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THE ROLE OF PUBLIC SERVICES AND TECHNOLOGICAL  
INNOVATION IN IMPROVING THE WELFARE OF  
FISHERMEN IN EAST LUWU REGENCY WITH COMMUNITY  
EMPOWERMENT MEDIATION

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**Abstract:**

This study aims to analyze the role of public services and technological innovation in improving the welfare of fishermen in East Luwu Regency with community empowerment as an intervening variable. This study uses a quantitative approach with the Structural Equation Modeling (SEM) method to test the relationship between the variables involved. The results of the study show that public services have a significant positive influence on the welfare of fishermen both directly and through community empowerment. On the other hand, technological innovations do not have a significant influence on the welfare of fishermen or community empowerment. Community empowerment was found to have a significant mediating role between public services and fishermen's welfare. However, the mediation by community empowerment between technological innovation and fisherman welfare is not significant, showing that technology implementation in the fisheries sector still faces various challenges. This study recommends that the government should focus more on improving the quality of public services and community empowerment programs to support the welfare of fishermen.

**Keywords:**

Public Service, Technological Innovation, Fisherman's Welfare.



## Introduction

The fishing community in East Luwu Regency has an important role in the regional economy, especially in the provision of fish resources and other marine products. However, the welfare of fishermen in this area is still a big challenge. Some of the factors that affect the welfare of fishermen include the quality of public services received and the ability of fishermen to adopt innovative technologies that are relevant to their activities.

Good public service is one of the key factors in improving the welfare of the fishing community. Effective services include easy access to various government services such as education, health, and social assistance. According to a study conducted (Lamsal & Kumar Gupta, 2021), improving the quality of public services is positively related to improving the welfare of fishing communities in several coastal areas of Indonesia. Good quality of public services can provide the necessary support for fishermen to increase productivity and economic stability (Gayatri et al., 2013).

In addition, technological innovation also plays a very important role in improving the efficiency and productivity of fishermen. The use of modern technology in fishing, processing catches, and marketing products can significantly increase fishermen's income. Research by (Ridho et al., 2023) shows that the adoption of new technologies in the fisheries sector contributes to improving the welfare of fishermen in several developing countries. Technologies such as modern navigation systems, efficient fishing gear, and e-commerce platforms for marketing fishery products have been proven to assist fishermen in optimizing their catches and expanding markets.

However, the role of technological innovation and public services in improving the welfare of fishermen cannot be separated from community empowerment. Empowering fishing communities through training, counseling, and capacity building programs is essential to ensure that fishermen have the knowledge and skills needed to make optimal use of public services and technology (Syukur et al., 2018). A study by (Riyantini et al., 2023) emphasizes the importance of community empowerment in supporting technology adoption and improving welfare in fishing communities. This empowerment includes education on sustainable fishing practices, financial management, and effective marketing strategies.

In East Luwu Regency, the problems faced by the fishing community include limited access to public services, low technology adoption, and lack of sustainable empowerment programs. The local government has made efforts to improve public services through various initiatives, but the impact is still not optimally felt by the fishing community. Therefore, a more integrated approach is needed that involves various aspects of public services, technological innovation, and community empowerment.

Against this background, this study aims to analyze the role of public services and technological innovation in improving the welfare of fishermen in East Luwu Regency, with community empowerment as an intervening variable. The results of this study are expected to provide valuable recommendations for the government and other stakeholders in designing

more effective policies and programs to improve the welfare of fishermen. This research is also expected to make a theoretical contribution in understanding the relationship between public services, technological innovation, community empowerment, and fishermen's welfare.

### Literature Review

Public services are all forms of services provided by the government to the community with the aim of meeting needs and improving welfare. This definition includes different types of services such as education, health, and social security. The main indicators to measure the quality of public services include accessibility, responsiveness, reliability, competence, and empathy (Smith et al., 2020). Accessibility measures the extent to which services can be accessed by fishing communities without significant barriers. Responsiveness refers to the ability of public services to respond to the needs of the community quickly and appropriately.

The reliability of public services is measured based on consistency and precision in service delivery (White & Black, 2022). Competence is related to the ability and expertise of officers in providing quality services (Johnson, 2020). Empathy measures the level of attention and concern given by officers to the fishing community (Walker et al., 2021). Research by Green (2021) shows that improving the quality of public services can have a significant impact on improving the welfare of the fishing community. Therefore, it is important for the government to continue to improve these indicators in the provision of public services.

Technological innovation is the process of developing and applying new technologies to improve efficiency and productivity in various sectors, including fisheries (Tria et al., 2022). This innovation includes the use of modern fishing gear, navigation systems, and catch processing technology (Huda, 2020). Indicators used to measure technological innovation include technology adoption, technology use, technology benefits, and technology understanding level (Fauziyanti et al., 2023). Technology adoption measures the extent to which new technologies are accepted and used by fishers (Johnson & Miller, 2021).

The use of technology refers to the frequency and way of using technology in fishing activities (Sriyono & Dewi, 2021). The benefits of technology are measured based on the increase in productivity and efficiency obtained from the use of the technology (Black & Green, 2023). The level of understanding of technology is related to the extent to which fishermen understand how it works and the benefits of the technology they use (Sumartini et al., 2023). Research by Davis (2022) shows that technological innovations can increase fishermen's income and welfare through increased productivity and efficiency (Zhang et al., 2021).

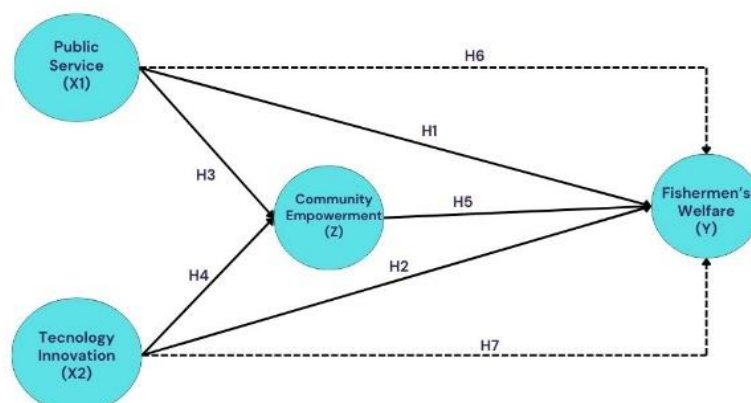
Community empowerment is the process of providing skills, knowledge, and resources to communities to increase their capacity to overcome problems and make decisions (Tunda et al., 2020). This definition includes training, counseling, and capacity building programs aimed at improving the welfare of fishing communities (Jones, 2019). One of the important indicators in community empowerment is the active participation of community members in the decision-making process. Hartono and Nasution Hartono & Nasution (2017) emphasized that community participation in fishermen's empowerment programs in Indonesia is greatly influenced by socio-cultural aspects, which include health, economy, and politics. In addition, Rahmawati et al. (2021) showed that community participation in empowerment programs can be measured through input, output, and impact indicators, which reflect community involvement in each stage of the program. Thus, participation is one of the main indicators that

show the success of community empowerment. Access to resources measures the extent to which communities can access the resources needed for empowerment (Smith, 2020). Program sustainability refers to the ability of an enablement program to be sustainable and provide long-term benefits.

The welfare of fishermen is a condition in which fishermen experience an improvement in the quality of life, both in terms of economy, social, and environment. indicators that are commonly used to measure the welfare of fishermen, but need to be balanced with a more comprehensive analysis to get a better understanding of their condition (Wijayanto et al., 2021). Research by also shows that traditional fishermen's incomes vary widely and are influenced by many factors, including age, education, and the number of family members, all of which contribute to the level of well-being (Putranto et al., 2023). Research by (sriasih, 2024) shows that the welfare of fishermen can be improved through the improvement of these indicators, as well as through appropriate policy interventions.

Previous research has shown that there is a significant relationship between public services, technological innovation, community empowerment, and fishermen's welfare (Zulkieflimansyah, 2023). Good public services can improve the welfare of fishermen directly or through community empowerment (Prapti, 2021). Technological innovation also has a significant impact on the welfare of fishermen, both directly and through capacity building and empowerment (rahmat & mirnawati, 2020).

Community empowerment plays a role as an intervening variable that strengthens the relationship between public services and fishermen's welfare (Assagaf, 2023). Likewise, community empowerment can mediate the relationship between technological innovation and fishermen's welfare. A study by (Amriwan, 2021) found that an effective empowerment program can increase the acceptance and use of new technology by fishermen, ultimately improving their well-being. As such, it is important to understand and integrate all of these variables in an effort to improve the welfare of fishermen.



**Figure. 1**  
**Conceptual Framework Of Research**

## Methodology

This study is a quantitative research using the structural equation modeling (SEM) method which aims to empirically test what subjects experience such as behavior, perception, motivation, and decision-making actions. Junaidi (2021) said that exploratory and confirmatory analysis with the SEM approach is a very popular quantitative analysis in social sciences today. Furthermore, based on the objectives of empirical studies, quantitative research can be divided into two (two), namely, estimation and prediction. This study uses a quantitative descriptive approach. This approach was chosen because this study aims to systematically and accurately describe the role of public services and technological innovations in improving the welfare of fishermen with the mediation of community empowerment in East Luwu Regency. The sample was 100 respondents. The instrument in this study is in the form of a questionnaire using a google form. The measurement scale uses a likers scale with the answer items Strongly agree (SS), Agree (S), Quite agree (CS), Disagree (TS) and Strongly disagree (STS). Data analysis uses the *Structural Equation Modeling* (SEM) technique with the help of the Smart PLS 3 application.

## Result

The respondents in this study are people in East Luwu Regency. The identity of the respondents is depicted according to table 1.

**Tabel 1. Description of Respondent Overview**

Category		frequency	%
<b>Gender</b>	Male	89	89%
	Female	11	11%
<b>Age</b>	15-25 Years	0	0%
	26-34 Years	14	14%
	35-44 Years	43	43%
	45-54 Years	32	32%
	55-65 Years	10	10%
	Diatas 65 Years	0	0%
<b>Education</b>	SD	26	26%
	SLTP	37	37%
	SLTA	25	25%
	S1	12	12%

Source: Author 2024

## Measurement Model/Outer Model Test

The results of the research conducted by looking at the measurement model/outer model test were determined by the outer loading value of each variable indicator. The determination criteria are said to be valid if the outer loading value  $> 0.07$ . The results of the research found that the outer loading values of all variable indicators of PS, TI, CE, and FW were more than 0.7 (see Table 2). In addition, to assess the model, it is said to be reliable if the value of Cronbach's Alpha is greater  $> 0.6$  and the composite reliability (CR) is higher than  $> 0.07$ . The results of the study found that the CR value of each construct was in the range above  $> 0.07$  so that it could be said that the reality was achieved (see table 2). In addition, the convergent validity indicator is achieved when the average extracted variance (AVE) the value obtained is

said to be valid if it  $> 0.50$ . The results of the analysis found that the AVE value was above the limit so that it could be said that convergent validity was achieved (see table 2).

**Table 2. Measurement Model/Outer Model Test**

Variable	Item	$\lambda$	$\alpha$	CR	AVE
<b>PS</b>	PS1	0,836	0,909	0,932	0,734
	PS2	0,831			
	PS3	0,833			
	PS4	0,887			
	PS5	0,893			
<b>TI</b>	TI1	0,934	0,916	0,940	0,798
	TI2	0,874			
	TI3	0,904			
	TI4	0,859			
<b>CE</b>	CE1	0,841	0,816	0,891	0,732
	CE2	0,827			
	CE3	0,897			
<b>FW</b>	FW1	0,769	0,846	0,897	0,686
	FW2	0,841			
	FW3	0,822			
	FW4	0,877			

Information: PS= Public Service, TI= Tecnology Innovation, CE= Community Empowerment, FW= Fishermen's Welfare

Source: Author 2024

### **Hypothesis Test**

Hypothesis testing using SEM applications is seen in table 3. for any relationship between variables. The P-Value shows the significant level between variables where if the P-value  $< 0.05$ , the relationship between the variables is said to be significant,

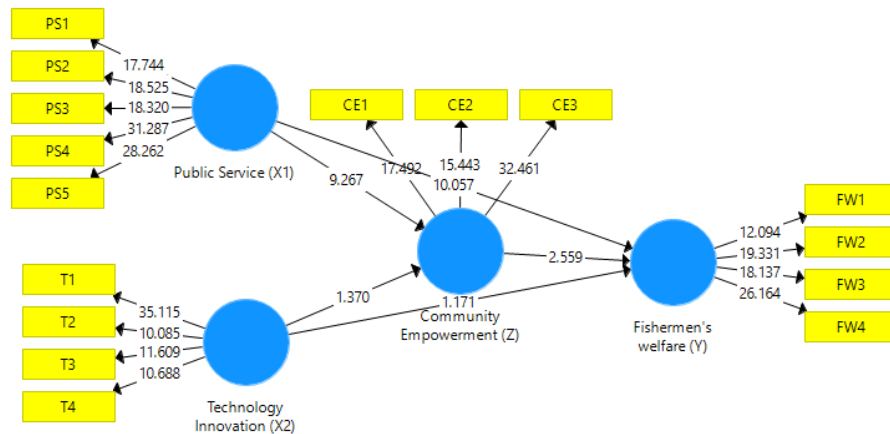
**Table 3. Hypothesis Test**

Hypothesis	Connection	$\beta$	T-Value	P-Value	Information
<b>H<sub>1</sub></b>	PS→FW	0,773	10,057	0,000	Diterima
<b>H<sub>2</sub></b>	TI→FW	0,045	1,171	0,242	Ditolak
<b>H<sub>3</sub></b>	PS→CE	0,707	9,267	0,000	Diterima
<b>H<sub>4</sub></b>	TI→CE	-0,141	1,370	0,171	Ditolak
<b>H<sub>5</sub></b>	CE→FW	0,204	2,559	0,011	Diterima
<b>H<sub>6</sub></b>	PS→CE→FW	0,144	2,454	0,014	Diterima
<b>H<sub>7</sub></b>	TI→CE→FW	-0,029	1,281	0,201	Ditolak

Information: PS= Public Service, TI= Tecnology Innovation, CE= Community Empowerment, FW= Fishermen's Welfare

Source: Author 2024





**Figure 2. SEM analysis results**

Based on the results of the hypothesis test carried out, this study found that Public Services (PS) have a significant positive influence on Fisherman's Welfare (FW) and Community Empowerment (CE), while Technological Innovation (IT) does not have a significant direct influence on Fisherman's Welfare or Community Empowerment. However, Community Empowerment (CE) has a positive impact on the Welfare of Fishermen, and Public Services, through Community Empowerment, also have a positive impact on the Welfare of Fishermen.

This study reveals that Public Services (PS) have a significant influence on the Welfare of Fishermen (FW), both directly and through Community Empowerment (CE). Community empowerment strengthened by effective public services has been shown to be able to improve the welfare of fishermen, as supported by previous research by Haryanto & Setyowati (2019), which found that quality public services contribute to improving the welfare of coastal communities. In contrast, Technological Innovation (IT) does not show a significant influence on FW or CE. These results indicate that the application of technology in the fisheries sector may still face various challenges. This may be due to the low digital literacy and access to adequate technology among fishermen, as explained by Sari et al. (2021), who stated that low technology adoption among fishermen often hinders the improvement of their welfare.

Community Empowerment (CE) itself was found to have a significant positive influence on FW. This shows that the empowerment efforts carried out, such as training and skill improvement, are able to improve the welfare of fishermen. In addition, CE also mediates the relationship between PS and FW, strengthening the positive influence of PS on FW. However, mediation by CE between IT and FW is not significant, suggesting that technological innovations have not yet delivered the expected impact without adequate support. Therefore, it is important for policymakers to not only focus on technological innovation, but also ensure that supportive public services and community empowerment programs are implemented effectively to achieve better fishermen's welfare.

### Summary and Conclusions

This research emphasizes that Public Services (PS) have a very significant role in improving the Welfare of Fishermen (FW), both directly and through Community Empowerment (CE). On the other hand, Technological Innovation (IT) does not have a significant impact on improving the welfare of fishermen or empowering the community. These results show that

although the technology has great potential, its application in the fisheries sector still faces obstacles that make it not optimal in improving the welfare of fishermen.

These findings imply that government policies should focus more on improving the quality of public services and community empowerment programs to support the welfare of fishermen. Meanwhile, the implementation of technological innovation requires a more holistic approach, including increasing digital literacy and technology accessibility for fishermen. By combining effective public services with technology-based empowerment programs that are in accordance with the needs of the community, it is hoped that the welfare of fishermen can be improved in a more significant and sustainable manner.

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