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ANALYSIS OF FARMERS PARTICIPATION FOR WATER MANAGEMENT IN SINDH PROVINCE OF PAKISTAN

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ABSTRACT

The paper attempts to ensure that participation is a systematic involvement of local people in diverse activities to manage their own problems that transports sustainability. Therefore, the higher the farmers' participation in water management ensures the higher the level of agricultural benefits. Consequently, the participation value was insisted to identify the level of farmers' indulgence regarding participation in water management activities in Sindh Province of Pakistan. The research considers the Cohen and Uphoff's participation theory that led to the cross-sectional data collection, using multi-stage cluster sampling from 457 farmers in Sindh province of Pakistan. The paper reports the results, involving confirmatory factor analysis, in which, farmers' participation via planning, implementation, monitoring and evaluation of water-user associations were scientifically measured. The study revealed that the majority of the farmers were averagely involved in water management activities. Therefore, it was concluded that there is a room for betterment in the participatory irrigation management for desired sustainable results in the particular studied area.

Keyword: community development, farmers, rural development, watercourse association

INTRODUCTION

The common understanding about "participation" is diverse among different disciplines. The economists yield the participation as profiting agent, while political scientists focus on votes, and sociologists define it like decision making (Cohen and Uphoff, 1977). In the context of rural development, the term "Community Participation" consigns to a variety of sponsored actions intended to allow poor citizen to influence in decision-making (Eisinger, 1972). It simply invites the people to get involved in development processes (Eversole, 2012), usually driven by indigenous people that have many ladders and levels (Emilio *et al.,* 2010). Participatory practices involve community members in a process of empowered decision-making and policy implementation (Ruano *et al.,* 2011). It is a route to social progress in which people meet their collective needs (Mulyanto

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and Magsi, 2014), where stakeholder influences the direction and implementation of a task for self-satisfaction (Magsi and Torre, 2012). Cohen and Manion (1980) consider participation as the systematic involvement of a significant number of persons on situation of actions that ensures sustainable development in the communities.

Community development is a continuous process, which brings about pleasant changes through collective action by participating in community activities (Sail and Asnarulkhadi, 2010). Abbott (1995) simplifies that community development is in fact a particular shape of community participation. Shannon and Walker (2006) are of the same opinion that high level of dynamic public involvement is vital to attain community development. However, lack of participation is one characteristic of poverty and social segregation (Platt, 2006). Community participation facilitates to develop dexterities to gain knowledge to apply collective exertion to outline the outcomes that leads to have power over their lives.

Participation by local people in development process allows the community to have control over the resources, boost involvement in decision making and develop their common comfort. In order to achieve the benefits, the different interests and aspirations of groups can come together towards formulating common goals or finding solutions in the particular context (Lyndon *et al.,* 2011). People's participation in the context of community development is viewed as a process by which persons are involved in commencing, come to a decision, sketching, put into operation and managing the group and its activities. Participation generates the understanding about the situation, help to get their collective needs and overcome their common problems. Therefore, Ahmadu *et al.* (2012) strongly recommended the active participation of community members to achieve sustainable rural development through capacity building. Participation in water management refers to improve stakeholder sharing in resource use decision-making that ultimately is helpful to reduce the poverty and income inequality in the rural communities.

The benefits of community participation are broadly being debated in depth by the different scholars and researchers in community development perspectives. Participatory process gradually steps forward towards the quality of life in the community environment (Asnarulkhadi, 2006). Uphoff (1986) indicated that participation assures equality, while Nikkhah and Mar'of (2009) argued that it upgrades individually and bring empowerment to the community as well. Participatory strategic planning increases local development and sustainable activities in a community (Blair, 2004). Participation enhances ‘sense of ownership’ among the members of a community (Sara and Jennifer, 2012). Consumer-run organizations can lead to positive individual outcomes (Brown and Michael, 2010). It may reduce social isolation and enhance self-efficacy and bring sustainability (Asnarulkhadi *et al.,* 2013). In short, countries would be greatly benefited using a community participation course of action in developmental projects (Mathbor, 1997), while said to be at the centre stage of global development (Asnarulkhadi *et al.,* 2013). The above all, the benefits of public participation are beyond the economic value (Ansari and Anderson, 2011). On account of reforms in the water management, by forming Water Users Associations (WUAs) gradually replace traditional forms of collective

management in China led to sufficient water saving during the unusual reduction in water (Wang *et al.,* 2005). In addition, rural communities can easily avoid the problems related to irrigation through cooperation and active participation and achieve self-reliance (Nitising, 2012). Enhanced community participation has the ability to improve overall water management, including conflict resolutions (Jansky and Juha, 2006). Similarly, it was reported by Dakins *et al.* (2005) that the majority of farmers realized that their profound participation in watershed activities made them aware and understands the issues related to watershed, while rated their groups advantaged than government guided groups in tackling the issues of conflict.

The levels of peoples' participation in development process depend on the objectives of the program (Ahmadu *et al.,* 2012). Participation is a course of action with many ladders (decision-making, execution, monitoring and evaluation), each with a chance for diverse levels of participation. The more a community is drawn in the decision-making process the more it increases a personal commitment to the programs or projects leading to the best resolution of problems (Mariana, 2008). Therefore, the level of participation of individuals in a community development process must be at higher continuum. In a bottom-up approach, the goals of development are considered less important, much emphasis is given to building the confidence and competence of people to totally participate in their own development plans without seeking assistance from outside the community (Ahmadu *et al.,* 2012).

A number of scholars and researchers contributed in measuring the levels of participation. Pretty (1995) presented participation levels from the lowest to the highest: manipulative participation, passive participation, participation by consultation, participation by material incentives and functional participation. Oakley (1986) over viewed the participation level of spontaneous, induced and compulsory participation. Moser (1983) debated the participation as an end and as a means. Wandersman (1981) holds four typologies of participation that varies with people's extent of participation and control in decision making, namely self-planning, choice, feedback, and no participation. Thus, the literature suggests that the highest participation level is directly associated with higher benefits. For this research it was hypothesized that the higher level of farmers' participation in water management signifies the level of agricultural benefits in rural Sindh province of Pakistan. Specifically for this research, the level of participation was assessed through its components, i.e. planning, implementation, monitoring and evaluation (Cohen and Uphoff, 1977; Mondal and Singh, 2011), the extent of farmers' involvement in the each element and presented in the shape of high, medium and low (Ying, 2009).

MATERIALS AND METHODS

In order to achieve the objectives of the study, a cross-sectional study (Sheikh *et al.,* 2009) was conducted in Sindh province of Pakistan using multi-stage cluster sampling method. In this study eight canals out of fourteen were randomly selected from the study area. In the next step, one distributary/minor from each canal was randomly selected. Followed by, six watercourses from each distributary/minor were considered with the segregation of two watercourses each from the head, middle and tail. At the same time, equal representation of

watercourses from left and right side was assured. Finally, 48 watercourses were selected for data collection. Sample sizes of 500 respondents were considered to study at 95% confidence level and ±4.38 confidence interval (Krejcie and Morgan, 1970). For the purpose, 500 respondents were approached, out of them, 457 (91.4%) respondents agreed upon to share the ground realities. Answers of the questions were collected using six points (Strongly Agree to Strongly Disagree) Likert scale. Data analysis was performed through SPSS and AMOS softwares.

The reliability of the instrument/scale was measured during data analysis, by applying the Cronbach's Alpha, and found the results as follows; Participation (Planning-16 items) 0.934, (Implementation-7 items) 0.731 and (Monitoring and Evaluation-8 items) 0.863. Normality test in Table 1 elaborates the responses distribution of participation elements. The "Z" score of participation received Planning 1.85, Implementation 1.77 and Monitoring and Evaluation 0.34.

Table 1. Normality test of participation

Participation	Mean	Mode	Kurtosis	Z Score
Planning	60.35	60.00	0.422	1.85
Implementation	39.88	40.12	0.404	1.77
Monitoring and Evaluation	33.63	35.00	0.079	0.34

Confirmatory Factor Analysis (CFA) is generally part of a procedure such as Structural Equation Modelling (SEM) (Darlingtons, 2002), but it is used for a variety of purposes, such as psychometric evaluation, the detection of method effects, construct validation, evaluation of measurement invariance and convergent validity (Brown and Michael, 2010). Figure 1 displays the results of CFA that was applied to discover the construct reliability, discriminant and convergent validity of the variables. Those items which did not meet the cutoff point of 0.5 (Yusoff, 2011), and disturbing in achieving correlation of less than 0.85 (Kenny, 2012) were discontinued. For this study, participation in planning had 16 items, but it was reduced to 10 items during second order CFA with AVE = 0.5 and supported only four items. Participation in implementation has seven items, however, after conducting first and second order CFA, only two items with AVE = 0.5 were stabled. Similarly, participation in monitoring and evaluation had eight items, but it remained only three items.

The analysis of construct variables using AMOS shows that the model ideally fits, as the data illustrated by the following Goodness-of-Fit indices in Figure 1; (CMIN) = 63.263 (df=25), relative $\chi 2$ (CMIN/df) = 2.531, AGFI = 0.950, GFI = 0.972, IFI = 0.970, NFI = 0.951, TLI = 0.956, RMSEA = 0.058 and p =0.000. The model has successfully met the minimum required criteria of indices of Goodness-of-fit as proposed by the various scholars (Armenta *et al.,* 2013). Finally, the level of participation was enumerated through mean scores of selected variables. Further distribution was made on the frequency of farmers for the particular variable. In the end, the mean score of construct variables (planning, implementation, monitoring and evaluation) combined to latent variable (participation) to measure the farmers' level of participation in water management activities.

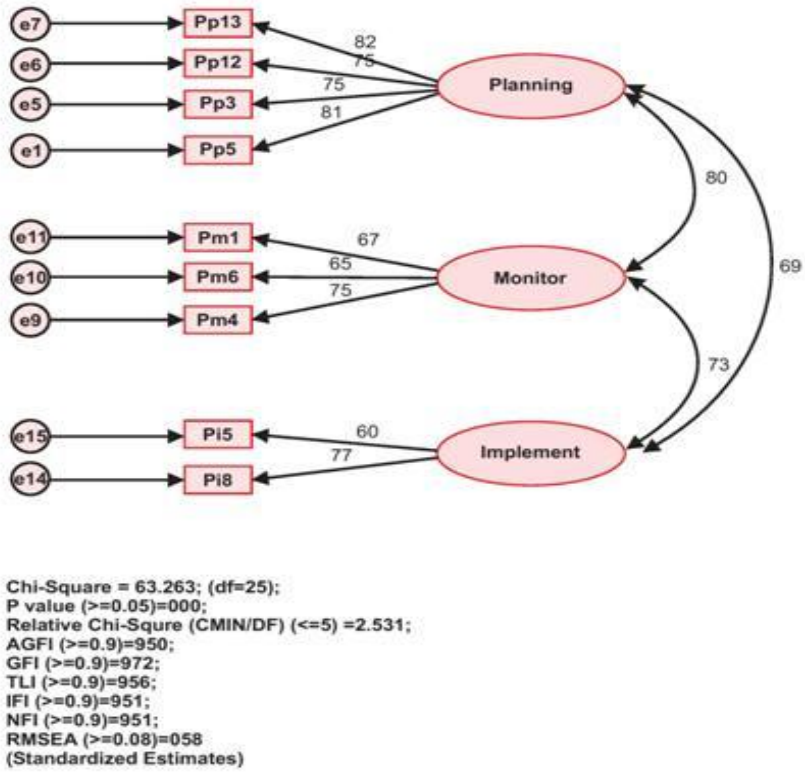

Figure 1. Confirmatory factor analysis

RESULTS

The summarized results regarding the background of the farmers illustrated that the majority of the farmers, within the age limit between 36 and 56, were involved in water management activities. An overwhelming majority (98%) of the respondents were married, showing the picture of common rural values, about three fourth (75%) of the respondents were habituated in an extended/joint family system, and a little less than half (47%) of the respondents were illiterate or do not have any formal education. A simple majority (50.5%) of the respondents were landlord-cum-farmer (owner-cultivator), however, an unfair distribution of agricultural land was frequently observed among the farmers of Sindh province of Pakistan. At the same time, waterlogging and salinity were found to be major issues in the study area as reported by the respondents. In the same way, an overwhelming majority of the farmers in Sindh province of Pakistan showed their concern over existing irrigation and drainage system and of the opinion that there is certainly a room for betterment in the current irrigation and drainage system. The results of the descriptive analysis stated in Table 2 that with regard to planning the respondents were enjoying the medium (60% of farmers) to high

(30% of farmers) level in water management. In implementation of the tasks, the involvement of respondents was reported medium (56%) to higher (33%) and in monitoring and evaluate the involvement of farmers was seen a medium (53%) to low (25%) level. An aggregation of the components of the participation shows that the overall level of participation in water management of the farmers was observed at medium (71%) level in Sindh province of Pakistan.

Table 2. Participation level of respondents

Participation	Low (%)	Medium (%)	High (%)
Planning	49 (10.7)	273 (59.7)	135 (29.5)
Implementation	48 (10.5)	257 (56.2)	152 (33.3)
Monitoring and evaluation	115 (25.2)	244 (53.4)	98 (21.4)
Participation	29 (6.3)	326 (71.3)	102 (22.3)

DISCUSSION

Farmers under a bottom-up approach are likely to self-motivated and do not have any other option for their livelihood (ILO, 2004). Therefore, an overwhelming majority of the respondents was involved at the level of medium to high in water management activities. Generally, participation level is influenced by various socio economic (Saidu *et al.,* 2014), demographic, farm characteristics, irrigation and drainage system (Sheikh *et al.,* 2014), and cultural factors. Therefore, the researchers could expect a different level of participation in the Sindh Province of Pakistan that may differ from other parts of the world. Ehrensperger and Boniface (2005) disclosed through an associated survey in Nigeria and reported that almost all the respondents were aged between 30 and 50. Mutuma *et al.* (2009) also conducted a study with the aim to assess water resource conservation in Imenti district of Kenya, and reported that the majority of the farmers were at the age in between 37 to 54. Consequently, with regard to local culture, senior citizens get more respect as compared to young farmers. Therefore, young farmers of a watercourse could not contribute effectively in water management activities at a higher level, and reluctant to participate in an organization dominated by higher age groups (Amir *et al.,* 2012).

International Irrigation Management Institute, Pakistan reported that the Sindh province stretches over an area of about 14.09 million hectares, out of which 3.08 million hectares are classified as fallow land at the percent of 22 (Jehangir and Ali, 1998). Simultaneously, more than half of the rural population in Pakistan is landless, while 2.5 percent of landowners control over a third of agricultural land in holdings that exceeds 50 acres (ILO, 2004). Therefore, the existing situation may favour to the big and prosperous landlords to influence over small farmers during the participation process that may also fluctuate the participation level of the farmers in the study area. Further segregation of the participants indicated that the contribution of farmers in monitoring and evaluation process remained medium to low. In this regard, Cohen and Uphoff (1977) indicated that “evaluation” is supposed to be a rare activity in the rural development process. Logically, people spent more time in planning or decision making because it requires less or no money in sharing the ideas. In addition, the

illiterate majority of rural Sindh (GoP, 2013) may possibly be unaware about the tools and techniques of monitoring and evaluation. Therefore, Seyed *et al.* (2011) also reported an overall medium level of citizens' participation in local government of Torbat-Heydarieh, in Iran. Similarly, Bagherian (2009) conducted a research to explore the participation level of stakeholders in a watershed management program in Iran, and revealed that the involvement of community was moderate to low due to certain external demands. The available research articles indicated that the participation level may vary place to place and project to project, because there are a number of potential factors that may affect the participation level. However, some of the studies reported the same level of participation in water management activities in other regions because of one way or another similar background. Therefore, the researchers further advice to identify hidden potential factors through a separate research. Nonetheless, this study was focused on the components and level of participation in water management activities.

CONCLUSION

It is concluded that participatory irrigation management plays an important role in managing the issues of irrigation water and enhancing agricultural benefits. Moreover, reviewed literature supported that, the participation levels may vary because of different socioeconomic, demographic, culture, farm characteristics, and other factors. The farmers' participation in water management activities in Sindh province of Pakistan was identified at medium level, which indicates that the watercourse associations in Sindh are not typically activate and there is room for betterment in participatory processes. Considering the potentials of participatory irrigation management, an improved level of participation may bring higher level of agricultural benefits to the farming communities that may enhance prosperity according to their aspirations and wishes.

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