CONFIRMATORY FACTOR ANALYSIS SPECIMEN IN CALCULATING INDEPENDENCE ELEMENT OF COASTAL WOMAN

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ABSTRACT

The short-term objective of this study is to analyze the relevant factors in influencing the economic independence of coastal women, knowing the significant influence of the relevant factors on the economic independence of coastal women and the welfare of the fishermen's family in Desa Pahlawan. Tanjung Tiram. The population is all women/housewives in Pahlawan village, and the sample is set based on sampling quota of 66 people. Data analysis used is a method of Descriptive Analysis and Quantitative Analysis. Quantitative Analysis in this study uses the method of Confirmatory Analysis Factor (CFA) and Path Analyst analysis. The results of the CFA test revealed that the relevant factors in influencing the income of coastal women in Pahlawan village fishers to increase their economic independence were three factors selected from the eight initial factors, such as art, health, and education. The results of Path Analysis are known that art influences wife income and artistry influences family income through wife income as an intervening variable, wife's income functions as an intervening variable. Health does not affect wife's income and health influences family income through wife's income as an intervening variable, wife's income functions as an intervening variable. Education is not so influential on wife's income and education influences family income through wife's income as an intervening variable, wife's income functions as an intervening variable.

Key words: coastal women, economic independence, welfare, local wisdom, CFA

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1. INTRODUCTION

Several independence factors are the solution to welfare [1]–[3]. The level of one's economic independence will affect the quality of life of himself and his family's welfare. The purpose of this independent is that the general public can reproduce to meet personal needs within the

limits of prosperity (self), do not need and do not depend on others in carrying out economic problems. In the family life of fishermen, women or housewives have a strategic role such as guardians and successors of life. The reality of life in coastal areas which are poverty pockets is often very worrying. Encouraged by economic conditions, women fishermen must be actively involved in productive activities. In this challenging situation, the role of women fishermen is very much needed. Based on local wisdom, the contribution of women fishermen is expected to be able to change the blurred portrait of fishers with all the complexity of their problems [4]. Based on local wisdom in the area, coastal women must be able to be independent, the independence of coastal women in the economic field will improve the quality of life of the woman and her family. The contribution of a mother in the family is a measure of the quality of the family. Political wisdom is human intelligence which belongs to certain ethnic groups obtained through community experience [5]–[7] That is, local wisdom is the result of certain communities through their experience and not necessarily experienced by other communities. These values will be very firmly attached to specific communities, and that value has been through a long time journey, throughout the existence of the community [8]–[11].

Pahlawan Village, located in Tanjung Tiram Subdistrict, Batu Bara Regency, is a village in the seafront area with 98% of its people working as fishermen and most of the fishermen are only as sea laborers. The Pahlawan Village has an area of 173.79 km² and a population of 5567 with details of 1,452 heads of households, 2649 men and 2918 women where more than 50% are classified as the low-income family. The following table is the family data according to the welfare level [12].

Table 1 Number of Families by Welfare Level in Each District in Batu Bara Regency

District	Prosperity level				
	Pra-S	KS-I	KS-II	KS-III	KS-III Plus
Sei Balai	315	1558	3111	1348	1497
Tanjung Tiram	3566	4221	9145	413	-
Talawi	373	3136	3696	4962	2993
Lima Puluh	2913	3357	7491	6714	2549
Air Putih	1536	2545	4306	3989	368
Sei Suka	251	402	609	8989	3311
Medang Deras	1363	2092	4877	3801	900
Batu Bara	10317	17311	33235	30216	11618

Source: Agency for Women's Empowerment and Family Planning

Based on the initial observations that the authors did, it was known that Tanjung Tiram Subdistrict was the most significant number of underprivileged families from other sub-districts in the Coal Regency. The low level of welfare is due mainly to low income. The following table is the average data of fishermen's income in Pahlawan Village, Tanjung Tiram Subdistrict, which the author obtained from initial observation through questionnaire distribution.

Table 2 Average Family Income

No.	Revenue / Month	Respondent
1	Rp 1,000,000 – Rp 2,000,000	1
2	Rp. 500,000 - Rp 1,000,000	10
3	Uncertain	16

Source: Preliminary observations, 2018

The condition of poor housing illustrates the low level of welfare of fishermen's families in the Pahlawan Village, the average looks narrow, and there is also one house inhabited by several families that make discomfort in the house and can interfere with the child's growth and development. Environmental conditions also seem inappropriate, meaning that they are far from being clean, plus there is no availability of clean water, and MCK facilities make public health levels still low. The low level of education due to a large number of school dropouts triggers early marriage, drugs, and crime [13]–[18]. However, all the problems found are the impact of the low income of the fishermen in Pahlawan Village. Fishers who are always synonymous with poverty and the conditions of the Pahlawan Village become one of the justifications for the statement. The results of Hendra Wawansyah's study showed that the income contribution of fishers women in Juru Seberang village had a significant influence, such as 39.45% of family income [19]. The results of Wahyu Nugraheni's study revealed that in addition to women fishermen acting as housewives (domestic), women fishermen in Bedono village also played a role and participated in earning a living for the economic fulfillment of their families [20].

2. THEORIES

2.1. Welfare

A prosperous family is a family that is formed based on a legitimate marriage that is able to meet spiritual needs and material needs which include: Life Value Factors: Something that is considered the most important in his life. The value of life is "Conception," which means a mental picture that distinguishes individuals or groups in order to achieve something desired. Life Purpose Factor: something that will be achieved or something that is championed so that the value which is a benchmark can be achieved so that the purpose of life cannot be separated from the value of life [21]. Life Standard Factor: Life level which is a benchmark that someone wants to achieve in meeting the needs of the family's economic situation [22]–[24]. Economics in the family includes finance and resources that can improve the living standards of family members, the brighter the light of family life. The more financial resources/income received, it will improve the family's standard of living. The financial resources/income can be obtained from renting out the land, other jobs outside of trading, etc [25].

2.2. Independence of Coastal Women

Independence is an attitude that prioritizes self-ability in overcoming various problems in order to achieve a single goal, without covering oneself from the possibilities of mutually beneficial cooperation [26]. The purpose of this independent is that the general public can reproduce to meet personal needs within the limits of prosperity (self), do not need and do not depend on others in carrying out economic problems [27]. Independence is a concept that is often associated with development [28]. In this concept development programs are systematically designed so that individuals and society are the subjects of development. The concept of independence is a significant factor in development. This concept does not only include the notion of self-sufficiency in the economic field but also includes human factors in person, which contain elements of self-discovery based on self-confidence. Independence is an attitude that prioritizes the ability of oneself in overcoming various problems in order to achieve a goal, without closing oneself against the possibilities of mutually beneficial cooperation. In a social sense or association between humans (groups, communities), independence also means as self-organization or self-management. These elements interact and complement each other so that a balance arises. In this direction, finding the right pattern, so that interactions between elements always reach balance, becomes very important. Every

balance achieved will be the basis for the next development. The process of independence is a process that runs without end.

3. METHODOLOGY

3.1. Confirmatory Factor Analysis

Factor analysis aims to prove the first hypothesis, which is finding a way to summarize the information in the original (initial) variable into a new set of dimensions or factors with the formula [29]:

$$X_i = B_{i1} F_1 + B_{i2} F_2 + B_{i3} F_3 + \dots + V_{\mu i}$$

Where:

X_i = Variables to i are standardized

B_{ij} = The partial regression coefficients for variables i on the common factor to j

F_j = Common factor j

V_i = Regression coefficients that are standardized for the i variable are unique factors to i

μ_i = Unique factor variable to i

3.2. Path Analysis

Path analysis is a development technique of multiple linear regression. This technique is used to test the amount of contribution shown by the path coefficients in each path diagram of the causal relationship between variables X_1 , X_2 and X_3 to Y and the impact on Z . Path analysis is a technique for analyzing a causal relationship that occurs in multiple regression if the independent variable affects dependent variables not only directly but also indirectly [30].

First equation

$$Y_1 = \beta_{Y1X1} X_1 + \beta_{Y1X2} X_2 + \beta_{Y1X3} X_3 + \beta_{Y1X4} X_4 + \epsilon_1$$

Second Equation

$$Y_2 = \beta_{Y2X1} X_1 + \beta_{Y2X2} X_2 + \beta_{Y2X3} X_3 + \beta_{Y2X4} X_4 + \beta_{Y2Y1} Y_1 + \epsilon_2$$

Third Equation

$$Y_2 = \beta_{Y2Y1} Y_1 + \epsilon_3$$

Information:

Y_1 = Coastal Women's Economic Independence (Coastal Women Income)

Y_2 = Family Welfare (Family Income)

X_1, X_2, X_3, X_4 = Relevant Independent Variables

ϵ = Error Term

4. RESULT AND DISCUSSION

4.1. Data Analysis Result of Confirmatory Factor Analysis (CFA)

The researcher conducted and applied a quantitative analysis method to analyze the research data by compiling the data and then interpreting it so that a real picture of the problem under study would be obtained. Furthermore, factor analysis is conducted which aims to find a way to summarize the information in the original variable (initial) into a set of new dimensions or variables (factors). Data processing uses the SPSS program, with the following results:

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.547
Bartlett's Test of Sphericity	Approx. Chi-Square	53.965
	Df	28
	Sig.	.002

The method used in this factor analysis is the Main Component method. From the KMO and Bartlett's Test table, the Kaiser Mayer Olkin (KMO) value is 0.547 where the value is greater than 0.5. This value indicates that the data is valid for further analysis by factor analysis. Bartlett test value is 53.965 with a significant value of 0.002 below 5%, then the correlation matrix formed is an identity matrix, or in other words, the factor model used is excellent. Furthermore, to see which variables have communalities correlation values above or below 0.5 or above 50% can be seen in the following communalities table.

Table 4. Communalities

	Initial	Extraction
Age	1.000	.444
Education	1.000	.723
Skills	1.000	.537
Outpouring work time	1.000	.578
Health	1.000	.561
Language	1.000	.494
Art	1.000	.722
Use of technology	1.000	.550

Source: SPSS result

The results of data analysis showed that the higher the commonalities of a variable, the more closely related the factors formed. The communalities table shows the results of extraction individually. Six variables have a contribution that exceeds 0.5 or 50%, such as education, skills, the outpouring of work time, health, art, and technology use while the age and language variables have extraction values below 0.5 or 50%. However, further feasibility must be tested with variance Explained.

Table 5. Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumul. %	Total	% of Variance	Cumul. %	Total	% of Variance	Cumul. %
1	1.881	23.513	23.513	1.881	23.513	23.513	1.597	19.966	19.966
2	1.520	18.998	42.511	1.520	18.998	42.511	1.582	19.775	39.741
3	1.208	15.104	57.615	1.208	15.104	57.615	1.430	17.874	57.615
4	.976	12.202	69.817						
5	.766	9.579	79.396						
6	.653	8.164	87.560						
7	.533	6.657	94.217						
8	.463	5.783	100.000						

Based on the results of the total variance explained in the initial Eigenvalues table, it is known that there are only three components of the variables that influence the income of the family. Eigenvalues show the relative importance of each factor in calculating the variance for the eight variables analyzed. From the table above shows that there are only three factors formed. Because the three factors have a total value of eigenvalues above 1, that is, 1.881 for factor 1, 1.520 for factor 2, and 1.208 for factor 3, so the factoring process stops at three factors that will participate in the next analysis.

Figure 1 Screen Plot Component Number

The scree plot graph shows that from one to two factors (the line from the Component Number axis = 1 to 2), the direction of the graph decreases. Then from number 2 to 3, the line still decreases. Whereas from number 3 to number 4 is below 1 from the Y (Eigenvalues) axis. It shows that three factors are best for summarizing the eight variables.

Table 6 Component Matrix^a

	Component		
	1	2	3
Age	.350	.304	.478
Education	-.522	.488	-.461
Skills	.574	.448	.080
Outpouring work time	.669	-.187	-.308
Health	-.593	-.057	.454
Language	-.387	.411	.419
Art	.348	.770	.088
Use of technology	-.291	.435	-.526

Having known that the three factors are the most optimal number, it can be seen in the Component Matrix table showing the distribution of the eight variables in the three factors formed. While the numbers in the table are factor loadings, which shows the magnitude of the correlation between variables with factor 1, factor 2, and factor 3. The process of determining which variables will go into which factors, is done by doing a large ratio of correlation on each line. In the component, the matrix table shows a correlation above 0.5. in factor 1 is the skill and outpouring of work time. In factor 2, the art variable. While in factor 3 there is no

correlation above 0.5. Furthermore, the process of Rotation or rotation factor is applied to the factors formed. The purpose of rotation is to clarify variables that fall into certain factors.

Table 7. Rotated Component Matrix^a

	Component		
	1	2	3
Age	.575	.129	-.311
Education	-.044	.207	.823
Skills	.687	-.252	-.044
Outpouring work time	.123	-.730	-.173
Health	-.227	.707	-.101
Language	.239	.653	.103
Art	.818	-.002	.230
Use of technology	.020	-.016	.741

The result of the rotation process Component Matrix (Rotated Component Matrix) shows a more transparent and more apparent variable distribution. It was seen that the loading factor that was once small was getting smaller and a large loading factor was increasingly enlarged. Based on the results of the component matrix, it is known that out of eight factors, what is feasible to influence family income are three factors derived from:

- The biggest component 1: Art
- The biggest component 2: Health
- The biggest component 3: Education

After obtaining the results that there are three relevant variables, such as the arts, health and education of coastal women that are considered relevant in influencing the welfare of fishermen families in the Pahlawan village, then the variables that will be used in the subsequent analysis use Path Analysis (Intervening) analysis.

The confirmatory factor analysis (CFA) test results show that the KMO value and Bartlett's test value indicate the value of the correlation matrix formed is an identity matrix, in other words, the factor model used is excellent. Furthermore, the communalities table shows the results of extraction individually; there are six variables that have contributed more than 50%, such education, ignition, work time, health, art, and technology use, while the age and language variables have an extraction value below 50%.

The total variance results are explained in the initial Eigenvalues table. It is known that there are only three variables that are factors influencing income as a proxy of economic independence, because of these three factors have a total value of eigenvalues above 1, such as age, education, and skills, so the factoring process stop on just three variables that will participate in the next analysis. It is reinforced by the scree plot graph which shows the direction of the graph decreasing from the second point, and the third point is still above the number one on the Y-axis, while from four to eight is already below the one from the Y (Eigenvalues) axis. It shows that there are three best factors to summarize the eight variables.

4.2. Path Analysis Result

After conducting the CFA Test and the results were obtained that there were three relevant variables in influencing the welfare of the art family, health and education. Path Analysis or path analysis is divided into direct influence analysis and secondary influence analysis. If the

direct influence is greater than the indirect effect, then the intervening variable has less role and vice versa.

Table 8. Pathway Analysis I

Model	Unstandardized Coefficients		Standard ized Coeffici ents	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-618.198	367.617		-1.682	.098
Art	706.331	159.300	.513	4.434	.000
Health	261.286	162.683	.188	1.606	.113
Education	-78.842	166.904	-.048	-.472	.638

Table 8 is the value of path 1 (P1), it can be seen that the standardized beta value for art is 0.513 and is significant at 0.000, which means that art influences the wife's income. The table is the value of path 2 (P2), the standardized beta value for wife's income is 0.674 and is significant at 0.000, which means that a wife's income affects family income.

The value of $P3 = (1 - 0.683) \cdot 2 = 0.533$.

0,683 (Adjusted R square line II)

Equation I : $Z = 0,513p1 + 0,674p2 + 0,533p3 + e_1$

Figure 2. Path Analysis of the Influence Between Arts on Wife and Family Income

Based on the picture above, the results of path analysis show that art has a direct effect on family income and can also have an indirect effect, such as from the influence of art to wife's income (as an intervening variable) and then to family income.

- The amount of direct influence of art on family income ($P3$) = 0.533
- Large indirect effect of art on family income through wife's income ($P1 \times P2$) ($0,513 \times 0,674$) = 0,346
- The amount of the total effect as the mediating influence of art on family income through wife's income (direct influence + indirect influence) = $0.533 + 0.346 = 0.879$.
- The conclusion of total value as mediating influence is greater than the value of direct influence and indirect influence.

The calculation results obtained show the mediation value of the influence of art on family income through wife's income (0.879) greater than the direct influence of art on family income (0.533). These results indicate that art influences family income through wife's income as an intervening variable, or it can be concluded that wife's income becomes a

variable that mediates between art and family income, hence wife's income functions as an intervening variable. Table 5.18 is the value of path 1 or path 1 (P1), it can be seen that the standardized beta value for health is 0.188 and is significant at 0.113 which means that health does not affect the wife's income. Figure 2 is the value of path 2 or path 2 (P2), it can be seen that the standardized beta value for wife's income is 0.674 and is significant at 0.000 which means that wife's income affects family income.

The value of $P_3 = (1 - 0,683)^2 = 0,533$.

0,683 (Ad value R square line II)

Equation I : $Z = 0,188p1 + 0,674p2 + 0,533p3 + e_1$

Figure 3. Path Analysis of the Effect Between Health on Wife and Family Income

Based on the picture above, the results of path analysis show that health has a direct effect on family income and can also have an indirect effect, from the influence of health to wife's income (as an intervening variable) and then to family income.

- The amount of direct health influence on family income (P_3) = 0.533
- Large indirect effect of art on family income through wife income ($P_1 \times P_2$) (0.188×0.674) = 0.126
- The amount of total influence as a mediating effect of health on family income through wife's income (direct influence + indirect effect) = $0.533 + 0.126 = 0.659$
- The conclusion of total value as mediating influence is greater than the value of direct influence and indirect influence.

The calculation results obtained show the mediation value of the influence of health on family income through wife's income (0.659) greater than the direct influence of health on family income (0.533). These results indicate that health influences family income through wife's income as an intervening variable, or it can be concluded that wife's income becomes a variable that mediates between health and family income, hence wife's income functions as an intervening variable. The earlier figure is the value of path 1 or line 1 (P1), it can be seen that the standardized beta value for education is 0.048 and is significant at 0.638 which means that education does not affect the wife's income. Figure 3 is the value of path 2 or path 2 (P2), it can be seen that the standardized beta value for wife's income is 0.674 and is significant at 0.000, which means that wife's income affects family income.

The value of $P_3 = (1 - 0,683)^2 = 0,533$.

0,683 (Ad value R square line II)

Equation I : $Z = 0,188p1 + 0,674p2 + 0,533p3 + e_1$

Figure 4. Path Analysis of Relationship Between Education on Wife and Family Income

Based on the picture above, the results of path analysis show that education has a direct effect on family income and can also indirectly influence the influence of education on wife's income (as an intervening variable) and then on family income.

- The amount of direct influence of education on family income (P_3) = 0.533
- The indirect effect of education on family income through wife's income ($P_1 \times P_2$) (0.048×0.674) = 0.032
- The amount of the total effect as the mediating influence of education on family income through wife's income (direct influence + indirect influence) = $0.533 + 0.032 = 0.565$
- The conclusion of total value as mediating influence is greater than the value of direct influence and indirect influence.

The calculation results obtained show the mediation value of the influence of education on family income through wife's income (0.565) higher than the direct influence of education on family income (0.533). These results indicate that education influences family income through wife income as an intervening variable, or it can be concluded that wife's income becomes a variable that mediates between education and family income, the wife's income functions as an intervening variable.

Art fields owned by coastal women such as singing, "Nasyid" and "Marhaban" have an effect on the income of the village women. It is because the Nurul Huda Nasyid group in the village gets a reward if invited to community ceremonies such as weddings, circumcision thanksgiving, and child name sowing awards. Although Nasyid and Marhaban activities are not regular activities, the results of this study indicate that art influences income. The role of fishermen's wives in the South Mola village in a much-improved economy is concentrated in the informal sector.

The education of fishermen's families was significantly lower than the education of non-fishermen families, but the income of fishermen's families was much higher than the income of non-fishermen families in the coastal areas of West Java. Thus Istiqlaliyah Muflikhati's research states that the level of education does not have a significant effect on income. This statement is following the results of this study which states that education has less influence on income. The results of this study following the results of Hendra Wawansyah's [19] study showed that the income contribution of women fishermen in Juru Seberang village had a significant influence, such as 39.45% of family income. The results of Wahyu Nugraheni's [20] study revealed that besides women fishermen acting as housewives (domestic), women fishermen in Bedono village also played a role and participated in earning a living for the economic fulfillment of their families.

The role of the wife of fishers in the village of South Mola in a much increased economic concentration in the informal sector. In the economy, the participation of a wife of a fisherman in the village of South Mola is three things: being a seaweed binder, a sand miner, and a fish seller. In establishing household relations welfare in meeting economic needs, a wife needs to be able to distribute time allocations to the role of the public and domestic roles. It is because these two roles a wife of a fisherman in the village of South Mola take part in meeting economic needs due to a husband lacking in income in meeting economic needs in the life of his family. The role of coastal women empowerment in Purworejo village is manifested by changes in the household, such as changes in the amount of income that increases, changes in social status better, changes in the lifestyle of coastal women.

The local wisdom of empowering the community in the management and development of fisheries resources through the marine wisdom that is carried out annually which aims to feed fish and gather and pray together so that the sustainability of fisheries in the sea is maintained. Local wisdom after being done by the local community as a process to get blessings. The Tellasan tradition for the community was carried out on the 27th or third day, three days before the feast of fishing activities had begun to stop, this had an impact on the time given to marine biota to breed.

5. CONCLUSIONS

The CFA test results revealed that the relevant factors in influencing the income of coastal fishers women to increase their economic independence were three factors selected from the eight initial factors, such as art, health, and education. Path Analysis results show that wife's income becomes a variable that mediates between art and family income, it is concluded that Pahlawan village women who are good at arts such as Nasyid and Marhaban will be able to earn income from these arts activities and will influence their income. However, these art activities are not directly able to increase family income, meaning that art activities through wife's income can increase family income which ultimately has an impact on improving the welfare of fishing families in the Palawan village. The results of the Path Analysis show that the wife's income becomes a variable that mediates between education and family income, it is concluded that Pahlawan village women who are educated or uneducated do not significantly influence their income. Education is also not directly able to increase family income, meaning that the level of education through wife's income can increase family income which ultimately has an impact on improving the welfare of fishing families in the Pahlawan village.

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