

FACTORS THAT INFLUENCE EFFECTIVENESS OF LOCAL ORGANIZATIONS IN PROMOTING COMMUNITY PARTICIPATION IN ARTISANAL FISHERIES MANAGEMENT IN MALAWI: A CASE OF MBENJI ISLAND FISHERY

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Abstract

While local fisheries organizations are crucial for fisheries resource management, functional local organizations can hardly ever be found in small-scale fisheries in Malawi. A study aimed at investigating and describing factors that influence effectiveness of local fisheries organizations in promoting community participation in fisheries management was conducted on the small-scale fishery of Mbenji Island, on Lake Malawi between April and December 2008. Semi-structured questionnaires were administered to a total of 150 fishers, eight village heads and five staff of Department of Fisheries (DoF). Survey data was entered and analyzed in Statistical Package for Social Scientists (SPSS). Mbenji Island fishery is identified with four dynamic organizations that are actively involved in fisheries management. They are characterized by well-defined design principles, a measure of effectiveness of institutions governing their operations in the management of resources. Besides these organizations, some socioeconomic and demographic characteristics of sampled fisherfolk were also found to have important bearing on community participation in fisheries management. The study concluded that local organizations were effective in the area due to low population density, and monitoring of internal and external pressures on resources. It is therefore recommended that policy should provide for demarcation of great lakes into fishing grounds big enough for enforcement to be both effective and cost-effective, allocated to specific Traditional Authorities (TAs) or otherwise, where fishers of a particular locality will belong. This instills a sense of ownership, responsibility and accountability for resources.

Keywords: Local fisheries organizations, Mbenji Island, Institutional design principles, Fisheries management.

Introduction

The fish stocks of Malawian waters are, undoubtedly, among the most important natural resources of Malawi (Government of Malawi (GOM), 1999). Matiya (2002) observed that fishing communities look at fishing as the only most important income generating activity. For Malawi, the per capita annual supply was 12.9kg in 1976, dropped to 9.9kg in 1986 and 5.6kg in 2000 (Matiya *et al.*, 2005). This could be attributed to over-fishing and use of illegal fishing practices due to inadequacies in implementation of management regulations by local organizations expected to monitor and enforce such regulations. Pomeroy *et al.* (2001) argue that devolution of functions is necessary for effective participation and accountability of the communities and resource user groups in resource management.

The National Fisheries and Aquaculture Policy (1999), has gone on to support co-management in stating that “participatory fisheries management has proven to be the most appropriate method to manage the fish resources in the lakes of Malawi.” Subsidiary legislation empowers communities through the Act, to formulate by-laws that can self-govern the management of the

fisheries resources in their locality (DoF, 1996; Ngwira, Ng’ombe and Nsiku, 1996).

Chief Msosa of Mbenji Island together with his subordinate traditional chiefs have upheld traditional fishery laws around the Island based on the ancestral beliefs that have been enforced for over 50 years (DoF, 2000). The Island is subjected to a closed fishing season, which begins in December and ends in April, with the aim of allowing fish to breed and stocks to recover. The fishers of Mbenji continue to achieve optimum fish harvests during every annual open season. The maintenance of fish stocks around the Island emerged to be spectacular (Scholz and Chimatiro, 2004) compared with conspicuous depletion of fish in most pockets of Lake Malawi and other water bodies (DoF, 2000; Ngochera, 2001).

In view of the current status of fisheries and fish stocks in Malawian waters, except for Mbenji, the effectiveness of management measures appeared to be limited, mainly due to open access nature of the artisanal fisheries, and ineffective enforcement of regulations. The decline of the fisheries (Weyl *et al.*, 2000) stresses the need for efficient fisheries management. Therefore, a study whose underlying aim was to investigate and

describe factors that influence effectiveness of local fisheries organizations in promoting community participation in fisheries management in Malawi was conducted. The objectives included: identification of the local organisations and their roles; assessment of the effectiveness of the local organizations; assessment of the level of community participation; and assessment of socio-economic and demographic factors that promote participation of local communities in fisheries management at Mbenji Island .

Methodology

The study was conducted at Mbenji Island, in Lake Malawi. The Island is about nine square kilometers in size and located about 15 km off the mainland at Chikombe beach in Nema Village, in the area of TA Msosa, Salima District, Central Lake Malawi (DoF, 2000).

A total of 150 fishers, 8 village heads and 5 fisheries staff were interviewed for the study during the April to December 2008 fishing season. Non-probability sampling techniques were used in the selection of fishers i.e. all fishers on the island were interviewed. Both qualitative and quantitative data were collected. A structured questionnaire with open-ended and closed-ended questions, and checklists were used during data collection. In addition, secondary data such as published and unpublished documents were used. Since most interviewees focus on the negative or problematic aspects, a strengths-based focus group discussion approach using principles of appreciative inquiry (Bushe and Coetzer, 1995) was used to validate data collected during fisher surveys. A positive approach is more generative and effective as it focuses primarily on what's right and what's present.

Data analysis was done using SPSS (version 11) and Microsoft Excel. Descriptive statistics such as percentages, frequencies and means were used for summarizing and presenting data from fisher surveys to determine the number of organizations, their roles and effectiveness. In this study where the dependent variable was defined as participating or not participating in fisheries management activities, the Logit Regression Model as outlined by Maddala (1983) was used to examine socio-economic and demographic characteristics influencing participation in fisheries management activities.

The equation used to estimate the parameters was specified as follows:

$$Y_i = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9)$$

Where

Y_i = the dependent variable, i.e. participating in fisheries management activities;

X_1 = Advice on management (ADVFM);

X_2 = Taboos (TABS);

X_3 = Years spent fishing (YSFHD);

X_4 = Alternative IGA (ALTIGA);

X_5 = Household size (HHSIZ);

X_6 = Migration (MIGRA);

X_7 = Fish catches (FISCAT);

X_8 = Landholding size (LANDSIZ);

X_9 = Education (EDULEV).

All the independent variables except YSFHD and HHSIZ are in dummy form (i.e. categorical variables coded into dichotomous variables representing variables with higher levels of measurements).

The following hypotheses were tested:

ADVFM was hypothesized to have a positive relationship to participation in fisheries management activities; it is believed that indulgence in TABS would offend the spirits that control the availability of the fish around the Island; a positive relationship was hypothesized between YSFHD and participation in fisheries management activities; ALTIGA was also hypothesized to have a positive relation to participation in fisheries management; it was hypothesized that HHSIZ would have negative influence to participation in fisheries management; it was hypothesized that MIGRA negatively influences participation in fisheries management; FISCAT of a fisher was hypothesized to have a positive influence on participation in fisheries management; LANDSIZ was hypothesized to have a positive relation to participation in fisheries management; and it was hypothesized that education positively influences participation in fisheries management.

Results

Local organizations and their roles

Respondents confirmed the involvement of four organizations in the management of Mbenji Island fishery as shown in Table 1. Over 80% of the fishers indicated that the number of organizations taking part in management of the fishery had been maintained for a decade. This suggests some kind of consistency with regards to institutional change in the fishery. Table 1 shows local organizations involved in fisheries management at Mbenji.

Table1.: Responses on local organisations involved in fisheries management (n = 150)

Organisations	Number of respondents	Percentage of respondents (Multiple response)
Beach Village Committee (BVC)	97	64.7
Mbenji Management Committee (MMC)	95	63.3
Beach Executive Committee (BEC)	12	8.0
Fisheries Committee (FC)	50	33.3

Organisations at the Island fishery have defined reporting channels as reflected in Figure 1. This is set out to eliminate chances of conflict of interests on assigned duties whilst promoting inclusive participation. MMC has taken more responsibility for management and is accountable for its decisions

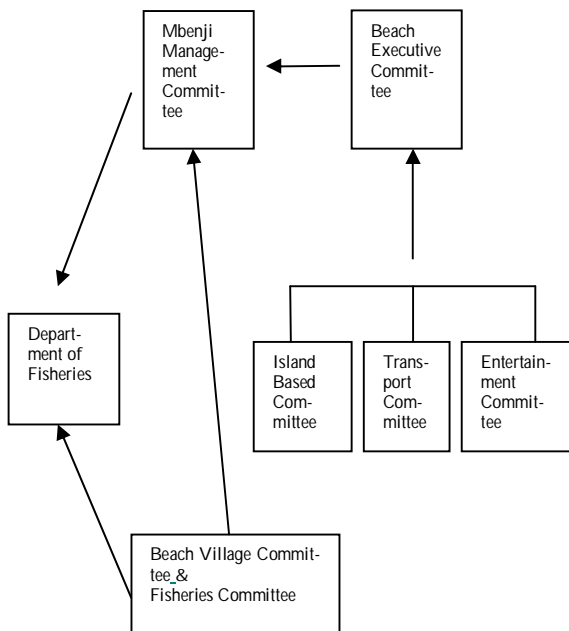


Figure 1: Reporting structure for organisations at Mbenji

Roles identified with these organisations were as shown in Table 2.0. The “YES” responses reflected awareness or knowledge by the fishers of the existence of the organizational roles in the area while the ‘NO’ responses reflected non-awareness. Results revealed that a relatively higher number of fishers were aware of the existence of roles.

Table 2: Responses of respondents on the existence of roles of organisations (n = 150).

Role of organizations	Percentage of respondents (Multiple responses)	
	Yes %	No %
Formulation of fisheries management plans	62.7	37.3
Formulation of organizational constitution	86.0	14.0
Formulation of provisional rules	76.7	23.3
Formulation of appropriation rules	44.0	56.0
Monitoring use of fisheries resources	97.3	2.7
Conflict resolution	96.7	3.3
Enforcing graduated sanctions	94.0	6.0

Assessment of effectiveness of local organizations

Table 3.0 shows institutional design principles working in the fishery and fisher perceptions pertaining to their existence. There are several ways of measuring the effectiveness of local institutions. However, the most common method of assessing the effectiveness of the local institutions is by using Ostrom’s institutional design principles (Human and Pattanaik, 2000).

Table 3: Existence of institutional design principles in the area (n = 150)

Institutional design principles	Percentage of respondents (Multiple response)	
	Yes %	No %
Ownership rights of fisheries resources	91.3	8.7
Equitable benefit sharing	44.0	56.0
Clearly defined boundaries for fishery area	44.7	55.3
Appropriation and provision rules	78.7	21.3
Monitoring of fisheries resources	98.7	1.3
Graduated sanctions	98.7	1.3
Conflict resolution mechanisms	97.3	2.7

Fish catches and effective local fisheries management

Figure 2 shows perceptions of respondents interviewed at Mbenji on fish catches from year 2000 to 2008.

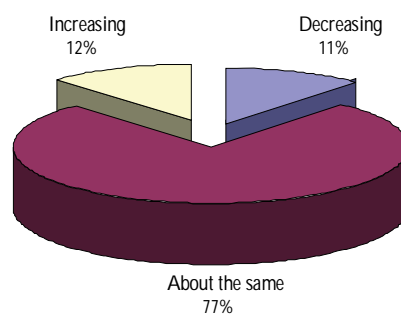


Figure 2: Perceptions of respondents about fish catches at Mbenji

Key socio-economic and demographic factors promoting participation

Model evaluation

The model is appropriate for two reasons. Firstly, the chi-square (or Hosmer-Lemeshow) goodness-of-fit test

shows that it is a good model because it produced an insignificant Chi-square of 0.079 at $P < 0.05$. Secondly, the logistic regression model explains 24% of the variation in the dependent variable (participation in fisheries management). The low R^2 must be judged on the context of a developing country data set based on each fisher's memory recall of his average fishing behavior and outcomes as well as the fisher's attitude towards some of the questions.

Results of the model

The results of the binary logit regression model, which estimated the participation of fishers in fisheries management activities, are presented in Table 4.0. Migration of fishers, fish catches, household family size and education status of the household heads were significant at $P < 0.05$ while years of fishing experience was significant at $P < 0.1$. Migration of fishers, fish catches and years of fishing experience were positively related to participation in fisheries management. This suggests that these are the key socio-economic and demographic factors promoting participation of fishers in fisheries management activities in the study area. Education status of the household heads and household family size were negatively associated to participation in fisheries management.

Table 4 . Results of the logit regression model for participation of fishers in fisheries management

Variable	X_i	Coefficient	$P > z $
Constant		-1.160	
Migration**	X_6	0.959	0.012
Fish catches**	X_7	0.780	0.014
Education status**	X_9	-1.193	0.024
Household family size**	X_5	-0.632	0.046
Years of fishing*	X_3	0.047	0.069
-2 Log likelihood		172.653	
Prob> chi-square		0.079	
Nagelkerke R^2		0.240	

** Statistically significant at p-value $P < 0.05$, * statistically significant at p-value $P < 0.1$

Discussion

Local organisations and their roles

The study revealed the existence of four local organisations that play major roles in fisheries management in the area. MMC and BEC are informal but recognized as legal by DoF while BVC and FC are formal organisations. Probably the oldest of all the organisations operating at the Island, MMC is the main committee of

Mbenji Island fishery, comprising the Chief's appointees, including some of his own counselors. This committee also assists in the day to day administration of justice in the chief's area. This committee is strictly supervised by the traditional authority, Chief Msosa. The term "traditional authority" (TA) covers many different local organizations, but they are mainly chiefs holding offices based on ethnic groupings. Focus Group Discussions (FGDs) revealed that the MMC has sub-committees that are assigned specific duties in order to ensure effectiveness in the main committee's operations. The sub-committees include: an Island-based committee, and is largely composed of the fishers and small businessmen. This committee monitors the day to day operations at the Island. This committee is more in association with the BVC; the second is the Transport Committee which ensures that all boats load to normal capacity. The committee also inspects the boats to avoid transportation of prohibited items to the Island. The committee only flags out boats when the weather on the lake is calm, to avoid accidents; the third is the Entertainment Committee whose duty is to organize events such as the opening and closing ceremonies as well as hosting visitors. They collect money and any other contributions from community members and well-wishers. They keep books of accounts for all collections. The government of Malawi has not taken a strictly legalistic perspective to reject informal norms that might contradict the formal and legal system due to resource constraints in terms of personnel, funds and equipment preventing government to adequately carry out the control measures (Scholz *et al.*, 1997).

According to the Fisheries Act, BVC's have authority to demarcate sanctuaries, close fishing grounds, confiscate prohibited gear and impose sanctions and fines. Broadly speaking, BVCs are responsible for "conservation and management of fisheries" within their jurisdictional areas. It was, however, clearly revealed through FGDs that the DoF has placed much emphasis on the role BVCs should play in enforcing government based management regulations.

Together the BVC, MMC, and BEC look into matters of community policing and enforcement of fishery regulations. FGDs revealed that the aforementioned organizations have the powers to independently decide and impose appropriate penalties and fines on violators without involving the Chief. The Chief is only provided with information of the offences as well as names of offenders, and one of the rituals the Chief performs at the opening or closing ceremony is to publicly rebuke and denounce such offenders for their uncalled for behaviour at Mbenji Island. The FC comprises local data collection personnel located in strategic beaches to collect necessary fish and fisheries data for DoF. In the absence of fisheries technical staff, the FC stands-in to provide advice on fisheries conservation and management.

The combined roles of organizations at Mbenji, as in Table 2, provide a complete set of local legislation to ensure wholesome operation of the Island fishery. Any one of the roles is revisited, reviewed and amended accordingly at their regular meetings. Common property regimes and their associated institutional arrangements need to be dynamic in order to adjust to new opportunities, internal growth, externalities and institutional dissonance (Ostrom, 1992). FAO (1997) points out that the effectiveness of fisheries management is highly dependent upon the appropriateness of its separate components and the way in which these components interact. The organizations and their related roles have a structured interaction.

Effectiveness of local organizations

Collectively the local organizations at Mbenji are effective in managing fisheries resources since all the assessed institutional design principles that characterize the robustness, efficiency and sustainability of local institutions existed among the organizations in the area. Focus group discussions revealed that principles scoring high in this study, such as ownership rights of fisheries resources, an understanding of appropriation and provision rules, monitoring of fisheries resources, graduated sanctions and conflict resolution mechanisms were in themselves an incentive to respect and support the rules especially that they complement cultural perspectives, are dined self-imposed, and seemingly providing mutual benefits. Equitable benefit sharing and observation of defined boundaries for the fishery area were not achieved successfully. Since equitable benefit sharing means every member of the community benefiting from available resources, it was inconclusive as to whether it was fulfilled or not. Water boundaries are often difficult in the absence of physical markers.

Mbenji fishery culture has essential elements for a successful and sustainable resource management program. Local commons are used under local organizations. However, other non-local organizations might also have impacts. Nevertheless, local fisheries organizations at Mbenji have ensured high compliance to fish conservation rules and regulations among fishers. Mbenji is an example of a well-run fishery, in which members comply with community and to a greater extent government rules. This shows that community-based management works under such conditions because fishers can manage themselves. By engaging in design and enforcement of their own rules, fishers show the willingness to govern themselves without reliance on government for decisions. It was noted that when fishers themselves are involved in the design of management rules, a high rate of compliance can be expected. The Island fishery does not rely on external enforcement of regulations and this renders enforcement both effective and cost-effective especially with the severity of the punishments.

Painter (1995) and Child (1996) suggest that it is essential that national policies and legislation support devolution of resource tenure and governance that provides the authority to make decisions on resource use at the local level. However, this must be supported by extension services that provide the knowledge and skills to manage resources sustainably in communities where literacy levels are low.

Socio-economic and demographic characteristics

This study isolated the following Socio-economic and demographic characteristics as having important bearing on community participation in fisheries management at the Island fishery: migration of fishers, household family size, fish catches, education status of the household heads and years of fishing experience. This, therefore, suggests that such socio-economic and demographic characteristics of the fishers in a given community should be considered during formulation and implementation of fisheries management plans. This would also form a strong basis for effective performance of the local organizations.

Migration of fishers showed positive correlation with participation in fisheries management. It was revealed that the Mbenji Island fishery being one of the few productive fisheries has attracted interest of many fishers from all parts of the country. This is observed in the groups of people of different ethnic backgrounds and religious beliefs exploiting the same waters and targeting the same species. When moving to the Island, however, the migrant fishers leave their families behind and they construct temporary shelters. It was also found out that migratory movements around the lake tend to increase with diminishing fish stocks in fisher's respective localities. Ganter *et al.* (2001) noted that migration is a common feature among fishers along Lake Malawi beaches. Ganter *et al.* (2001) pointed out that fishers migrate to areas where fish catches are good, especially of fish species such as usipa (*Engraulicypris sardella*), utaka (*Copadichromis spp.*) and ncheni (*Ramphochromis spp.*). Contrary to the hypothesis that migration negatively influences participation in fisheries management, it was found that migrant fishers are focused on what they would want to achieve. This implies that when they migrate to areas where there are clear institutional design principles for fisheries management, they most likely would participate in the management of the fish stocks. However, uncontrolled migrations to the Island might pose serious challenges of overfishing to this fishery as the maximum amount of fishing effort has not been determined.

Formal education gives fishers the ability to perceive, interpret and respond to new information much faster than their counterparts without education. To the contrary, it is often the case in many countries that the majority of artisanal fishers are illiterate. The results of this study revealed that educational status of the household heads was negatively associated to participation in

fisheries management. This implies that the lower the education status of the fisher, the more the likelihood of that particular fisher to participate. This gives an impression that formal education is not that important among the fishers at Mbenji. This could be attributed to the long history of traditional management based on ancestral beliefs that may not require major input of technological innovations. That is, those with lower education status are more tied to the existing ancestral beliefs. A strong background of compliance to ancestral beliefs has somewhat contributed to ease of observing set rules.

Family size shows negative correlation with participation. This implies that larger families had more demand for the resource, hence a higher probability of not participating in fisheries management activities compared to smaller families. This could be attributed to the fact that larger families may be more dependent on the resource and would venture more into fishing. It is also felt that they would find it difficult to observe such practices as closed season and use of recommended fishing gear. Considering the average family size of six members, available land size is not enough, even for the purpose of subsistence farming. Families indicated that they were not able to produce enough to support themselves during the closed season. Above 60% of them were reported to own between one acre and three acres. Under such circumstances, fishers would be compelled to break rules that restrict them from fishing and/or catching more fish.

Results revealed that years of fishing experience was positively related to participation in fisheries management. This entails that increase in years of experience in fishing offers fishers better appreciation of the relevance of fisheries management. Therefore, the more the years of experience, the higher the likelihood of a fisher to participate. Experienced fishers also tend to be better placed to acquire the needed skills to use management technologies compared with less experienced ones.

However, besides socio-economic attributes, Poffenberger and McGean (1998) indicated that major changes in levels of community participation also occur as a result of, cultural and political influences within local organizations.

Conclusion and Recommendations

In conclusion, the local organizations operating at the Island were effective in promoting community participation in fisheries resource management. This has been evidenced by the existence of consistent institutional roles assigned to particular organizations for easy follow-ups. The presence of institutional design principles that almost all fishers in the area were aware of, for effective fisheries management also provided evidence. Mbenji has managed to develop a fisheries management regime that has improved the economic efficiency and utilization of fisheries resources on a sustainable

basis. Community involvement in formulation and implementation of management measures has provided a high degree of acceptability and compliance at the Island fishery. Community members have enforced standards of behavior and management accountable to the local area.

Lessons from the study imply that local fisheries management organizations are most effective on a small ecological area where population density is low, and internal and external pressures on the resource are under control. While the fisheries sectoral policy objectives in Malawi aim to maximize the yield from the fish stocks in the national waters, Mbenji fishery management strictly controls the number of fishers during every fishing season, with social sanctions superseding legal sanctions. It is, therefore, suggested that management should be designed to fit small jurisdictional areas focusing on local-level management with decentralized ownership, authority, accountability and responsibility, and making good use of fisher's knowledge. This minimizes dependence on government to solve fisher's problems. It would be concluded that institutions, the rules of the game (Donda, 2000) governing local organizations, are as essential to fisheries as the fish and the fishers themselves (Jentoft, 2004).

The interventions that have been recommended for other areas on Lake Malawi arising from lessons learnt at Mbenji Island fishery are as follows; enhanced fisheries extension awareness programmes such as meetings and exchange visits, radio awareness programmes by various government agencies, revision of national legislations to include fisher's knowledge, fish conservation or fisheries management courses as required by revised legislation, and campaigns of enforcement of lake fish conservation legislation.

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