

## Factors Influencing Women Inclusion in Fish Value Chain in Kilombero District, Tanzania



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**ABSTRACT:** Fishing is among livelihood activities for many residents around the world, however, women inclusion in the fishing value chain is not equal to men. This gap is attributed by different factors. The study analyses the factors that influence women inclusion in fish value chain in Kilombero District, Morogoro. Tanzania. Cross-sectional research design involving 132 women fishers was used. Systematic random and purposive sampling techniques were used. Questionnaire survey and key informant interviews were used to gather information from women fishers and Key informants for the study. The data analysis employed Multiple linear regression and thematic content analysis. It was found that awareness on fish activities, access to market fish supply, access to credit, access to license, social responsibilities, norms and customs are the important variables influencing women inclusion in fish value chain. The study concludes that awareness on fish activities, accessibility to fish markets, credit and to license are opportunities for women to engage into fish value chain while existing cultural norms and customs social responsibilities drawbacks. The study recommends that the government needs to advocate for environment that promote opportunities for women to engage into fish value chain whilst diminishing negative cultural situation that discourage women involvement into fish value chain.

**KEYWORDS:** Fish, value chain, fish value chain, women, inclusion.

### 1. INTRODUCTION

A value chain is the entire series of activities and transactions needed to make a product and deliver it to consumers. Fish value chain passes through four nodes or fishing activities usually starts at harvesting stage at sea, lakes, river, dams, or water bodies and then the catch is brought to landing sites, (centers). Then processing activity, storage and packaging activity, marked by wholesalers to retailers and finally marketing distribution and supply it reaches to the end users (consumers) (Kiminski *et al.*, 2018).

Globally, fishery industry plays a significant role in the livelihoods of many people in terms of creation of employment, income generation and provision of principal protein to the diet (Kizito *et al.*, 2017). For example, according to FAO (2017) there are an estimated worldwide that 180 million people working in fisheries and aquaculture, of those nearly half are women. It is estimated worldwide that women make up an estimated 47% of workers (56 million women) in fish value chains worldwide, making up nearly half of the overall fisheries sector workforce (Meetei *et al.*, 2016). There is disparity in terms of women inclusion in fisheries industry since this sector is mostly dominated by men (Arthur *et al.*, 2015).

African governments recognize gender as a cross-cutting issue including measures to enhance inclusion of women in fish value chain (Torell *et al.*, 2019). Government-led gender integration appears to focus on supporting the post-harvest processing sector by encouraging value-chain changes and addressing social needs (*ibid.*). There is also a need for government authorities to extend the scope of women inclusion from a mere post-harvest participation to pre-harvest engagement (Harper *et al.*, 2017).

In Tanzania, despite the long-standing notion that fishing is dominated by men, both men and women work in different stages in the fish value chain however gender roles vary regionally based on various factors including culture and economy (FAO, 2017; Medard *et al.*, 2019). While it is common for women to participate in capturing fisheries, particularly in near shore areas and along rivers, it is post-harvest activities such as processing and marketing that typically provide income for women (Alonso-Plobacion and Siar, 2018). Women often dry, smoke, and salt or fry fish to be sold or traded at regional markets.

In Kilombero District, fish value chain is still dominated by men counterparts (Mgana *et al.*, 2019). According to the annual report (2021) Kilombero District is facing low inclusion of women in its local fish value chain Condemned on the limed access.

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Only 12.1 percent of the fish value chain actors at Lumemo ward in Kilombero District are women. Men are the main owners of fishing gears such as motor boats propelled with engines (Onyango, 2017). Off-shore fishing is regarded as a sustainable practice as such as it captures mature fish. Once the fish is brought at the landing sites, mostly women transfer the catch from the fishing boats to the drying area (Jones *et al.*, 2018). On the other hand, In Kilombero District there are few studies done on assessing factors influencing women inclusion in fish value chain.

## 2. LITERATURE REVIEW

### 2.1 Supply Chain Model

This study uses Supply Chain Model to explain the linkage between women inclusion in fish value chain and different factors that attribute to that chain. The model was pioneered by Nguyen (2018) who described that in the supply chain model there is a network between suppliers and the final buyers. This network includes different activities in fish value chain, people, entities, information, and resources. Nonetheless, in this study, people means inclusion of women. Therefore, in course of involving women in the fish supply chain there are different factors that influence the operation of the chain.

### 2.2 Empirical Literature Review

Manyungwa *et al.* (2019) conducted a study to investigate whether there was the presence of gender inclusion in fishery. The study found that men and women are included in different fish value chain projects, but women have been restricted to less competitive form of utility that has had an effect on their level of inclusion in fish value chain. This was influenced by social factor like awareness in fish activities, security in fish harvesting, having social responsibilities apart from fishing. Also, another study which was conducted in Vietnam by Alonso and Siar (2018) found that women are constrained from market fish supply, access to credits, access to own fish licenses, transport cost, access technological fish equipment's costs like owning boats, knowledge in storage and packaging for processed fish as well as poor price determination. These factors contribute to decreasing women's prospect of advancement in correlation with men who win as managers and gifted specialists.

On the other hand, studies indicate that cultural perspective influence fishing activities (Gardner *et al.* 2017; Choudhury *et al.*,2017). Studied indicated that low women inclusion in fish value chain due to the cultural factors including cultural beliefs, norms and customs, structural prejudice and patriarchal systems. They established that culture and norms act as an informal regulatory mechanism that influences access and control of resources and patriarchy hinders women to be flexible in fish value chain.

## 3. RESEARCH METHODOLOGY

The study was conducted in Lumemo Ward of Kilombero District, Morogoro Region. Tanzania and adopted cross sectional research design whereby 165 fisher women were involved. The district was selected due to the fact that is among the major fish producing area in the region (Mligo, 2015) and it bears very conducive conditions for fishing activities. The Lumemo Ward was selected because it is facing low inclusion of women in its local fish value chain whereby only 12.1 percent of the fish value chain actors are found in Lumemo Ward (Kilombero District profile, 2021). Systematic random sampling was used to select women fishers and purposive sampling to select Ward Agricultural field Officer and District Fish officer as the Key informants. A questionnaire survey with the structured questionnaire and in-depth interviews with Key informants using checklist of questions were conducted to collect primary information. Qualitative information was collected using checklists.

Quantitative data on factors influencing women inclusion in fish value chain were analyzed using Multiple linear regression model. The model was specified as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \epsilon$$

Where:

Y= Dependent variable; Women inclusion (number of women fishers)

$\beta_1 - \beta_{12}$  = Coefficients of the predictor variables

$\beta_0$  = constant of the equation.

X1 = Age of respondents

X2 = Education level of the respondent (years of schooling)

X3 = Marital status (1= Married, 0= not married)

X4= Security in fish harvesting (scores)

X5= Having responsibilities apart from fishing, (1= Yes, 0= No)

X6= Awareness in fishing activities (scale)

X7= Market fish supply (1=Existing 0= non existing)

X8= Access to credit (1=Yes 0= No)

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X9= Access to own license (1= Yes 0=No)

X10= Access to fish equipment's (1= Yes 0=No)

X11= Culture beliefs (scores)

X12= Norms and customs (scores)

$\varepsilon$  = error term

Qualitative information were analyzed using content analysis.

### 4. RESULTS AND DISCUSSION

#### 4.1 Factors Influencing Women Inclusion in Fish Value Chain

The study analyzed the data using a multiple regression model to show the individual contribution of factors influencing women inclusion (age group of women, marital status, education, security in fishing harvesting, having social responsibilities apart from fishing, awareness in fishing activities, access to market fish supply, access to credit, access to fish licenses, access to fish equipment's, cultural beliefs, norms and customs) towards inclusion in fish value chain. The results are shown in Table 1.

**Table 1. Factors influencing women inclusion in fish value chain (n= 132)**

Variable	Unstandardized Coefficients		Standardized Coefficients	t- value	p - value
	$\beta$	Std. Error	Beta		
Constant	1.311	.142		9.263	.000
Age group of women	.002	.010	.004	.177	.860
Marital status	.007	.011	.014	.632	.528
Education level	.017	.013	.031	1.362	.176
Security in fish harvesting	-.013	.014	.030	.927	.356
Social responsibilities	-.056	.015	-.114	-3.741	.000***
Awareness in fish activities	.138	.021	.297	6.496	.000***
Access to market fish supply	.184	.017	.368	11.023	.000***
Access to credit	.086	.017	.215	4.941	.000***
Access to fish licenses	.205	.012	.452	17.018	.000***
Access to equipment's	.028	.018	.056	1.615	.109
Cultural beliefs	.011	.013	.024	.808	.420
Norms and customs	-.034	.015	-.074	-2.283	.024**

$\beta$  = Coefficient; SE= Standard error

Note: \*\* and \*\*\* indicate statistical significance at 10%, 5% and 1% significance levels respectively.

The results revealed that there is a negative relationship between having social responsibilities and women inclusion in the fish value chain ( $\beta = -0.056$ ;  $P = 0.000$ .) and the relationship between variables was statistically significant (Table 1). These results indicate that social responsibilities apart from fishing (e.g. generally combining work, household, community activities etc.) have negative contribution towards women inclusion.

For instance the interview with District Fish Officer who had this to say; "...Barriers are such as heavy family responsibilities (e.g. generally combining work, household, community activities etc.) have negative contribution toward women inclusion". ( District Fish Officer- Kilombero District, 03/08/2022)

The result implies that most of women reported that domestic activities such as caring family children limit their time to engage in fishing activities. Also their main obstacles appear to lack confidence in their abilities in finding sufficient time in participating in fishing activities, as result majority of them are holding back from participating in fishery activities.

The results revealed that there is a positive relationship between awareness in fish activities and women inclusion in the fish value chain ( $\beta = 0.138$ ;  $P = 0.000$ ) and the relationship between variables was statistically significant (Table 1). These results indicate that more the women have awareness in fish activities, the higher is the probability they engage in fish value chain. The result implies that most of women who were aware in fish value chain were engaged in fishing activities and this led to influence women inclusion in fish value chain. Some of women get aware through media women groups and involve in fish value chain. These results concur with Hara *et al.*, (2017) who found out that awareness in fish activities have positive significant contribution towards women inclusion.

The results revealed that there is a positive relationship between access to market fish supply and women inclusion in the fish value chain ( $\beta = 0.184$ ;  $P = 0.000$ ) and the relationship between variables was statistically significant (Table 1). These results indicate that most of women they access to market fish supply in fish value chain. The result implies that some of the women

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were directly participates in access to market fish supply in decision-making about market distribution. Having access to market fish supply is one of their reasons to why they are included in fishing activities. This finding also concurred with Lynch *et al.* (2016) which established that women may have advantaged in finding market, they still play a significant role in fishery value additions.

The results revealed that there is a positive relationship between access to credit and women inclusion in the fish value chain ( $\beta=0.086$ ;  $P=0.000$ ) and the relationship between variables was statistically significant (Table 1). These results indicate that more women have access to credit which support to involve in fish activities. These results imply that the more women have access to credit the more inclusive in fish value chain and vice versa is true. Most of them they get loans from government and private sectors and support to run fishing activities. These results concur with scholars such as Shelly and Costa (2001) who argued that access to credit have positive significant contribution towards women inclusion.

The results revealed that there is a positive relationship between access to licenses and women inclusion in the fish value chain ( $\beta=0.205$ ;  $p=0.000$ ) and the relationship between variables was statistically significant (Table 1). These results indicate that women who have access to licenses they participate in fish activities than women who have no access to licenses. These results imply that most of women who have access to fish licenses were engage in fishing activities in all chain or nodes and increase number of inclusion in fish value chain. License help women to involve with confidence in fishing activities due to government issues. These results concur with scholars such as Frangoudes and Gerard (2019) who argued that access to licenses have positive significant contribution towards women inclusion.

The results revealed that there is negative relationship between norms and customs and women inclusion in the fish value chain ( $\beta= -0.034$ ;  $P=0.024$ ) and the relationship between variables was statistically significant (Table 1). These results indicate that existence norms and custom discourage women to involve in fish value chain. The result implies that customs and norms discriminate women in engage in fishing activities and engage in other activities apart from harvesting activities. One of the interviews with the Ward Agriculture Field Officer- Lumemo Ward, reported that;

*"...There is some of norms and customs believe that women are not allowed in harvesting activities. This culture hinder by excluding women in harvesting stage they perceive that if women were in their monthly period menstruation cycle when inter into water fish are disappear."* (Ward Agriculture Field Officer - Lumemo Ward, 03/08/2022)

These result concur with Kleiber *et al.* (2017) who found norms and customs having negative contribution towards women inclusion in fish value chain.

## 5. CONCLUSION AND RECOMMENDATIONS

The study concluded that there is a strong significant relationship between women access and control over fish resources and inclusion in fish value chain. There was relationship between factors influencing women inclusion and inclusion in fish value chain, and some of the factors relationship between variables was statistically significant. These factors are such as awareness in fish activities, access to credit, access to licenses and access to market fish supply. Also these factor have positive contribution toward women inclusion in fish value chain because help women to involve in fish value chain. While factors like norms and customs, having social responsibilities have negative contribution toward women inclusion in fish value chain because these factors hinder women to be involved in fish value chain.

The study recommend that fish vendors need for policy makers to establish local fish forum so as to offer education regarding those cultural norms that play as barrier for the women to have a full participation in fish value chain. This can be done by strengthening Gender mainstreaming strategy which according to Tanzania National Fisheries Policy of 2015 is the strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation with regards to fisheries management and development. By doing so, we render with Tanzania National Fisheries Policy of 2015 which advocating on creation of more and better employment opportunities in fisheries and aquaculture for both women and men is necessary in poverty reduction in this country.

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