Local Stakeholder Perception on Community Participation in Marine Protected Area Management: A Q-Method Approach

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Abstract. Local stakeholder involvement in Marine Protected Area (MPA) management can bring to a successful MPA. Generally, participatory research in marine protected area management is exploring the relationship between marine protected area management approach adopted by the management agencies and the level of participation of local stakeholder whom reside within the marine protected areas. However, the scenario of local community participation in MPA management in Malaysia seems discouraging and does not align with the International Aichi Biodiversity Target 2020. In order to achieve the International Aichi Biodiversity Target 2020, this paper attempts to explore the methodology on participatory research towards the local stakeholder of Pulau Perhentian Marine Park (PPMP), Terengganu, Malaysia. A Q-methodology is used to investigate the perspective of local stakeholder who represents different stances on the issues, by having participants rank and sort a series of statements by comply quantitative and qualitative method in collecting the data. A structured questionnaire will be employed across this study by means of face-to-face interview. In total, 210 respondents from Kampung Pasir Hantu are randomly selected. Meanwhile, a workshop with the agency (Department of Marine Park) had been held to discuss about the issues faces on behalf of management that manage the PPMP. Using the Q-method, researcher acknowledged wise viewpoints, reflecting how different stakeholders’ perception and opinion about community participation with highlights the current level of community participation in MPA. Thus, this paper describes the phases involved in this study, methodology and analysis used in making a conclusion.

1. Introduction
The relationship between MPA and its local stakeholder is one of the most common issues in the field of MPA. This hate love relationship is laden with MPA management principal and policy adopted by most the management agencies mixed with the attitude, values and norms of the local community whom reside within the marine protected areas [11]. However recently, the importance of local stakeholder involvement in MPA management is being acknowledged by many management authorities as conflict resolution approach. It creates a win-win situation which later creates beneficial relationships to all parties involved in a MPA especially local stakeholder reside there.

MPAs are well known throughout the world as a tool for managing fisheries, conserving species and habitats, maintaining ecosystem functioning and resilience, preserving biodiversity and protecting manifold of human values related with the ocean [14]. While the myriad of human values and biodiversity are essential to conserving, conflict between conservationists and people desperate in accessing the resources had caused criticism of conservation organizations and their activities globally [7]. Moreover, a solution is needed in ways of seeking for transforming conflicts between MPA and local stakeholder into mutually beneficial relationships. Instead maintaining MPA by force, it should
be done by good approach towards community because it is important of considering community livelihoods, particularly when ‘no-take’ MPAs was employed, as well as governance and management for the success of MPAs [13].

Therefore, this study reviews with the vital of participatory approach in marine protected area management. Particularly, there is a long overdue issue that always being concern is local stakeholder versus MPA management. In order to explore this issue, one MPA in the state of Terengganu, Malaysia- Pulau Perhentian Marine Park (PPMP) is selected. Precisely, this study aims to analyse the participatory approach in MPA management; to analyse the level of local stakeholder participation in PPMP; to analyse benefits that local stakeholder get from their participation in PPMP management; to analyse the support from authorities for encourage local stakeholder participation; and to develop a community participation model for PPMP.

2. Research Design
A plan for gathering the data required to achieve the research objectives must be devised once a decision is made to proceed with the next step of research [12]. The function of research design is to obtain relevant evidence in achieving objective with answering the initial question as unambiguously as possible [2]. A participatory research have evolved from qualitative method approaches with objective to reflect, explore and propagate the views, concerns, feelings and experiences of research participants from their own perspectives [16]. According to J. Bergold and S. Thomas, the objective of the inquiry and the research questions in participatory research was develop out with merging the two perspectives; science and practice whereas the results benefit both sides from the research process [8]. Thus, the Q-method had been chosen to be attempt in this research corresponding to the aims of the method which is act as cornerstone for the systematic study of subjectivity, a person’s viewpoint, opinion, beliefs, and attitude [4].

2.1. Q-Method: An attempt in participatory research
Q-methodology is an approach to research at the interface between qualitative and quantitative methods where it is used particularly for the acquisition of complex views, attitudes and value orientations from a subjective perspective [3]. The Q-methodology is equivalent to this study because this study want to identify local stakeholder viewpoints on community participation, where it analyse the view of benefit, level of participation and support for participation from local stakeholder perception. Q-Method employs qualitative judgements of the researcher in defining the problem, developing statements to identify the participants’ perspectives and selecting participants and used quantitative options of analysis.

Basically, data in Q are collected within five steps. The first step is definition of the concourse which refers to collection of all the possible statements the respondents can make about the subject at hand or in other meaning is the raw material [16]. In other meaning, it is the hub of information about research topic (in this study: the hub of available information on the local community participation in MPA) where is the concourse are all the data from interviewing local stakeholder, participant observation, and scientific literature such as papers, journals, and books from which the ‘Q set’ is taken. Secondly, develop the Q-set which is the subset of statement is drawn from the concourse which based on the literature review, to be presented to the participants [9]. All the selected statements included in the Q set is based on the concourse that basically indicate the diversity of discourses apropos the local community participation in MPA. In this study, the Q set consists of 61 statements (Table 2) with key themes within the opinion on local community participation in MPA had been expressed in the concourse (dependency on resources, issues, concern, opportunity, and benefit). To avoid potential biases, researcher used a ‘structured approach’ [9]. Next is selection of the P-set or Q participants which is usually smaller than the Q-set. In this study, it will be referred to the village committee (JKK) of Kampung Pasir Hantu and the agency involved (Department of Marine Park Malaysia) who represent the array of perspectives and opinions concerning the local community participation in MPA. Then, Q sorting which is the respondent is instructed to rank the statement according to their preference. This process shows the participants’ subjective meaning to the statements [10]. The condition of instruction is normally the person’s point of view regarding the issue.
Then, participants’ sorts are being analysed using correlation and factor analysis to show clusters of subjectivity [10]. Thus, this methodology is suitable for this study because this process will reveals group of stakeholder perspective and the similarities and differences in viewpoint over the issue. On the other hands, it helps to create a platform for meaningful discussion between different stakeholder groups through stakeholders’ perspective [10] for participatory research.

2.2. The main study
For the purpose of this study, one marine protected area (PPMP) is selected by the researchers as it will represent a continuance of the Department of Marine Park Malaysia effort in managing its 42 marine protected areas in peninsular Malaysia. The management authority of PPMP needs to increase their effort to encourage community participation in MPA management. This case study will show that effective MPA management can be achieved when the local stakeholder is a part of management and conservation initiative in MPA by involving them in decision-making process and conservation programme. The study will explore the wider perspective of PPMP from geographical locations, villages, chalet and resort within the Pulau Perhentian considering the size and various communities lived and use the resources within and around this reserve. The study will substantiate that it is essential to identifying benefits for the community to ensure a successful participatory process. A case study help researcher link the actions of individual people to social structure and process [19] in this case the local stakeholder participation and the marine protected area management.

2.3. Sampling design
The target population for the study is the local community whom were the stakeholders or play character to the community involvement initiative in PPMP. The only village in PPMP Kampung Pasir Hantu is selected for this study (Table 1).

| Household | Resident | Ethnicity  | Total Population |
|-----------|----------|------------|-----------------|
| 450       | 210 door | Bumiputera : 2,160 | 2,163           |
|           |          | Others : 3    |                 |

From the data above, household is the total number of family live in Kampung Pasir Hantu. Meanwhile, resident is total number of house built in the village. In order to give ample power detecting relationships, the “5times” heuristics and the “10 times” heuristics is used as the guide to minimum sample size since this study will use SEM-Partial Least Square as method for analysis [11] and 210 sample was considered as good sample in fulfil representative criteria.

2.4. Data collection and instrument
This study employed the survey approach with a face-to-face interview with local stakeholders using structured questionnaire. This is a better approach in obtaining representative samples and produce the fewest number of constraints in terms of questionnaire design and questionnaire construction [11] such as constraints in wording aspects, the measurement scale used, and the layout design of the questionnaire [15]. The questionnaire consists of six sections (Table 2) which mostly using Likert Scale as measurement.
Table 2. Arrangement of the questionnaire

| Section | Questions Classification                           | Number of items |
|---------|--------------------------------------------------|-----------------|
| I       | Respondent’s background                          | 7 items         |
| II      | Dependency on resources                          | 14 items        |
| III     | Issues, concerns and opportunities               | 5 items         |
| IV      | Expectation benefits                             | 30 items        |
| V       | Level of participation                           | 7 items         |
| VI      | Support for community participation              | 5 items         |

The questionnaire had been designed as open-ended structured. The questionnaire had been divided into six sections according to its purpose to achieve the objective of the study. Respondent background is essential in order to know their profile demography. Then, the data from dependency on resources are important to evaluate how important is it the marine park towards stakeholder. The paramount data is from the issues, concerns and opportunities from their perceptions which help to identify marine park issues and improve the management. Besides, the expectations benefit can encourage for more conservation programme to protect the marine park values. Meanwhile, the section fifth and sixth is to measure the level of stakeholder participation in MPA management and if there any support for encouraging stakeholder participation. Henceforth, Q-method is very practical to use in this study in order to get the data systematically, precise and efficient.

3. Analysis
This study will use several statistical techniques including factor analysis and reliability analysis, descriptive statistics, and partial least square for analyzing the data, hypotheses testing and reaching conclusions. These statistical techniques are used to test the local stakeholder dependency on resources, benefits that local community get from the MPA, level of local stakeholder participation in MPA management, and support for local stakeholder actively participate in MPA management.

3.1. Modelling local stakeholder participant: Partial Least Square SEM (PLS-SEM)
PLS-SEM models are path models which some variables may be effects of others while still because for variables later in the hypothesized causal sequence where is an alternative model to covariance-based structural equation modelling [1, 4]. Primarily, Partial Least Square SEM (PLS-SEM) is used to establish theories in exploratory research by focusing on explaining the variance in the dependent variables when examining the model [6]. The rules of thumb for choosing PLS-SEM as method of analysis had been presents by [6]. The first rule is deciding the aim of the research is either to predict key target constructs or identifying key “driver” constructs. In this research, the aim is to predict the influence of social benefits, economic benefits, attitudinal benefits and legal/institutional benefits on community participation in MPA management. These beneficial are the “drivers” to community participation. A PLS-SEM is preferred method since the aim of this study is not theory confirmation. PLS-SEM can handle both reflective and formative measurement models as well as single-item measures without additional requirements or constraints [6]. In this study, reflective measurement model are being involved whereas the indicators refers to the functions of the latent construct and changes in the latent constructs are reflected in changes in the indicators variables [5]. This study involves many constructs and many indicators. As mentioned, PSL-SEM is capable of estimating very complex models to using it as the method of analysing the data is appropriate [6].
4. Conclusion
The purpose of this paper is to introduce Q methodology in the participatory research. The reason Q method had been chosen, because of focusing to highlighting the synergies between the approach and current theoretical concerns in participatory research. This is an appropriate method was said by Brown (1998), when the application are endless, then the term ‘subjectivity’ itself is ‘in vogue’ which welcoming the Q methodology in participatory research.

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