Application of Structural Equation Modeling on Fishery Performance Drivers and Fisheries Economic Sustainability

Rinto Agustino[1], Darwati Susilastuti[2], Sugiyanto[2]
[1]*Post Graduate Student, Universitas Borobudur, Indonesia*
[2]*Post Graduate Program, Universitas Borobudur, Indonesia*

Abstract: *This study aims to model fisheries performance and fisheries' economic sustainability using structural equation modeling (SEM).The analysis used in this study is a structural equation modeling (SEM) analysis to model the variables that influence the drivers of fishery performance and the sustainability of the fishery economy. Through the results of SEM analysis, it was found that the variables of good governance (X2) and human resources (X3) had a significant effect on the fishery performance variable (Y1). The variables of fishery resources (X1), human resources (X3), and fishery performance (Y1) have a significant effect on the variable of fishery economic sustainability (Y2).*

Keywords: *SEM, Fisheries, Economic Sustainability*

I. Introduction

The United Nations Decade of Ocean Science is being leveraged by the Oceans Panel on Sustainable Development to build collective understanding and knowledge of ocean sustainability, ecosystem services, and functions, and ensure that science supports decision-making to build a sustainable ocean economy. Globally, fish and aquaculture production sectors are significant contributors to food and nutritional security (Kawarazuka and Béné, 2010; Hicks et al., 2019; FAO 2020).The Oceans Panel presents a framework with desired outcomes in key areas: ocean *wealth*, ocean health, ocean *equity, ocean* knowledge, and ocean *finance*. To implement the five focuses of the *High-Level Panel on Sustainable Ocean Economy*, the Ministry of Maritime Affairs and Fisheries has three breakthrough programs that lead to the preservation of national marine and fishery resources, namely Increased Non-Tax State Revenue (PNBP) from natural resources of capture fisheries, aquaculture for welfare, and development of cultivation villages for community economic recovery and employment. Action on all fronts is needed to achieve a sustainable ocean economy and build critical foundations for economic recovery and resilience.

Given the current era, the COVID-19 pandemic has caused major disruptions to the global economy which has resulted in huge losses to society. This increases the financial pressure on developing countries, especially underdeveloped countries. However, there are still opportunities and obligations to reorganize and build a more resilient, science-based, and prosperous future that is in harmony with nature. The ocean and the economic activities associated with it offer many opportunities to support this transition. Thus, building a sustainable marine economy is one of the most important tasks and the greatest opportunity of the current era. The importance of the fisheries sector is projected to continue its expansion, with increasing consumption propelled by rising incomes, continued population growth and urbanization. The fastest rate of in- crease is predictably in the Indo- Pacific region. At the same time, however, one-third of world fish stocks are currently classified as overfished, and there is strong evidence that another 60% is reaching the limit of sustainable yields

(Ye and Gutierrez, 2017; FAO, 2018a). Indo-Pacific region fisheries are among those inadequately assessed, with serious consequences for effective governance (Hilborn et al., 2020;FAO 2020).

Fisheries Economic Sustainability Plan explains policies and mechanisms in the sustainable use of the ocean and maximizes benefits and increases value for present and future generations. This plan provides a framework for resolving conflicts in the use of the ocean and the resources within it, as well as enabling long-term sustainable growth in the marine economy. This could include mechanisms such as regulatory reform, strategic investment in some developing sectors, marine spatial planning, integrated coastal and watershed management, and the establishment and implementation of marine protected areas and other area-based conservation measures that are effective and sustainable. help realize community contributions, positive economic outcomes, biodiversity conservation, climate change mitigation and adaptation, and sustainable fish stocks. Based on the previous descriptions, the researchers wanted to model the drivers of fisheries performance and fisheries' economic sustainability using the *structural equation modeling analysis method.*

II. Literature Review

2.1. Fishery Resources

Natural resources are everything that comes from nature that can be used to meet the needs of human life which are not only biotic components (animals, plants, and microorganisms) but also abiotic components (petroleum, natural gas, various types of metals, water, soil).) (Laksana, 2017). The utilization of natural resources is determined based on the use of these natural resources for humans. Therefore, the value of a natural resource is also determined by the value of its usefulness to humans. According to Yasin (1986), humans (residents) of a country are a resource for the country because humans can provide benefits to their country, such as labor, scientific progress, and technology that can improve the country's economy. According to Heryawan (2018), natural resources are the backbone of a region that can contribute. on GRDP and also the welfare of the community, such as the agriculture and fishery sectors which will affect it.

The definition of natural resources includes natural resources and systems that are beneficial to humans in technology, economy, and certain social conditions. Then the use of natural resources, namely as direct consumption, input for processing, consumption for further processing, and processing of resources for various purposes. Natural resources can be seen in terms of the inventory that exists at a time (*research*) or the flow of natural resource goods/services produced by the supply of these natural resources (Manik, 2003). Stocks or *reserves* indicate what is known to be available for use over time, while goods and services indicate that basic goods are being utilized. The renewability of a natural resource depends on a non-destructive management method because of some changes, the natural resource cannot be returned (*irreversible*). The availability of natural resources depends on the availability of technology, the level of costs, and social constraints. Natural resources must be viewed as part of a wider system.

Fishery Resources are natural resources, built/artificial resources, and environmental services contained in marine areas. Dahuri (1996), the potential for fisheries resources is generally divided into four groups, namely (1) *renewable resources*, (2) *non-renewable resources*, (3) marine energy, and (4) marine environmental services (*environmental services*). Resources that can be recovered consist of various types of fish, shrimp, seaweed, seagrass beds, *mangroves*, and coral reefs including coastal aquaculture activities and *marine culture*.

The availability of land is one of the potentials that can be developed for fishery activities. Likewise, coastal waters can be developed for various aquaculture activities, especially marine aquaculture. Non-recoverable resources include minerals, mining/excavation materials, oil, and gas. Energy resources consist of OTEC (*Ocean Thermal Energy Conservation*), tides, waves, and so on. Meanwhile, marine environmental services include tourism and sea transportation. Coastal and marine areas as dynamic ecosystems have very unique characteristics. The uniqueness of this area indicates the importance of managing the area in an integrated and wise manner.

2.2. *Good governance*

The idea of *governance* is closely related to the concept of institutions that unite the state, citizens, and other aspects (Deolaikar et al., 2015). Governance has three main characteristics. First, it includes government, the private sector, and civil society (and is therefore distinct from government alone). Second, it is not a product process, as it includes decisions made based on complex relationships between many actors with different goals, interests, and priorities. Third, governance is a multidimensional concept, which includes corruption. rule of law, government rule, voice and accountability, political instability and violence, and regulatory burdens (Kaufmann et al., 1999).

Genie (2000) explains the notion of *good governance*, as follows: " *Good governance* is a mechanism for managing economic and social resources that involves the influence of the state sector and non-state sector in a collective effort". *Good governance* is good governance that has been defined by various institutions that are recognized worldwide. One of these institutions is the *United Nations Development* Program (UNDP) in its policy document entitled " *Governance for Sustainable Human Development* " (1997) defines *good governance* as a synergistic and constructive relationship between the state, the private sector, and *society* (Dwiyanto, 2005). So it can be concluded that *good governance* is the implementation of solid and responsible development management that is in line with the principles of democracy and an efficient market, avoiding misallocation of investment funds and preventing corruption both politically and administratively, implementing budgetary discipline and creating legal and political frameworks for growth. business activity.

2.3. Human Resources

According to (AA Anwar, 2013), "Human resource management is a planning, organizing, coordinating, implementing, and supervising procurement, development, remuneration, integration, and separation of workers to achieve organizational goals". Human resource management can also be defined as the management and utilization of existing resources in individuals (employees). The management and utilization are developed optimally in the world of work to achieve organizational goals and individual employee development.

Furthermore, according to AF Stoner quoted by (Sondang P. Siagian, 2013), "Human resource management is an ongoing procedure that aims to supply an organization or company with the right people to be placed in the right positions and positions when the organization needs them". Meanwhile, according to (Malayu SP Hasibuan, 2011), "HR is the science and art of regulating the relationship and role of the workforce to be effective and efficient in helping the realization of the goals of the company, employees, and society".

2.4. Fishery Performance

In general, performance can be interpreted as a result of work achieved by an employee by predetermined standards and criteria within a certain period. The indicators for determining a performance according to Anwar Prabu Mangkunegara (2005) are as follows:

1. Quality.
   Quality of work is how well an employee does what is supposed to be done.
2. Quantity.
   The quantity of work is how long an employee works in one day. This work quantity can be seen from the work speed of each employee.
3. Task execution.
   Task execution is how far the employee can do his job accurately or without errors.
4. Responsibility.
   Responsibility for work is an awareness of the employee's obligation to carry out the work given by the company.

The Indonesian Ministry of Maritime Affairs and Fisheries is the Indonesian Ministry of Internal Affairs in charge of marine and fisheries affairs. In carrying out its duties and functions in the field of fisheries, the Ministry of Maritime Affairs and Fisheries cannot reach every work area in every province or district/city. Therefore, the Minister makes regulations that contain the division of labor. Thus, it can be concluded that water performance is a result of work achieved by a person by predetermined standards and criteria in charge of fisheries affairs.

2.5. Digitizing Fisheries

The definition of digitization according to Terry Kuny (2014) is "referring to the process of translating a piece of information such as a book, sound recording, image or video, into bits. A bit is the basic unit of information in a computer system. Meanwhile, according to Marilyn Deegan (2008), "digitalization is the process of converting all forms of printed or other documents into digital presentation". In the field of libraries, the digitization process is the activity of converting printed documents into digital documents. This digitization process can be carried out on various forms of collections or library materials such as maps, ancient manuscripts, photographs, sculptures, audiovisuals, paintings, and so on. To digitize each form of collection, of course, using a different way. For example, for sculptures and paintings, they usually use a digital camera or record them in the form of moving images to produce digital photos or videos. As for other printed documents usually use a *scanner machine.*

2.6. Fisheries Economic Sustainability

Marine Economy according to Kildow et al (2009) is an economic activity that depends on the sea and its products. The marine economy originates from the oceans (or large lakes) whose resources become inputs of goods and services directly or indirectly in their economic activities. Sulistyo (2004) defines marine economy as the utilization of a water area that is designated as an area of economic growth based on the character possessed by each group of waters. Adisasmita (2006) said that the maritime economy or the archipelago economy studies the problem of economic linkages and dependence between land areas and between water areas within an archipelagic area.

Dahuri (2008) argues that the marine economy organizes and develops a marine-based economy, which is the basis for the growth and development of marine-related sectors (fishery, environmental tourism, mining/oil and gas), as well as the transportation, construction, and marine services industries. Apridar (2010) explained that the marine economy is a maritime-based economy that utilizes existing marine *resources*, both biological such as fish, seaweed, and other biota as well as non-biological ones such as oil, natural gas, and mineral materials and services. *services).* Kildow et al (2009) and Colgan (2013) have categorized the scope of the marine economic sector, namely construction, biological resources, minerals, ship and boat building, tourism, and recreation to sea transportation. So it can be concluded that Fisheries Economic Sustainability is a maritime-based economy by utilizing existing resources in the sea, both biological and service.

III. Methodology

3.1. Research data

This study uses secondary data that will be obtained from the Central Statistics Agency (BPS) and Local Government Implementation Reports (LPPD) for each Regency/City that has a marine area. The data obtained from BPS are data for the variables of Fishery Resources, Fishery Performance, and Fisheries Economic Sustainability. Reports on the Implementation of Local Governments in each province can be used to obtain data for the variables of Human Resources and Fisheries Performance.

3.2. Research variable

The variables in this study are Fishery Resources (X1), *Good Governance (X2*), and Human Resources (X3) variables which are exogenous. Furthermore, this research involves a moderating variable, namely (X4) Fisheries Digitization. While the endogenous variables are Fishery Performance (Y1) and Fisheries' Economic Sustainability (Y2). The analysis used in this study is structural equation modeling (SEM) analysis.
[Make the SEM image]

IV. Results and Discussion

4.1. Results of Structural Equation Modeling (SEM) Analysis

In the SEM analysis, there are two models, namely the outer model and the inner model. Overall model testing in SEM involves an integrated structural model and measurement model. According to Solimun (2002), the model is said to be good if the hypothetical development conceptually and theoretically is supported by empirical data.

4.1.1. Model Feasibility Test

Test the feasibility of the model or goodness of fit testing the suitability of the mode with the research data owned. The goodness of *fit* in question is an index or measure of the goodness of the relationship between latent variables (*inner model*) related. with his assumptions. In this study, the criteria for determining the goodness/feasibility of the model can be seen in Table X.

Table X. Model Feasibility Test Results

No. –	*Model Fit* / Quality Index	Score	Criteria	Information
1	*Average path coefficient*	APC = 0.245 P < 0.008	P < 0.05	Significant
2	*Average R-squared*	ARS = 0.422 P < 0.001	P < 0, 05	Significant
3	*Average adjusted R-squared*	AARS = 0.392 P < 0.001	P < 0, 05	Significant
4	*Average block* VIF	AVIF = 1 . 077	*acceptable* if AVIF 5 ideal if AVIF 3, 3	Ideal
5	*Average full collinearity* VIF	AFVIF = 1.525	*acceptable* if AFVIF 5 ideal if AFVIF 3, 3	Ideal
6	*Tenenhaus GoF*	GoF = 0.432	small if GoF 0, 1 medium if GoF 0, 25 large if GoF 0, 36	Big
7	*Sympson's paradox ratio*	SPR = 0.857	*acceptable* if SPR 0, 7 ideal if SPR = 1	*Acceptable*
8	*R-squared contribution ratio*	RSCR = 0.997	*acceptable* if RSCR 0, 9 ideal RSCR = 1	*Acceptable*
9	*Statistical suppression ratio*	SSR = 1, 000	*acceptable* if SSR 0, 7	*Acceptable*
10	*Nonlinear bivariate causality direction ratio*	NLBCDR = 0.857	*acceptable* if NLBCDR 0, 7	*Acceptable*

Source: Primary Data Processed (2019)

Table X is a summary of the results obtained in the analysis and the recommended values for measuring the feasibility of the model. Based on the results of the overall model feasibility test, all the criteria have reached the expected value limits or have met the recommended critical limits of Goodness of fit indices, so that the results of this modeling can be accepted or worthy of analysis. It can be stated that this test produces good confirmation of the variables and causality relationships between variables. The overall model test shows good results or is in line with expectations, meaning that empirical data (field data) has supported the theoretical model developed.

4.1.2. Variable Measurement Model (Outer Model)

The value of *outer loading* (for reflexive indicators) and *outer weight* (for formative indicators) shows the weight of each indicator as a measure of each latent variable. In this study, a formative model is used so that the largest *outer weight* shows that the indicator is the strongest (dominant) variable measuring.

The Fishery Resources variable is measured by a formative indicator model, so it is necessary to pay attention to the value of the *outer weight* to determine the strength and weakness of the influence of each indicator on the Fishery Resources variable. This variable is measured by five indicators, namely aquaculture production by province and type of cultivation (tons)(X. 1.1),Capture fisheries production in public waters (tons) (X.1.2), Capture fisheries production value (thousand rupiah) (X.1.3), Capture fisheries production in marine waters (tons) (X.1.4), and Area of aquaculture according to province (ha) (X.1.5). Table X presented a significant measurement model measuring the Fishery Resources variable (X.1).

Variable	Indicator	Weight	P value	Information
Fishery Resources (X.1)	Aquaculture production by province and type of cultivation (tonnes)(X 1.1)	0.230	0.023	Significant
	Capture fisheries production in public waters (tonnes) (X.1.2)	0.190	0.050	Significant
	Capture fisheries production value (thousand rupiahs) (X.1.3)	0.364	<0.001	Significant
	Capture fisheries production in marine waters(tons) (X.1.4)	0.388	<0.001	Significant
	Area of aquaculture by province (ha) (X.1.5)	0.240	0.018	Significant

The first indicator on the measurement of the Fishery Resources variable(X.1) is aquaculture production by province and type of cultivation (tons)(X 1.1). The outer *weight* is 0.230, and *the p-value is* 0.023 (significant), then the aquaculture production indicator by province and type of cultivation (tons)(X.1.1), significant as a measure of Fishery Resources (X.1) . The level of fishery resources (X.1) is determined by the high and low aquaculture production by province and type of cultivation (tons)(X 1.1).

The second indicator that measures the variable of Fishery Resources (X.1) is Capture fisheries production in public waters (tons) (X.1.2). Obtained *outer weight* of 0.190, and *p-value* of 0.050 (significant), then the indicator of capture fisheries production in public waters (tons) (X.1.2), is significant as a measure of Fishery Resources (X.1) . The level of fishery resources (X.1) is determined by the high and low production of capture fisheries in public waters (tons) (X.1.2).

Furthermore, the third indicator that measures the Fishery Resources variable (X.1) is the value of capture fisheries production (thousand rupiahs) (X.1.3). In this third indicator, the *outer weight is* 0.364, and *the p-value is* <0.001 (significant), then the capture fisheries production value indicator (thousand rupiahs) (X.1.3) is significant as a measure of Fishery Resources (X.1) . The level of fishery resources (X.1) is determined by the high and low value of capture fishery production (thousand rupiah) (X.1.3).

The fourth indicator that measures the Fishery Resources variable (X.1) is Capture fisheries production in marine waters (tons) (X.1.4). The *outer weight* of the fourth indicator is 0.388 and *the p-value is* <0.001 (significant), then the indicator of Capture fisheries production in marine waters (tonnes) (X.1.4) is significant as a measure of Fishery Resources (X.1) . Thus, the level of fishery resources (X.1) is also determined by the high and low production of capture fisheries in marine waters (tons) (X.1.4).

The last indicator that measures the Fishery Resources variable (X.1) is the area of aquaculture by province (ha) (X.1.5). *Outer weight* indicator The area of aquaculture by province (ha) (X.1.5) is 0.240 and *the p-value is* 0.018 (significant), then the indicator of Area of aquaculture by province (ha) (X.1.5) is significant as a measure of Resources Fisheries (X.1) . Thus, the level of fishery resources (X.1) is also determined by the area of aquaculture by province (ha) (X.1.5).

Based on the explanation of the paragraph above, of the five significant indicators measuring Fishery Resources(X.1) namely aquaculture production by province and type of cultivation (tonnes) (X.1.1), capture fishery production in public waters (tons) (X.1.2), capture fishery production value (thousand rupiahs) (X.1.3), Production of capture fisheries in marine waters (tons) (X.1.4), and area of aquaculture by province (ha) (X.1.5) as seen from the magnitude of the *Outer weight* coefficient, it is obtained that Capture fisheries production in marine waters (tons) (X.1.4) as the largest measure of Fishery Resources(X.1) because it has the largest *outer weight value* compared to other indicators. That is, Fishery Resources (X.1) are mainly seen in Capture fisheries production in marine waters (tons) (X.1.4).

The second independent variable used in this study is Good Governance (X.2) which is measured by a formative indicator model so it is necessary to pay attention to the value of *outer weight* to determine the strength and weakness of the influence of each indicator on the Good Governance variable. This variable is measured by four indicators, namely the Indonesian democracy index by aspect and province(X 2.1),Dimensions of life satisfaction based on security conditions (X.2.2), Information on resources available to frontline service delivery units (X.2.3), and Public access to local financial information (Public access to fiscal information). (X.2.4). In Table X, a significant measurement model is presented to measure the Good Governance (X.2) variable.

Variable	Indicator	Weight	P value	Information
Good Governance (X.2)	Indonesian democracy index by aspect and province(X.2.1)	0.420	<0.001	Significant
	Dimensions of life satisfaction based on security conditions (X.2.2)	-0.252	0.014	Significant
	Information on resources available to frontline service delivery units (X.2.3)	0.462	<0.001	Significant
	Public access to local financial information (Public access to fiscal information) (X.2.4)	-0.395	<0.001	Significant

The first indicator that measures the Good Governance variable(X.2) is Indonesia's democracy index by aspect and province(X. 2.1) . After the analysis, the *outer weight* of the indicator is 0.420 with a *p-value* of <0.001 (significant), then the Indonesian democracy index indicator by aspect and province(X. 2.1), significant as a measure of Good Governance(X.2). High and low Good Governance(X.2) is determined by the high and low of the Indonesian democracy index by aspect and province(X. 2.1).

The next indicator that measures the Good Governance variable(X.2) is the dimension of life satisfaction based on security conditions (X.2.2) with an *outer weight* of -0.252 with a *p-value* of 0.014 (significant), then the indicator of the dimension of life satisfaction based on security conditions (X.2.2), significant as a measure Good governance(X.2). High and low Good Governance(X.2) is negatively determined by the high and low dimensions of life satisfaction based on security conditions (X.2.2).

The third indicator that measures the Good Governance variable(X.2) is Information on resources available to frontline service delivery units (X.2.3). After the analysis, the *outer weight* of the indicator is 0.462 with a *p-value* of <0.001 (significant), then the indicator Information on resources available to frontline service delivery units (X.2.3) is significant as Good Governance gauge(X.2). High and low Good Governance(X.2) is determined by the level of Information on resources available to frontline service delivery units (X.2.3).

The fourth indicator that measures the Good Governance variable(X.2) is Public access to fiscal information (X.2.4). After the analysis, the *outer weight* of the indicator is -0.395 with a *p-value* of <0.001 (significant), then the indicator of Public access to regional financial information (X.2.4) is significant as a measure of Good Governance.(X.2). High and low Good Governance(X.2) is determined by the level of public access to financial information (Public access to fiscal information) (X.2.4).

Based on the explanation of the paragraph above, of the four indicators that significantly measure Good Governance(X.2) namely Indonesia's democracy index by aspect and province(X 2.1),Dimensions of life satisfaction based on security conditions (X.2.2), Information on resources available to frontline service delivery units (X.2.3), and Public access to local financial information (Public access to fiscal information).) (X.2.4) seen from the magnitude of the *Outer weight* coefficient, it is obtained that Information on resources available to frontline service delivery units (X.2.3) is the largest measure of Good Governance(X.2) because it has the largest *outer weight value* compared to other indicators. That is, Good Governance (X.2) is mainly seen in Information on resources available to frontline service delivery units (X.2.3).

The last or third independent variable used in this study is the Human Resources variable which is measured by the formative indicator model so it is necessary to pay attention to the *outer weight value* to determine the strength and weakness of the influence of each indicator on the Human Resources variable. Four indicators measure the Human Resources variable (X.3), namely the level of participation of citizens aged 16-18 years who participate in secondary education (X. 3.1),Participation rate of citizens aged 4-18 years with disabilities who participate in special education (X.3.2), Percentage of Competent Certified Workers (X.3.3), and Percentage of districts/cities that prepare manpower plans (X.3.4). In Table X, a significant measurement model is presented to measure the Human Resources variable (X.3).

Variable	Indicator	Weight	P value	Information
Human Resources (X.3)	The participation rate of citizens aged 16-18 years participating in secondary education (X .3.1)	0.584	<0.001	Significant
	The participation rate of citizens aged 4-18 years with disabilities participating in special education (X.3.2)	0.590	<0.001	Significant
	Percentage of Competent Certified Workers (X.3.3)	-0.090	0.224	Non Significant
	Percentage of districts/cities that have prepared manpower plans (X.3.4)	0.191	0.049	Significant

The first indicator that measures the Human Resources variable(X.3) is the participation rate of citizens aged 16-18 years who participate in secondary education (X. 3.1) . Through SEM analysis, the *outer weight* indicator is 0.584 with a *p-value* of <0.001 (significant), then the indicator of the participation rate of citizens aged 16-18 years who participates in secondary education (X. 3.1), is significant as a measure of Human Resources(X.3). High and low Human Resources(X.3) is determined by the participation rate of citizens aged 16-18 years participating in secondary education (X. 3.1).

The second indicator that measures the Human Resources variable (X.3) is the participation rate of citizens aged 4-18 years with disabilities participating in special education (X.3.2). Through SEM analysis, the *outer weight* indicator was obtained of 0.590 with a *p-value* of <0.001 (significant), then the indicator of the level of participation of citizens aged 4-18 years with disabilities participating in special education (X.3.2), significant as a measure of Resources Man(X.3). High and low Human Resources (X.3) is determined by the participation rate of citizens aged 4-18 years with disabilities participating in special education (X.3.2).

Furthermore, the Percentage of Competent Certified Workers (X.3.3) becomes the third indicator for the Human Resources variable (X.3) with an *outer weight* of -0.090 and a p-value of 0.224 (not significant). This indicates that the Percentage of Competency Certified Workers (X.3.3) cannot measure the level of Human Resources (X.3).

The fourth indicator that measures Human Resources is the Percentage of districts/cities that prepare manpower plans (X.3.4). The size of the outer weight resulting from the Percentage indicator of districts/cities that compose manpower plans (X.3.4) is 0.191 with a p-value of 0.049 (significant). High and low Human Resources(X.3) are determined by the percentage of districts/cities that prepare manpower plans (X.3.4).

Based on the description above, of the three significant indicators measuring Human Resources(X.3) namely the participation rate of citizens aged 16-18 years who participate in secondary education (X.3.1), the participation rate of citizens aged 4-18 years with disabilities participating in special education (X.3.2), and Percentage districts/cities that prepare manpower plans (X.3.4) which can be seen from the magnitude of the *Outer weight* coefficient, it is found that Information on the participation rate of citizens aged 4-18 years with disabilities who participate in special education (X.3.2) is the largest measure of resources. Man (X.3) because it has the largest *outer weight value* compared to other indicators. That is, Human Resources (X.3) is mainly seen in the participation rate of citizens aged 4-18 years with disabilities who participate in special education (X.3.2).
Y1

Fishery Performance variable is measured by formative indicator model so it is necessary to pay attention to the *outer weight value* to determine the strength and weakness of the influence of each indicator on the Fishery Performance variable. This variable is measurable. Two indicators are the Total Fishery Production Amount (Y.1.1) and the Percentage of compliance by KP business actors to the provisions of applicable laws and regulations (Y.1.2). In Table X, a significant measurement model is presented to measure the Fishery Performance variable (Y.1).

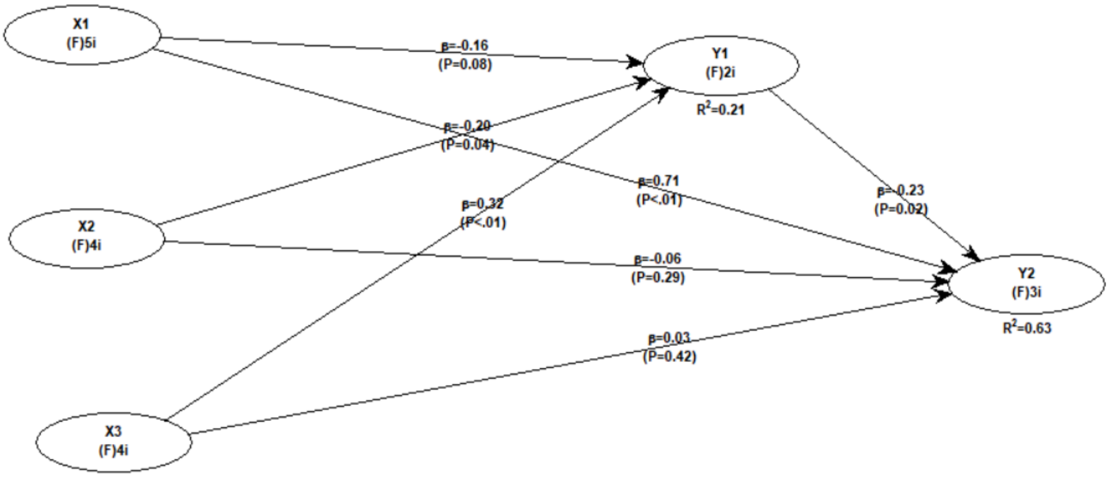
Variable	Indicator	Weight	P value	Information
Fishery Performance (Y.1)	Total Fishery Production (Y 1.1)	0.793	<0.001	Significant
	Percentage of compliance by KP business actors to the provisions of applicable laws and regulations (Y.1.2)	0.793	<0.001	Significant

Fisheries Economic Sustainability variable is measured by formative indicator model so it is necessary to pay attention to the *outer weight value* to determine the strength and weakness of the influence of each indicator on the Fishery Economic Sustainability variable. This variable is measurable Two indicators are the Number of boats/ships by province for marine fisheries (Y. 2.1), the Number of capture fisheries households by province (Y.2.2), and the Production of marine fisheries sold at TPI (Tons) (Y.2.3) . In Table X, a significant measurement model is presented to measure the Fishery Performance variable (Y.2).

Variable	Indicator	Weight	P value	Information
Fishery Performance (Y.1)	Number of boats/ships by province for marine fisheries (Y 2.1)	0.485	<0.001	Significant
	Number of capture fisheries households by province (Y.2.2)	0.502	<0.001	Significant
	Marine fishery production sold at TPI (Ton) (Y.2.3)	0.270	0.009	Significant

4.1.3. Hypothesis Model (Inner Model)

Structural model testing is essentially testing hypotheses in research. *The inner model* questions the relationship model between latent variables, some are recursive, and not recursive. The structural model presents the relationship between research variables. The *structural coefficient of* the model states the magnitude of the relationship between one variable and another. There is a significant influence between one variable on another variable if the *p-value* <0.05. The results of the direct effect are presented in Table X.



Variable		**Path Coefficient**	**P-value**	**Conclusion**
Predictor	**Response**			
Fishery Resources (X1)	Fishery Performance (Y1)	-0.162	0.082	Not significant
Fishery Resources (X1)	Fisheries Economic Sustainability (Y2)	0.709	<0.001	Significant
Good Governance (X2)	Fishery Performance (Y1)	-0.203	0.039	Significant
Good Governance (X2)	Fisheries Economic Sustainability (Y2)	-0.065	0.294	Not significant
Human Resources (X3)	Fishery Performance (Y1)	0.322	0.002	Significant
Human Resources (X3)	Fishery Economic Sustainability (Y2)	0.416	0.026	Significant
Fishery Performance (Y1)	Fisheries Economic Sustainability(Y2)	-0.227	0.024	Significant

Coefficient of Determination

Response Variable	***R-squared***
Y.1	0.214
Y.2	0.630

Effect of Fishery Resources (X1)on Fishery Performance (Y1), obtained a path coefficient of -0, 162 and *a P-value of* 0.082. Because *the P-value* >0.05, and the coefficient is negative, it indicates that there is no significant and negative influence between Fishery Resources (X 1) on Fishery Performance (Y 1). That is, the higher the fishery resources will not result in lower fishery performance. **The test results show that hypothesis 1 of this study is rejected.**

Effect *of Good Governance*(X 2) on Fishery Performance (Y1), obtained a path coefficient of -0, 203 and *a P-value of* 0.039. Because *the P-value* <0.05, and the coefficient is negative, it indicates that there is a significant and positive influence between *Good Governance*(X 2) on Fishery Performance (Y1). That is, higher *good governance* will result in lower fishery performance. **The test results show that hypothesis 2 of this study is accepted.**

Influence of Human Resources(X 3) to Fishery Performance (Y1), obtained a path coefficient of 0.322and *a P-value* of 0.002. Because *the P-value* <0.05, and the coefficient is positive, it indicates that there is a significant and positive influence between Human Resources(X 3)on Fishery Performance (Y1). That is, the higher the human resources, the higher the will befishery performance. **The test results show that hypothesis 3 of this study is accepted.**

The Effect of Fishery Resources (X1) on Fisheries Economic Sustainability (Y2), obtained a path coefficient of 0.709 and *P-value* <0.001. Because *the P-value* < 0.05, thus indicating that there is a significant and positive influence between Fishery Resources (X1) on Fisheries' Economic Sustainability (Y2). That is, the higher Fishery Resources (X 1)will result in higher Fisheries' Economic Sustainability (Y 2). **The test results show that hypothesis 4 of this study is accepted.**

Effect *of Good Governance*(X 2) on Fisheries Economic Sustainability (Y 2), the path coefficient is -0.065 and *P-value* 0, 294. Because *P-value* > 0.05, thus indicating that there is no significant influence between *Good Governance*(X 2) on Fishery's Economic Sustainability (Y 2). That is, the higher *Good Governance*(X 2) will not result in lower Fisheries' Economic Sustainability (Y 2). **The test results show that hypothesis 5 of this study is rejected.**

Influence of Human Resources(X 3) towards Fisheries Economic Sustainability (Y 2), the path coefficient is 0.416and *P-value* 0.026. Since *the P-value* < 0.05 and the coefficient is negative, this indicates that there is a significant and positive influence between Human Resources(X 3)on Fisheries' Economic Sustainability (Y 2). That is, the higher human resources will lead to an increase in the sustainability of the fisheries economy. **The test results show that hypothesis 6 of this study is accepted.**

Effect of Fishery Performance (Y1)on Fisheries Economic Sustainability (Y 2), the path coefficient is -0.2 27 and *P-value is* 0.024. Since *the P-value* < 0.05 and the coefficient is negative, this indicates that there is a significant and negative influence between Fishery Performance (Y1)on Fisheries' Economic Sustainability (Y 2). This means that the higher the fishery performance, the lower the economic sustainability of the fishery will be. **The test results show that hypothesis 7 of this study is accepted.**

There are five significant hypotheses including the influence between *Good Governance* and Fisheries Performance which is significant in the second hypothesis. Then, Human Resources Influence significant Fisheries Performance in the third hypothesis. Likewise, the Effect of Human Resources on Fisheries' Economic Sustainability is significant in hypothesis six. The significant influence between Fishery Performance on Fisheries' Economic Sustainability in the seventh hypothesis. In the eighth hypothesis, there is a significant influence between Fishery Resources which has a significant effect on Fisheries Economic Sustainability through Fishery Performance. The ninth hypothesis shows a significant influence between *Good Governance* on Fisheries' Economic Sustainability through Fishery Performance. The rest, of the two hypotheses have been tested and produce an insignificant effect, namely the effect of Fishery Resources on Fishery Performance and the influence of *Good Governance* on Fisheries Economic Sustainability.

V. Conclusion

Based on the results of the study, the following conclusions can be drawn.

1. Good governance and human resources variables have a significant effect on fishery performance
2. The variables of fishery resources, human resources, and fishery performance have a significant effect on the variable of fisheries' economic sustainability.
3. The variable of fishery resources does not affect the variable of fishery performance.
4. The good governance variable does not affect the variable of fisheries' economic sustainability.

Bibliography

[1.] Adisasmita, R. (2006). *Rural and urban development*. Graha Ilmu.
[2.] Anwar, M. (2013). *Race and politics* (Vol. 38). Routledge.
[3.] Apridar, A. (2010). The Competitiveness of Indonesian Tuna Export Facing the ASEAN Economic Community. *Aceh International Journal of Social Sciences*, *3* (1), 195642.
[4.] Colgan, JD (2013). *Petro-aggression: When oil causes war*. Cambridge University Press.
[5.] Dahuri, R., (1996), *Coastal Ecosystems*, Papers/Lecture Materials, IPB, Bogor
[6.] Dahuri, R., (1996), *Coastal Ecosystems*, Papers/Lecture Materials, IPB, Bogor
[7.] Dwiyanto, A. (2002), *Public Bureaucratic Reform in Indonesia*, Yogyakarta, Center for Population and Policy Studies UGM.
[8.] FAO, 2020. The State of World Fisheries and Aquaculture: Sustainability in Action. Foodand Agriculture Organization of the United Nations, Rome.
[9.] FAO, 2018a. The state of world fisheries and aquaculture: meeting the sustainable development goals. Food and Agriculture Organization of the United Nations, Rome. http://www.fao.org/documents/card/en/c/I9540EN/.
[10.] Genie-Rochman, M. (2000). article “Good governance: Principles. Components and Applications”, in Human Rights: Good State Administration and Citizens, Jakarta: KOMNAS HAM.
[11.] Hasibuan , MS (2011). Basic Understanding and Problems. *Jakarta: Earth Literacy*.
[12.] Hicks, C., Cohen, P., Graham, A.J., Nash, K., Allison, E., MacNeil, M.A., et al., 2019.Harnessing global fisheries to tackle micronutrient deficiencies. Nature 574, 95–98.
[13.] Hilborn, R., Amoroso, R., Anderson, M.A., Baum, J.K., et al., 2020. Effective fisheries management instrumental in improving fish stock status. Proc. Natl. Acad. Sci. Unit. States Am. https://doi.org/10.1073/pnas.1909726116.
[14.] Kawarazuka, N., B´en´e, C., 2010. Linking small-scale fisheries and aquaculture tohousehold nutritional security: an overview. Food Security 2 (4), 343–357. https://doi.org/10.1007/s12571-010-0079-y.Kildow, JT, Colgan, CS, & Scorse, JD (2009). State of the US ocean and coastal economies 2009.
[15.] Kaufmann, D., Kraay, A., & Zoido, P. (1999). *governance matters*. World Bank policy research working paper, (2196).
[16.] Kildow, JT, Colgan, CS, & Scorse, JD (2009). State of the US ocean and coastal economies 2009.
[17.] Laksana, A. (2017). Encyclopedia of Natural Resources. Yogyakarta: Khazanah-Pedia
[18.] Mangkunegara, AP, & Prabu, A. (2005). Organizational behavior and culture. *Bandung: Refika Aditama* .
[19.] Manik, KES (2003). *Environmental Management*. Jakarta: Bridge.
[20.] Siagian, SP (2013). Human Resource Management, Bandung.
[21.] Sulistyo-Basuki, L. (2004). Digitization of collections in Indonesian academic libraries. *Programs*.
[22.] Yasin, M. (1986). *Basic Natural Sciences*. Jakarta: PT Raja Grafindo Persada.
[23.] Ye, Y., Gutierrez, N., 2017. Ending Fisher overexploitation by expanding from local successes to globalized solutions. Nature, Ecology and Evolution. https://doi.org/10.1038/s41559-017-0179.