the number of family members. Small-scale fishermen household income derived from fishing and non-fishing business income.

The household income of fishers in Takalar District is higher than that of Makassar City. This occurs because fishing and non-fishing businesses' income is higher, even though the number of fishers is smaller in Takalar District (Table 1). The fishing business's revenue comes from revenue (catch production and fish prices) less operating costs per trip. Non-capture business income comes from other businesses (business processing and preserving catch fish and raising chickens). The age of small-scale fishers between 30-39 years is the largest age who are still actively working, especially fishermen, with 52 people in Makassar City and Takalar District. Age 20-29 years and $60 \geq$ years are the lowest numbers of those still actively working. There is still 60 years of age as a fisherman because he still supports his family members, especially his children's wife, and grandchildren. The fishers wife's education consists of not completing elementary school, elementary school, lower secondary school, and high school.

The most education of coastal fishermen's wives is that 30 people (44.78%) have not graduated from elementary school in Makassar City and Takalar District 31 people (63.26%) have graduated from elementary school. So, on average, women fishermen on the west coast still have a low level of education. The number of family members carried is quite low in the coastal areas of Makassar City (1-3 people or 67.16%) compared to the coastal districts of Takalar District (4-6 people or 69.39%). This is because fishers households in Makassar city have realized a big responsibility if they look after many children.

Table 1: Socio Economy of Small-Scale Fishers Household on the West Coast of South Sulawesi, Indonesia

Socio-economic	Description	Makassar City		Takalar District	
Household Income (IDR)	Capture Business Income	1,543,423		1,878,450	
	Non-Capture Income	75,373		544,907	
	Household Income	1,618,796		2,423,357	
		Frequency	Percentage	Frequency	Percentage
Fishers Age (years)	20-29	5	7.46	3	6.12
	30-39	32	47.77	20	40.48
	40-49	20	29.85	21	42.86
	50-59	8	11.94	1	2.04
	60 ≥	2	2.98	4	8.16
Total		67	100.00	49	100.00
	Didn't Finish Elementary School	30	44.78	11	22.45
Fishers wife education (years)	Elementary School	28	41.78	31	63.26
	Junior High School	7	10.45	7	14.24
	Senior High School	2	2.99	-	-
Total		67	100.00	49	100.00
The family members (people)	1-3	36	67.16	6	12.22
	4-6	19	28.36	34	69.39
	7-9	3	4.48	9	18.37
Total		67	100.00	49	100.00

Small-scale fishers household consumption expenditure in the West Coast tends to be irrational in both Takalar District and Makassar City. The household expenditure of fishers in Takalar District tends to be more towards non-food consumption. The consumption expenditure is IDR 561,333, which is greater than the food consumption of IDR 411,487. Non-food consumption is mostly used for land transportation costs in the form of fuel oil used to reach the city of Takalar District and South Sulawesi province's city or as much as 42.31% of food consumption. Other non-food items include education fees, electricity, soap, laundry soap, gas stoves, land, and building taxes. Another case in the household expenditure of fishers in Makassar City tends to food consumption. The consumption is IDR 817,030, which is greater than the non-food consumption of IDR 407,234. Cigarette

foodstuffs are bought quite a lot compared to other foodstuffs (rice, cooking oil, eggs, vegetables, sugar, tea, and coffee) or as much as 35.39% of non-food ingredients (Table 2).

Table 2: Household Consumption Expenditure of Small-Scale Fishers in the West Coast of South Sulawesi Province, Indonesia

The West Coast Region	Food (IDR)	Non-food (IDR)	Total
Makassar City	817,030	407,234	1,224,264
Takalar District	441,487	561,333	1,002,821
Average	629,258.5	484,283.5	1,113,543

V. Socio-economic influence on household consumption expenditures

The existence of differences in household expenditures for both food consumption and non-food consumption of small-scale fishers in the west coast area is influenced by changes in household income, age of fishermen, and the number of family dependents, while the education of fishermen's wives has no significant effect (Table 3). The measurement of the goodness of fit model from the adjusted R^2 value shows the independent variable in the estimation model of the household consumption expenditure function of small-scale fishers, which can explain the variation of 65.3% in Makassar City and 58.2% in Takalar District. Furthermore, the F-test shows that the factors that simultaneously influence small-scale fishermen's household consumption expenditure have a significant effect because the F-test is 39.487 in Makassar City and 8.418 in Takalar District is greater than the respective F-table. It is different to see the impact partially (t-test) by comparing the t table value. Next, look at each independent variable's changes against the dependent variable with its regression coefficient (Table 3).

Household income has a positive effect on household consumption expenditure of small-scale fishers in Makassar City at an error rate of 1% (0.01) or a confidence level of 99%. However, it has no significant effect in Takalar District. The expenditure of fishermen's households in Makassar City is mostly for non-food, while fishers in Takalar District are consuming food. Findings in Bangladesh by ^[16] that the higher the household income level, the smaller the proportion of consumption expenditure on food compared to non-food items. In general, food consumption patterns also tend to be different in each region ^[26]. Found significant differences in diet between rural and urban households. Starchy foods dominate rural diets, whereas animal foods are preferred in urban China. Household income comes from income from catches and non-fishing activities ^[27]. Catch

production and revenue and cost of catch as income from catch ^[28] are household income as investment capital, which significantly affects household consumption expenditure decisions ^[3]. However, the dependence of income from fishing businesses is not sufficient for their daily needs, so that other livelihood activities (non-fishing) are urgently needed ^[29].

Table 3: Comparison of the Socio-Economic Influence on Household Consumption Expenditure of Small-Scale Fishers in the West Coastal Areas South Sulawesi, Indonesia

Independent Variable	E.S.	Makassar City		Takalar District	
		β	t-test	β	t-test
Household income	+	0.759***	9.010	0.021 ^{ns}	0.334
Age of small-scale fishermen	+	0.345**	3.235	0.228***	5.597
Fishers wife education	+	0.762 ^{ns}	0.010	0.005 ^{ns}	1.585
The family members	+	0.281**	2.551	0.239**	2.702
Intercept		0.901		12.259	
F-test		39.487		8.418	
<i>Adjusted R²</i>		0.653		0.582	
N		67		49	

Note: *** is a level error significance of 1% (0,01), or confidence level 99%. ** is a level error significance of 5% (0,05), or confidence level 95%. ns is not significant. E.S is an expectation sign.

The age of small-scale fishers has a positive effect on household consumption expenditure in Makassar City and Takalar District's coastal areas. Empirically, the average age of fishers is 30-50 years of fishing. This result is in line with ^[30] findings in Taiwan that the age of 40 is the productive age in producing more catches than the age above 50 years. The age of fishers greatly influences fisheries management decisions ^[31] for their household economy, especially consumption expenditure, both food and non-food. The age structure is an important factor of responsibilities, privileges, rights, and obligations to work ^[32]. Age can affect a person's activities. The older a person is, the longer they work. However, as we get older, working time affects physical strength due to aging ^[33]. Also, increasing the age of fishers can indicate a long work experience and a significant increase in work in Republic of Korean fishing households ^[34].

Wife education does not significantly affect small-scale fishers' household consumption expenditure on the west coast of Makassar City and the Takalar District. The average education of fishermen's wives is only Elementary School (E.S.) and Junior High School (JHS). Management of household expenditures is irrational, focusing more on non-food spending

than food as an essential household need. Education can be used as an investment to increase household economic welfare ^[35]. Women's education can play a role as a rational decision-maker in their household ^[36], especially their family consumption expenditure ^[37]. Household expenditure on education (especially children's education) is essential as an investment ^[38]. It can also be used as literacy for fisherwomen to strengthen their bargaining position in the market ^[39].

The number of family dependents has a positive effect on small fishermen's household consumption expenditure in the two West coast areas. The average number of fisher family dependents in Takalar District is 4-6 people, while Makassar City is 1-3 people. The consumption expenditure of fishing households in the Philippines is determined by the household's size, especially the consumption of rice food ^[40]. In Malaysia, it affects fish food consumption expenditure ^[41]. According to ^[42], family members are the responsibility of the head of the family, which encourages the spirit of work to increase income and affect household expenses. Consumption expenditure will undoubtedly increase with the increase in the number of family dependents. Savings owned by households will be issued to meet their needs based on the number of dependents ^[43].

The socio-economic impact on small-scale fishers' household consumption expenditure is significant to become a policy for developing the capture fisheries sector, such as household income, age of fishermen, and several family members. Social, economic, and cultural norms can influence fishermen's decisions ^[44] in improving their household economy. Changes in food and non-food consumption in households are caused by changes in income from fishing and non-fishing activities. This fishermen's catch should be the point of attention of policymakers such as the government ^[45] to increase fishing business income during and out of season. Increased catches certainly have an impact on world food security ^[46] sustainably. The sustainable welfare of small-scale fishers can also reduce poverty ^[47].

VI. Conclusion

The household expenditures of small-scale fishermen in the West Coast region have different food and non-food consumption patterns even though they are in the same coastal environment or live nearby. The food consumption pattern is mostly carried out by fishers in Takalar District, while the non-food consumption pattern is fishers in Makassar City. Small scale fishermen's food and non-food consumption expenditures in Makassar City are positively influenced by household income, age of fishers, and some family dependents, while the education of fishermen's wives does not have a

significant effect. In Takalar District, household income and the teaching of fishermen's wives do not matter. On the other hand, only the fishermen's age and the number of family dependents on household consumption expenditure have a positive effect.

Small-scale fishermen's household expenditure in the west coast region can be reduced, especially the increased non-food consumption pattern because the fishermen's wife's education does not have a significant effect. As the household's financial manager, the wife can focus on the design of food consumption as primary needs rather than secondary or tertiary needs (non-food consumption). Apart from the wife's education, the number of family members impacts household expenditure changes, so that food consumption patterns are more concerned. Through counseling, food can be used as a source of nutrition for fishermen's families to nourish the body so that they are active in catching more fish so that household expenses are of higher quality.

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