Determinants of Fishers' Performance in Lamu County, Kenya.

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Abstract

Marine and coastal fisheries remain an important enterprise world over especially to the communities living adjacent to the water bodies. That has made many countries invest a lot in terms of research, harvesting, marketing and support to the fishing communities. However in developing economies, fishing has variously been identified as among the lowly paying livelihoods. The study aimed at identifying the various determinants of fishers' performance in Lamu County, Kenya which is characterized by over 65 islands, inhabited by over 100,000 people who depend to a large extent on fishing; especially the indigenous Bajun Community. The two main determinants studied were technology in use and market availability. Snowball sampling was used and 90 fishers sampled across the 6 inhabited islands of the county.

The study observed that the fishers using efficient and effective technology had better income compared to those who depended on traditional or less modern fishing gears. Most fishers using modern fishing methods were younger, more educated and used fishing gears from traders. On the other hand the fishers who relied on traditional fishing gears were older, less educated and depended on their own fishing gears which were less efficient. It was also observed that most of the modern fishing gears were owned by traders who hired the fishers. The proceeds from the fishing were ultimately shared where the fishers got one third so as to share among themselves as the other two thirds went to the boat and the other fishing gears' owner. Both the buyer and the owner of the boats and fishing gears controlled both the type of fish and quantity to be harvested by the fishers a factor which constrained their performance. Lack of cold storage facilities, and inappropriate skills were also observed as other challenges to fishers' performance.

The study findings concurred with other studies which variously emphasized on the efficiency and effectiveness of the technology and market availability as necessary in enhancing fishers' performance.

In conclusion, it was observed that fishers remained poor beneficiaries in the value chain despite the efforts put in place. The owners of boats and fishing gears continued benefiting from the enterprise with little concern of the plight of the fishers. Buyers of fresh fish had very high bargaining power in the business with the fishers remaining under their mercy. Among the recommendations put forward include encouraging fishers to save from their proceeds so as to acquire their own fishing gears. There was also need for the agreements between the fishers and the owners of the boats and other fishing gears to be reviewed and harmonized for the benefit of the fishers' who are the first level players in the value chain. The various players in the fisheries subsector need to come up with strategies of supporting provision of cold storage facilities in the islands so as to sustain the enterprise and ensure the various players in the industry were not adversely affected by the observed downward trends. Similar longitudinal studies to capture changing trends need to be conducted. Likewise, studies on the influence of the existing fishing contracts in the performance of the industry need to be conducted in other parts of the Kenyan Coastal region.

Key words: *Performance, fishers, Value chain, technology and market.*

1. Background of the Study

In Kenya, fishing has remained a key activity in Coastal and Marine waters as well as inland fisheries. MOFD(2008) indicated that over 12,000 people are involved in fishing and 250,000 depending on marine and coastal fisheries production. Apart from the fishers who happen to be the first level beneficiaries in the value chain several other parties depend on it. The (DFO 2011) observed that the lives of fishers in Lamu County had remained miserable despite its potential. DMO(2012) similarly observed that Lamu County composed of 65 islands whose most of the over 100000 inhabitants especially the indigenous Bajun community have over the years been dependent on fishing as their main livelihood strategy. However from the beginning of the 1990's most fishermen have been shifting to other livelihood strategies with over 500 households having been supported by the Arid lands resource management Program Lamu to shift to farming to supplement their dwindling income. Shao, et al (2003) observed that fisherSin Tanzania had gone down in numbers between 1994 and 1996 possibly shifting to other livelihood strategies. However in the period between 1996 and 1998 despite the number of fishers increasing the unit output in fish harvested remained low. It was equally observed that the per output share of fish harvest received by the boat owner was higher and reduced the returns to fishers since their share was lumped together as one unit. Having variously been observed that shifting from one livelihood strategy to another had always remained a coping mechanism, players in development needed to establish the factors leading to the shift so as for meaningful intervention to be put in place. The study was timely as many development agencies resorted to providing alternative livelihood strategies to the fishers in the Lamu County islands at the expense of addressing their challenges (DMO2012).

1.1 Problem Statement.

Lamu County whose main livelihood strategy has remained marine and coastal fisheries for generations has received little support if any in terms of establishing the various performance determinants of the fishers from the County. Most efforts by both the development agencies and government had focused on provision of alternative livelihood strategies to the inhabitants. (DFO2011). It was however worth noting that as the fishers embraced the other livelihood strategies efforts needed to be put in place to establish the various determinants of performance by the fishers for sustainable interventions to be put in place. DMO (2012) envisaged that efforts needed to be put in place to avoid situations where the fishing community would keep shifting from one livelihood strategy to another and also affect the other dependents of fisheries from within and outside the Lamu islands.

1.2 Research Objectives

Overall objective

The overall objective of the study was to establish the determinants of Fishers' Performance in Lamu County, Kenya

Specific objectives of the study

1. To determine the role of technology in performance of fishers in Lamu County, Kenya.

2. To establish how market influences performance of fishers in Lamu County, Kenya.

1.3: Research Questions

1. Is there any relationship between fishing technology in use and performance of fishers in Lamu County, Kenya?.

2. How does Market availability influence performance of fishers in Lamu County Kenya?

1.4 Significance of the Study

The study findings would contribute to the body of knowledge

The various players in the fisheries industry would be able to use the study findings in putting up strategies for improvement.

The government focus being put in place would ensure all areas of sustainable development were in place by mitigating the challenges faced by the fishers who form a critical element in the fisheries industry.

Other researchers would be able to identify gaps or areas for further study.

Investors would similarly be able to use the findings to revise their investment strategies.

2. Literature Review

2.1: Technology and Fishers Performance

MOFD(2008) observed technology in use as a major determinant of fishers performance. Poor fishing technology led to both low harvests and destruction of fish breeding patterns and sites. Where fishermen used poor and destructive technology the subsequent harvests normally went down. Despite the monitoring by the Fisheries department the technology in use remained a challenge especially in Lamu County.(DFO2011)

Shao, et al 2003 observed that fishermen in Tanzania used locally made dugout canoes which were less efficient compared to the motorized boats thus limiting the fish harvests. Bagumire (2009) observed that small scale fishermen harvested low levels of fish compared to the available potential due to the technologies in use. This finding supports the views of Anderson (1986) and Friedman (1998) that, small-scale fishing households in developing countries had always been unable to fully exploit the available fish resources due to the technology in use.

2.2: Market Availability and Fishers Performance.

Bagumire (2009) established that fishers with higher capacities had more potential to integrate in different markets while those without capacity to integrate different markets missed the opportunities for efficiency gains. Sesabo and Tol,(2005) found poor infrastructure as one of the major impediments to small-scale fishing households in coastal villages of Tanzania. However the study was not categorical on what infrastructure encompassed. Lack of market access similarly created disincentives in catching more fish (Bagumire 2009). The current study focused on the available market opportunities and the potential of the fishers to exploit.

2.3: Conceptual Framework

The performance of fishers is conceptualized to be always influenced by the level of technology in use and market available. That is, where the technology in use is both efficient and effective, the per unit fish output expected is always high. Bagumire (2009) identified market and technology in use as playing critical role in performance of fishers. Similarly where the market available was both reliable and enticing fishers are expected to enhance their fishing. The technology focused on the combination of tools and equipment to enable a fisher effectively and efficiently do fishing while market availability focused on the ease to harvest and market the fish by the fishers.

The owner of the fishing tools and equipment formed the moderating variable for was also expected to influence the way the fishers operated and marketed the harvests..

Performance was based on the average monthly income in dollars per fisher. Therefore performance was the dependent variable.
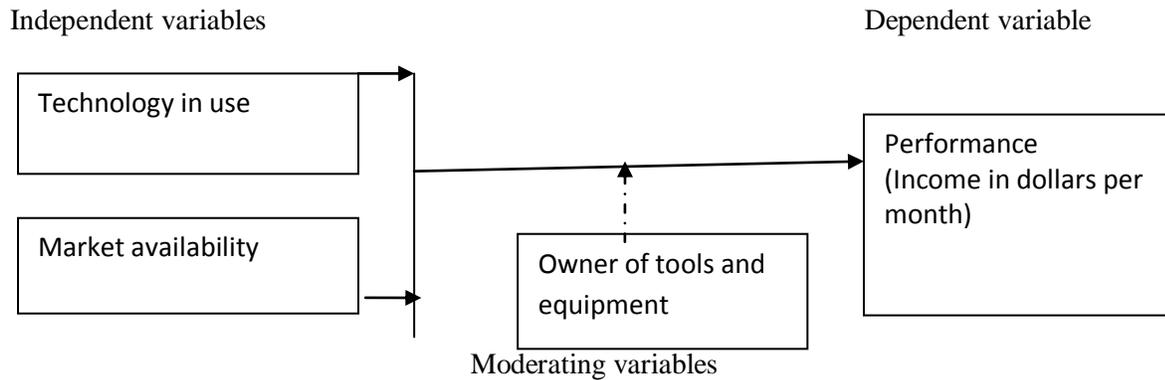
Independent variables   Dependent variable

Figure 1.Conceptual framework

3. Research Methodology

3.1 Research design.

The study employed a cross sectional survey for fishers in Lamu County, Kenya.

3.2 Population.

Fishers from Lamu County formed the study population.

3.3: The sampling frame

The sampling frame included fishers practicing or fishing during the time of the study.

3.4: Sample and sampling technique

Snow ball sampling technique was used as the target population was non static in position and operation. 100 fishers were targeted in the study.

3.5. Data collection instruments

An interview schedule was used as the main data collection instrument since most of the respondents were either semi illiterate or could not have got the spirit of the questions as expressed by the researcher thus needed clarification where necessary.

3.6: Data collection procedures.

The questionnaire developed was administered by trained research assistants after getting sensitized on the content and spirit of the questions.

3.7: Data Analysis.

The results from the study were analyzed descriptively and mean presented. Correlation analysis for the determinants was computed to establish how they correlated with performance and between themselves.

4. Data Presentation, Analysis and Interpretation

4.1: Response Rate

The study sampled 90 fishers across the 6 inhabited islands in Lamu County. Therefore since the study had targeted 100 fishers the response was 90%. The high response rate was occasioned by proper timing of the interview period and fishing schedule of the fishers. Proper sensitization of the fishers also enhanced the participation of the fishers in the study.

Table 1.Descriptive characteristics of fishers

	N	Minimum	Maximum	Mean	Std. Deviation
Education	90	0	12	5.9	3.666
Monthly Income in US dollars per fisher	90	100	270	192	47.975
Age	90	18	58	37.9	13.651
Valid N (listwise)	90				

4.2 Descriptive characteristics of fishers

All the sampled fishers were men. However it was indicated that women also had skills in fishing. The average age of the fishers was 37 years while the lowest was 18 and the highest was 58 years. It was equally indicated that as the fishers got older they engaged in less strenuous and energy requiring fishing methods.

The lowest income per fisher per month was 100US dollars while the highest was 270US dollars and the average was 192US dollars. The income was seemingly high but where fishing was the only livelihood strategy and fishers with large family sizes, it became inadequate.

The minimum education level for the fishers was 0 and the highest was 12 while the average was 5. That indicated that most fishers were primary school dropouts. With the education level of the fishers, some highly specialized fishing gears could prove difficult to use.

4.3 Correlation analysis of the fishermen characteristics

The Pearson correlation coefficient between the age and education level of fishers was -.819[**] with a p value of 0.00 therefore at $p<0.01$ the correlation was both negative and significant. The relationship shows that most old fishers were less educated than the younger fishers.

The Pearson correlation coefficient between the age of the fishers and their monthly income was -.747[**] with a p value of 0.00 therefore at $p<0.01$ the correlation was both negative and significant. Younger fishers used efficient fishing methods and were also better at sourcing for market while the older fishermen depended on local market.

The Pearson correlation coefficient between the age of the fishers and the efficiency of the fishing technology used was -.552[**] and a p value of 0.00 therefore at $p<0.01$ the correlation was both negative and significant. The most efficient fishing gears required some level of education and energy to operate which the older fishers lacked.

The Pearson correlation coefficient between the age of the fishers and the ease of accessing market was -.552[**] and a p value of 0.00 therefore at $p<0.01$ the correlation was both negative and significant. Since income level was pegged on market sourcing younger fishers were better placed in sourcing for market than the older fishers.

The Pearson correlation coefficient between the education level of fishers and income in dollars per month was .674[**] and a p value of 0.00 therefore at $p<0.01$ the correlation was both positive and significant. The more educated fishers used efficient fishing methods and were also better at sourcing for market compared to the older fishermen.

The Pearson correlation coefficient between the education level of fishers and efficiency of technology used in fishing was .797[**]and a p value of 0.00 therefore at $p<0.01$ the correlation was both positive and significant. Operations of some fishing technologies required some level of education to understand and comprehend.

The Pearson correlation coefficient between the ability of fishermen to access market and income was .797[**] and a p value of 0.00 therefore at $p<0.01$ the correlation was both positive and significant. For one to enhance income from fishing had to be able to aggressively source for market.

4.4 Challenges faced by fishers in Lamu County Kenya.

The main challenges faced by the fishers in Lamu County were poor tools and equipment, poor or lack of storage facilities during and after fishing so as to attract better market. The other challenge was market availability. The owners of the fishing gears including the boats controlled the market for fish harvested. For the fishers using their own fishing gears the main challenge was accessing market outside the islands. Buyers coming for fish from outside the islands dictated on the type of fish they would buy and even the quantities. That forced fishers to fish not based on their potential but the demand. Most fishers were constrained by the skills they had for they depended on skills learnt from their parents which were less efficient.

Table2. Challenges faced by fishers in Lamu County Kenya

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor tools and equipment	18	20	20	20
	In available storage facilities	18	20	20	40
	Poor Market availability	9	10	10	50
	Poor fishing skills	45	50	50	100
	Total	90	100	100	

5. Summary of findings, Conclusions and Recommendations.

5.1: Summary of findings.

The study aimed at establishing the determinants of performance of fishers in Lamu County, Kenya The various challenges faced by the fishermen in Lamu County formed the rationale for the study. Technology used by fishers and market availability formed the key determinants studied.

The study was guided by two research questions as indicated below.

1. Is there any relationship between technology in use and performance of fishers in Lamu County Kenya?.

2. How does Market availability influence performance of fishers in Lamu County Kenya?

The various literature reviewed observed that the technology used played a critical role in determining the present and future fish outputs. Therefore both the effectiveness and efficiency was observed as being worth putting into consideration. Market availability similarly was indicated as a motivator of fishing as areas with ready fish markets posted high fish outputs than areas with poor markets.

It was also observed from the study that most fishers performed poorly because the tools and equipment in use were less efficient and effective. Similarly, most fishers lacked their own fishing gears thus were highly exploited by the owners of the fishing gears and that de-motivated them. The owners of the fishing gears also determined the place of sale of the fish and the pricing thus leaving the fishers with little room for bargaining. The islands lacked the capacity to harvest high volumes of fish since only one island had access to electricity and also most of the fishing boats had no cold storage facilities. Buyers from outside the islands also provided restriction in terms of quantities and type of fish required and that constrained the fishers.

5.2: Discussions of the study findings

The study found a positive correlation between market and technology efficiency and income. The findings are similar with those by Sesabo and Tol, (2005) and Bagumire (2009) .However despite the findings being similar the uniqueness of the situation in the Lamu islands was that the owners of the fishing gears and the buyers highly controlled the business. The fishers from the islands have a lot of traditional skills which if upgraded would enhance their income. However, despite technology and market constraining the fishers their average monthly income was not very low indicating that the fishers in Lamu islands have a very big potential to enhance their income. Provision of storage and enhanced preservation methods could otherwise enhance their ability to source for market and increase their income.

5.3: Conclusions

Fishers still remained challenged in their efforts to enhance their income due to factors which could otherwise be overcome. Despite the fish resource potential from the islands very little has been exploited due to skills and technology challenges.

The owners of fishing gears have continued getting the biggest share of the fishing proceeds at the expense of the fishers.

The buyers of the fish products control both the quantity and type of fish to be harvested and that affects the income by the fishers.

Fish preservation facilities in Lamu County islands remain the greatest challenge to meaningful fishing as most fishers were constrained In terms of the distance to cover while fishing so as to minimize spoilage of fish.

5.4: Recommendations of the Study.

- Fishers need to be sensitized on savings, get organized in groups so as to be able to acquire credit facilities to enhance their businesses

- Simple storage facilities and technologies need to be developed to enable fishers enhance their income.

- Explore ways and means of acquiring fishing vessels with storage facilities so as to enable fishermen explore deep sea fishing.

- The various stakeholders in the subsector need to consider provision of various fishing and preservation skills to the fishers.

- The sharing of proceeds from fishing need to be regulated so as for the fishers to benefit as they always had low bargaining power

- Market availability studies need to be conducted clearly indicating the opportunity cost for the fishers in the various regions and what amounts to net income to them.

References

Anderson LG (1986) The economics of Fisheries Management. *John Hopkins University Press, Baltimore, MD, pp 27-43.*

Bagumire. A (2009) Impact of the Global Financial andEconomic Crisis on the Fish Industry In Uganda and Tanzania. Report prepared for UNIDO

DFO(2011)Annual report fisheries development Lamu County.2011.

DMO(2012)Annual report for ALRMP 2011 Lamu County, Kenya..

Friedman A (1998) World Fisheries: What is to be Done. *Baird Publications, Victoria, Australia.*

MOFD(2008) Marine waters fisheries framework survey 2008

Sesabo. J. K. and Tol, R. S. J. (2005), Technical Efficiency and Small-scale Fishing Households in Tanzanian coastal Villages: An Empirical Analysis, FNU-95 (submitted)

Shao, F.M.; Mlay, E.E.; Mushi, V.E. (2003) Review of Marine Fisheries for Tanzania. *FMSP London, UK, 81 pp.*