



UNIVERSITI PUTRA MALAYSIA

***FARMERS' PARTICIPATION, SOCIAL CAPITAL AND BENEFITS IN WATER
MANAGEMENT IN SINDH PROVINCE OF PAKISTAN***

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FEM 2015 3



**FARMERS' PARTICIPATION, SOCIAL CAPITAL AND BENEFITS IN WATER
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By

MUHAMMAD JAVED SHEIKH

**Thesis Submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of
Philosophy**

June 2015

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

FARMERS' PARTICIPATION, SOCIAL CAPITAL AND BENEFITS IN WATER MANAGEMENT IN SINDH PROVINCE OF PAKISTAN

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June 2015

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Participatory irrigation management is one of the important tools to poverty reduction among farming communities that helps to provide individual and collective benefits, and enhance quality of life. Theoretical perceptives and developmental studies also established the significant relationship between participation, social capital and their benefits. But, hardly any researcher has considered social capital as mediator between participation and benefits, which the researcher perceived as a huge gap in those studies. Based on previous literature, the researcher developed a hypothetical model and focused on the farming communities to examine the relationship among different levels of participation, social capital and benefits. Simultaneously, the researcher identified the potential factors that may affect participation and social capital. The study also quantified the mediation effect of social capital between participation and benefits (individual and collective).

In this regard, the cross-sectional data were collected on a valid and structured scale through personal interview method, using multi-stage cluster sampling from 457 farmers in Sindh province of Pakistan. The greater part of the questionnaire was adopted from previous literature and related theories. With regard to latent variables, the components of participation included were planning, implementation, and monitoring & evaluation; social capital contained bonding (trust), structural (group solidarity) and linking social capital (networking); economic benefits, psychological benefits and human capital assembled individual benefits; and, social benefits and environmental benefits were associated with collective benefits. Finally, descriptive analysis was performed by means of SPSS-20 and AMOS-20 was used to develop a structural equation modelling (SEM) to determine the relationship among selected variables.

The results of the study divulged that the farmers of Sindh province reported medium level of participation in water management activities with regard to watercourse associations. Medium level of participation, consequently produced the same level of social capital, individual and collective benefits, which revealed the positive relationship among them. Multiple linear regression estimates

predictors related to demographic (age and education), socio-economic (house type and residential locality), and farm characteristics (farm facilities, using underground water and watercourse position). Though, social capital was significantly influenced by canal water accessibility, drainage system availability, age of the farmers, total land holding, farming experience, and family size in the study area. However, only age factor has contributed significantly and positively on both, participation and social capital.

Goodness-of-fit indices of structural equation modelling robustly supports the theoretical framework and revealed significant contribution of participation to benefits (individual and collective) and social capital; likewise, social capital with individual and collective benefits was also noteworthy. Moreover, mediatory role of social capital between participation and collective benefits was found significant as compared to individual benefits.

Finally, it is concluded that social capital played an important role in gaining collective benefits (social and environmental benefits) to the farming communities in participatory irrigation management, Sindh province of Pakistan. Facts and findings of the study could be useful for governmental and non-governmental organizations, while developing policies and projects of community development.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**PENGLIBATAN PETANI, MODAL SOSIAL DAN FAEDAH DALAM
PENGURUSAN PENGAIRAN WILAYAH SINDH PAKISTAN**

Oleh

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Penglibatan pengurusan pengairan adalah salah satu cara penting untuk mengurangkan kemiskinan dalam kalangan komuniti pertanian dalam memberikan manfaat secara individu dan kolektif bagi meningkatkan kualiti hidup. Sementara itu, perspektif teori dan kajian pembangunan telah mencadangkan wujudnya hubungan yang signifikan antara penglibatan, modal sosial dan faedah yang diperolehi. Namun demikian, hampir tiada penyelidik yang menganggap modal sosial berperanan sebagai pengantara antara penglibatan dan faedah, dan dengan demikian penyelidik kajian ini melihatnya sebagai sebuah jurang yang besar dalam kajian-kajian tersebut. Berdasarkan penulisan-penulisan sebelumnya, penyelidik telah membangunkan satu model hipotetikal dan memberi tumpuan kepada komuniti pertanian untuk mengkaji hubungan antara tahap penglibatan, modal sosial dan faedah yang diperolehi daripadanya. Pada masa yang sama, penyelidik mengenal pasti faktor-faktor yang berpotensi yang boleh menjejaskan penglibatan dan modal sosial. Kajian ini juga mengkuantitikan kesan pengantara modal sosial ke atas hubungan antara penglibatan dan faedah (dari segi individu dan kolektif).

Dalam hal ini, data keratan rentas telah dikumpulkan menggunakan skala yang sah dan berstruktur melalui kaedah temubual bersemuka ke atas sampel kajian serama 457 orang petani di Wilayah Sindh Pakitan, yang dipilih dengan menggunakan menggunakan persampelan kelompok pelbagai peringkat. Sebahagian besar instrument kajian adalah diterima pakai berdasarkan hasil tulisan lalu dan teori-teori yang berkaitan. Mengenai pembolehubah-pembolehubah laten, komponen-komponen penglibatan yang dimasukkan adalah perancangan, pelaksanaan dan pemantaua dan penilaian; modal sosial yang mengandungi ikatan (amanah), struktur (perpaduan kumpulan) dan modal sosial yang berhubung (rangkaian); faedah-faedah ekonomi, faedah-faedah psikologi dan modal insan yang membentuk faedah-faedah individu; dan, faedah-faedah sosial dan faedah-faedah alam sekitar yang berkaitan dengan faedah-faedah kolektif. Seterusnya, analisis deskriptif telah dilakukan dengan menggunakan perisian SPSS-20, dan AMOS-20 digunakan untuk

membangunkan satu model persamaan struktur (SEM) untuk menentukan hubungan antara pemboleh ubah-pemboleh ubah yang dipilih.

Hasil kajian ini menunjukkan bahawa para petani di Wilayah Sindh (yang dikaji) melaporkan tahap penglibatan yang sederhana dalam aktiviti-aktiviti pengurusan saluran. Tahap penglibatan yang sederhana ini seterusnya menghasilkan tahap modal sosial, faedah individu dan kolektif yang sederhana juga, iaitu mencerminkan hubungan positif antara pemboleh ubah-pemboleh ubah ini. Regresi linear berganda menunjukkan hubungan yang VLJQLILNDQS'DQWDUDSHQJOLEDWDQGDQSHUDPDOQDDQJEHUNDLWDQGHQJDQ pemboleh ubah demografi (umur dan pendidikan), sosio-ekonomi (jenis rumah dan kawasan perumahan), dan ciri-ciri ladang (kemudahan ladang, penggunaan air bawah tanah dan kedudukan saluran air). Sungguhpun begitu, modal sosial dipengaruhi secara signifikan oleh kebolehcapaian air dari terusan, ketersediaan sistem saluran, umur petani, jumlah keluasan pemilikan tanah, pengalaman pertanian, dan saiz keluarga di kawasan kajian. Walau bagaimanapun, hanya faktor umur telah menyumbang dengan ketara dan secara positif terhadap penglibatan dan modal sosial.

Indeks kesesuaian bagi pemodelan persamaan struktur menyokong kuat kerangka teoritikal dan menunjukkan sumbangan penting pemboleh ubah penglibatan ke atas faedah (individu dan kolektif) dan modal sosial; selain itu, modal sosial dengan faedah individu dan kolektif juga patut diberi perhatian. Tambahan pula, peranan perantara pemboleh ubah modal sosial dalam hubungan antara pemboleh ubah penglibatan dengan faedah kolektif didapati signifikan berbanding dengan faedah individu.

Akhirnya, dapat disimpulkan bahawa modal sosial memainkan peranan yang penting dalam memperolehi faedah kolektif (faedah sosial dan alam sekitar) kepada komuniti pertanian dalam penglibatan pengurusan pengairan di Wilayah Sindh, Pakistan. Fakta dan dapatan kajian ini mungkin berguna untuk organisasi kerajaan dan bukan kerajaan semasa membentuk dasar dan projek-projek pembangunan komuniti pada masa akan datang.

ACKNOWLEDGEMENTS

First of all, I am grateful to Allah that gave me success in the expedition of the highest level of knowledge. After this I would like to express my sincere JUDWLWXGH WR P\ VXSHUYLVRU \$VVRFLDWH 3URIHVVURU 'U ODURI %LQ 5HG]XDQ including my supervisory committee members Associate Professor Dr. Asnarulkhadi Abu Samah and Associate Professor Dr. Nobaya Binti Ahmad, whose guidance and piece of advices converted my conceptual world into reality in the shape of PhD thesis.

My deepest appreciation to my family especially my wife for her utmost support and encouragement, without which all could only be a dream. For the others; Dr. Aijaz Ali Khooharo, Ghulam Mujtaba Khushk, Muhammad Bashir Saidu, Sardar Jamali, Shamshad Rajper, Urs Parhiar, Imtiaz Ali Odhano, Israr Ahmed Shahani, Sarfaraz Khan, Abdul Tauheed Rajput, and Shafiq Ahmed Rajput assisted me directly in the compilation of my research work. However, there is DOVRDORQJOLVWRIIDPLODQGIULHQGVDPHWKRVHIDOSHGIH order to complete my work in time, I thank you all.

I certify that a Thesis Examination Committee has met on 16 June 2015 to conduct the final examination of Muhammad Javed Sheikh on his thesis entitled "Farmers' Participation, Social Capital and Benefits in Water Management in Sindh Province of Pakistan" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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CHAPTER 1

INTRODUCTION

The introduction chapter portrays the background of the study, identifies the problem, raises research questions, aligns with the objectives of the study, illustrates theoretical framework, brings conceptual framework, makes the rationale of conceptual framework, explains conceptual and operational definitions, justifies significance of the study, enlighten the scope of the study, vigilances limitations of the study, and arranges organization of the study.

1.1 Background of the Study

Water is the sign of life, and, certainly, there is no substitute available for water on this planet. Similar to water and life, Pakistan and agriculture are also inseparable. About 25% of Pakistan's overall land is used for farming via one of the most extensive irrigation systems in the world (Nasim, 2000). Pakistan cultivates three times more land than Russia, which contributes significantly to the GDP, and engages around 43% of the labour force in this sector (Nazish, et al., 2013). At the same time, water has been a critical limiting factor (Abruzzi, 1985), and has been constantly declining (Hussain, et al., 2004) due to certain climatic changes (Dhar & Mazumdar, 2006; Afzal, 1996). In addition, Pakistan is among the world's driest countries, with its lowest average rainfall being below 240 mm a year. Consequently, the farmers of the region extensively rely on an unreliable irrigation system to fulfil their basic needs and livelihood (John & Usman, 2005). Interestingly, the demand for water irrigation has been continuously increasing in Pakistan, because of the ever growing population (Nakashima, 2000).

Water management is as important as water, because poor water management is among the reasons for the low water production in Sindh Province, Pakistan (Muhammad, 2011). In Pakistan, irrigation and drainage are the topmost concerns, marked in several forms with many of them clearly stemming from fundamental institutional weaknesses. These institutional issues are further considered to destabilize the irrigation distribution and infrastructure system that contribute to the discrimination of water distribution, negligence in infrastructure improvement, low cost recovery, and result in low crop production (Kulkarnir, et al., 2011). Similarly, unlike interstate conflicts, water disputes rarely gain international attention (Latif, 2007). The concept of equity and equality of water distribution is widely used in irrigation water management performance. Equality divides up a common resource, while equity is based on the principle of fairness that is accepted by all members of the community involved in sharing the common resource (Murray-Rust, et al., 2000). Hence, to counter such issues in the irrigation sector, Pakistan, like a number of countries also decided to institutionalize the existing farming communities, activating them in the process (Dawei & Chen, 2001).

As a result, in India, the watercourse associations were found to be successful in improving the irrigation efficiency, and ensuring the equitable distribution of water (Kelsey, 2013). Therefore, today, participation is considered to be an important and challenging role in the decision-making and the implementation process with reference to the management of natural resources. The European Water Framework Directive (EWFD) has stressed the active involvement of shareholders in water management (Jonsson, 2005). Irvin & Stansbury (2004) considered that the participation of citizens generates more informed decisions by the stakeholders, and produces efforts that are made on a self-help basis, that, ultimately, leads to a means of improvement for community development (Zadeh & Nobaya, 2010). In the observation of Wainwright & Walter (1998), the participation by stakeholders provides an essential impression for planners, designers, community organizers, and management officials. Williams (2011) revealed that in prosperous localities, the participation remains at a higher level that reduces social exclusion and is expected to improve the overall feature of community life (Baum, et al., 2000). Shannon and Walker (2006) are of the strong opinion that a high level of dynamic public involvement is essential to attain community development and helps to eradicate poverty (Zadeh & Nobaya, 2010), and results in empowerment, interpersonal trust, social identity, and the purpose to join (Baur & Abma, 2011). In short, the benefits of public participation are beyond the financial value (Ansari & Andersson, 2011).

Once the participation of water user organizations is consolidated, it has the potential to mobilize collective action for issues that are even beyond the management of irrigation systems (Hoogesteger, 2013). For this reason, participation has been concentrated on and gained a lot of admiration during the last two decades, predominantly for sustainable agriculture, empowerment, and rural community development. Participation is an approach to develop a community that aims to involve the people of poor communities in the process of building their own life. It is also a strategy used by the governments at the local level to assist poor people to enhance their earnings through possible initiatives by the community members (Frances, 1990). Consequently, the sustainability and effectiveness of community development depend on the level of participation in rural communities.

In the historical perspective, the Sindh Irrigation Act-1879 placed no provision for the farmers to govern the watercourses, distribution and canals. The ordinance granted substantial powers concerning the maintenance and the improvement of a watercourse, fixing water schedules, employment of labour, and general or special assessments, etc. However, the Watercourse Associations (WCAs) do not have many powers in dispute resolution. In parallel, the existing dispute resolution system is quite time-consuming and inconvenient, as it revolves around the irrigation authorities of a quasi-judicial system that affects their participation and level of empowerment. However, the farmers feel that their disputes could be resolved at the local level, provided these are vested with the legal authority for dispute resolution (Muhammad, 1998).

Generally, farmers live in communities in the villages, through which their actions and interactions are obviously (Kelsey, 2013) and socially tied to each other in terms of watercourses, and are primarily engaged in the management of agriculture and irrigation water (Shivakoti, 1991). Therefore, they have access to the agricultural tools/implements of the community members and are expected to reciprocate in terms of irrigation water. The reciprocity of water occurs when a farmer is in dire need of water but does not have his turn, and asks his community members and gives assurance to return the same amount of water when their turn comes. Therefore, in rural Sindh, the majority of the farming communities have more informal relations with each other. They are free to argue and discuss from time to time concerning irrigation water issues, and come to a conclusion that can be implemented amicably. On the other hand, any directive from an outside community pertaining to water management is not given serious consideration (FAO, 2004). Hence, the farming communities in the Sindh Province of Pakistan identify the problems by themselves and try to handle these issues as best as they are able.

These communities perform a number of activities within the participatory irrigation management, which involve cleaning, lining, and renovation of their watercourses after a particular period of time and based on their identified time frame. In addition, the watercourse association also plays a facilitating role between the irrigation department and farmers (Murray-Rust, et al., 2000) in order to collect Water Tax (*Abyana*), especially during the time of water shortage. Simultaneously, the absence of a drainage system/structure in the particular area may result in the total destruction of crops at the lower elevated area of agricultural land not receiving water during the season of heavy rainfall or flood situation (Sena & Michael, 2006). Therefore, the farming communities also try to resolve such disputes peacefully and collectively to avoid and decrease the side effects during a flood situation in the area (Howgate & Wendy, 2009). Some issues are not directly connected with the watercourses, such as crop theft, illegal grazing of animals, criminal activities, and the law and order situation in the particular areas. With the increasing participation and level of cooperation of the farmers, such problems are also managed on the basis of mutual understanding (Bello, 2005).

Carr et al. (2012) are of the strong opinion that the involvement of farmers in water management activities may increase the level of trust and functions as a by-product among its members (Woolcock, 1998). It has been proven that, ultimately, the more the social capital, the more the reciprocity of water between farmers, the more benefits that result. The exchange of irrigation timings may be further reciprocally shown by the members of the watercourse (Murgai, et al., 2000). Once they develop the relations, they are likely to get more benefits than those who lack trust, and group solidarity is only possible with dynamic participation in the process. To a certain extent, the conflicts on water may easily be resolved conscientiously when the farmers of a watercourse stick together, as social bonds and norms are critical for sustainability in natural resource management (Pretty, 2003). Furthermore, they often consult each other about the crop cultivation, laser levelling, poison, handling, application of fertilizers, reclamation of soil, and so on. In addition,

they have a golden chance to develop a drainage structure, educational institution, health services and security of the area on a community basis, which can further benefit the whole community through economic benefits, psychological rest and social advantages (Cohen & Uphoff, 1977), developing skills (Hancock, 2001), as well as environmentally friendly locations (Reed, 2008), which could be categorized into individual and collective benefits (Cohen & Uphoff, 1977). However, the overall situation of the farmers also leads to the need to investigate the participation level of farmers in water management activities, while conducting analysis about the role of the social capital to achieve particular benefits.

The background focuses on the sociology of the irrigation management within the perspectives of community development. Sociological questions are intensely attached to the development and operation of the irrigation systems in Sindh Province, Pakistan, because people collectively organize to secure water, transport it, divide it into usable shares, enforce rules for its distribution, and pay for it. In fact, water user groups have been formed as grassroots organizations to sustain the group action in terms of irrigation management. Thus, the structure and operation of WCAs, which comprise the interaction among irrigation farmers and their participation in managing and operation of the irrigation system, trust level between them, and the benefits they achieve as a result, represent the social fabric of irrigated agriculture and make a comprehensive study of the issues an attractive proposition.

1.2 Statement of Problem

The potential of farming communities in the agricultural sector in alleviating poverty cannot be exaggerated as it serves as a tool for sustainable growth with greater benefits for the farmers. These farming communities have existed there for many years, perhaps as an avenue to generate income, skills development and harmonious societies that may lead to better agricultural production. It could also boost the utilization of natural resources by providing low-cost expenditure for farming communities to produce for their consumption with the surplus contributing to supplying the country with a dense population. Consequently, it helps to generate self-employment to stand at the feet, reduce grassroots poverty, and become a prosperous country.

On the other hand, the magnitude of regional poverty and global food insecurity are related to the improper utilization of natural resources that pose a serious challenge to mankind under fluctuating economic situations. Regarding this matter, farming communities in Sindh Province, Pakistan, are also facing a serious threat due to low agricultural advantages, while rural people are surprisingly migrating to settle in urban localities to fulfil their basic needs (Arif & Shahnaz, 2009). In order to tackle rural poverty, the Government of Pakistan launched various projects in the past. Some of them took into consideration existing farming communities (WCAs) with the purpose of bringing sustainability into their lives. In this regard, the participation focuses on

achieving the advantages of community development to a greater extent. This is because the participatory process ensures the availability of water sharing, a proper rotation of water timings, justifies the costs, and discourages water theft. Together, these lead to better crop production with low delivery cost, and contribute to the economic benefits of the farmers (Groenfeldt, 1988), and part of the study as an individual benefit. Based on previous research, the researcher is curious to know the benefits that the farming communities are sharing together in respect of agriculture while involved in the water management activities under natural settings in the Sindh Province, Pakistan.

Since 1990, poverty has become an increasing phenomenon in Pakistan, with the level being particularly high in Sindh: 37% of the population live below the poverty line, of which, 53% of the rural population are poor, which consists of over half of the households that do not own agricultural land. While economic growth in the farming and non-farming sectors is a necessary condition to improve rural living that could be possible by removing the imbalance of access to resources, the use of new technologies, good governance, and tackling the empowerment constraints of the rural people (FAO, 2003). The annals of rural development in Pakistan provide evidence regarding the number of experiments that have been made ever since the early years of the 20th century to reactivate the rural economy.

According to Latif (2007), the Village Agricultural and Industrial Development (Village-Aid) programme was initiated in 1953 to work with the community development centres. This effort was further substantiated in 1963 by the introduction of the Rural Works Programme (RWP). In 1960, an agriculture-oriented practical model was offered for cooperatives that were acceptable to the farmers, workable and manageable by them at the village and police station (*thana*) level in the Comilla Project Area. The integrated Rural Development Programme (IRDP) along with the Peoples Works Programme (PWP) emerged as a combination of the above-mentioned models with the induction of the private sector during the first half of the 1970s. The IRDP and PWP were merged in 1979 and redesigned as Rural Development (RD).

In order to boost the agricultural economy, in 1976, a phased programme was started to line about 140,000 tertiary watercourses on a participatory basis. Subsequently, the Pakistan Government embarked upon a crash programme of lining about 86,000 watercourses by investing US\$ 1.1 billion over five years (2004 ± 2008) to save water and improve productivity. The contribution from the WCAs in this National Programme for Improvement of Watercourses (NPIW) was 22.1% of the total cost. However, the role of these associations remained limited and has not been instrumental in the long run to improve and sustain the efficiency of their watercourses. However, although they needed a lot of support for their sustainability the experience with the farmers who managed the system has been quite encouraging (FAO, 2003).

Water is not a factor for insecurity but a contributing factor to overall instability. Water is a hot spot because the scarcity threatens the livelihoods of the Pakistani people. Violence associated with water is derived from the frustrations and grievances against mismanagement. Hence, it becomes important to address the nuances of the structural obstacles of distribution inequalities and general water shortages to tackle the insecurity from the ground up. Rural residents migrate to the cities to escape either from violence or the loss of livelihood (notably agriculture), only to strain the urban water supply system that competes with agricultural water usage. In addition, agricultural shortage causes an increase in food prices, which adversely affects the urban poor who might have come from rural communities (Kugelman & Hathaway, 2009).

Water sector planning is not consistent and frequent changes are needed in the plans either based on changed priorities or economic constraints. The availability of finances for implementation is not considered and investment priorities are not properly established. The experience in other countries suggests that apart from the effective irrigation and drainage system, giving farmers a solid role in the irrigation management as a part of improved institutional framework is the key to a more productive and sustainable irrigated agriculture that, XOWLPDWHO\ LQFUHDVHV WKH IDUP LQFRPH, 7KHSHIRUH required to build confidence in the farmers, which, in turn, empower and sustain the farming communities to ensure the water management (FAO, 2003).

During the participatory process, the farmers who are satisfied with themselves find the opportunity to learn to oppose dispute matters by utilizing their good qualities. They will become confident in dealing with water issues, to determine the solutions and rely on their coping abilities when facing difficulties. It helps to provide psychological benefits in shaping self-efficacy and self-esteem (Abbott, 2010), and needs to be studied accordingly. During the process, they may also improve their skills and become acquainted with the knowledge related to crop water requirement, crop-water timings, quality of water, and appropriate crops in times of water scarcity, maintenance of watercourses, method and estimation of lining, etc. Such knowledge and skills distinguish them in the communities by enhancing the human capital. Therefore, the researcher is interested in knowing the economic benefits, psychological benefits, and human capital in shaping individual benefits for the farmers who are participating in the water management process in Sindh Province, Pakistan.

To a certain extent, the participatory process also helps in providing collective benefits, as a whole to the farming communities (Wojtyla, 1993) and also requires to be investigated. These collective benefits could not necessarily be connected directly with the agricultural benefits, but the communities have a chance to manage their educational, health, sanitation and security issues on a self-help basis as a result of participation. Cohen & Uphoff (1977) named such WSHVRIEQHILWDVVRFLDOEQHILWV)RUH[DPSOHIDUPHUV\$DUWFLSDWLRQLQZ management also provides ecological benefits in order to manage water

logging and salinity, and drainage problems in an agricultural background (Pretty & Hugh, 2001). Therefore, the researcher is also conducting the research to determine the environmental benefits in the study area. Negligence in using environmentally friendly pesticides, and improperly disposed of poison waste is dangerous enough for the communities but more so if it is mixed with the irrigation water. Irrigation water is widely used for rearing animals and domestic purposes in remote areas, where the communities are lacking basic facilities (Ahmad, 2008). Therefore, in conclusion, in this study the overall benefits were categorized into individual and collective benefits (Cohen & Uphoff, 1977). Consequently, the individual benefits include economic benefits, psychological benefits, and human capital. However, social and environmental advantages are under the umbrella of collective benefits, which the researcher wants to explore and extend to the selected study area.

At the same time, farming communities also share their cultural values, which may be easily seen in their agricultural life. In this regard, they have a certain level of expectation of their community members while consulting regarding the adoption of innovation, facilitation for cropping, and exchange of irrigation water. For this purpose, the trust level may play a significant role in making the reciprocity dynamic between the members (Uzzi, 1996). The reciprocity of water and cooperation among the farmers is a routine phenomenon in the study area. It is driven by the level of trust and facilitates access to the irrigation water during times of scarcity (Reyes & Jopillo, 1986), which the researcher wants to explore through bonding social capital (Putnam, 1993). Similarly, farmers also formulate laws and rules to ensure the solidarity for the purpose of joint and harmonious work (Uphoff & Wijayaratna, 2000). The unity among the farmers of WCAs is reflected by the friendly relations, frequent interactions, and priorities in attending their ceremonies. Therefore, well-unioned communities are not sub-divided into language, sect, or religious groups/barriers. Simultaneously, the group solidarity of WCAs is one of the most neglected functions in conventional thinking (Marsden & Oakley, 1998).

In addition, individuals may have a certain level of networking with the government institutions, and influential persons in other areas may be transferred to other community members during the participation (Benham, et al, 2008). Therefore, the researcher also intends to become familiar with how many types of links are being shared among the farmers through the participation of water management in the study area. However, the overall picture that refers to the level of trust, group solidarity, and networking, is part and parcel of the targeted farming communities while being involved in the water management activities, which compelled the researcher to include social capital in this study to determine its intensity and function in the process. This is because, farmers acquire social capital through participating in organizations and networks, developing joint interests, and sharing norms, which, in turn, lead to reciprocity, cooperation, and better understanding of the differences (Oyen, 2002) that may further lead to the development thereof (Jackson, 2013). Therefore, it is thought that under the prevailing situation, social capital has certain relations

with the participation and benefits. However, it also refers inevitable role in the process that must become crystal clear through a comprehensive study.

The fact is that irrigation water is sanctioned and allocated by the irrigation authorities based on landholdings, but the timings or shifts of irrigation are managed and rotated by the respective watercourse farmers on mutual understanding and consensus (FAO, 2004). The maintenance of a watercourse LV DOVR UHJDUGHG DV WKH IDUPHUVS They frequently gather to formulate the rules/plans for the implementation of assignments at the watercourse level. Furthermore, to a certain extent, although they intentionally or unintentionally monitor and evaluate the whole process they are unaccountable to any other external element. Therefore, the participation in planning, implementation, monitoring, and evaluation are advised to include the self-help participatory process (Cohen & Uphoff, 1977) in water management for the measurement (Sheikh, et al., 2014). Hence, it is required to know how much farmers are involved in the different stages of the participation process in Sindh. In addition, in order to obtain the optimum levels of benefits, the same OHYHORI IDUPHUVSDUWLFLSDVLRQ HURGH is required as extracted in Sri Lanka and the Philippines (Pretty & Hugh, 2001). However, the researcher would like to determine and describe the level of participation and benefits, including their relationships with the benefits in Sindh Province, Pakistan. In addition, the influence of participation on the individual and collective benefits (Cohen & Uphoff, 1977) will also be identified in the study area.

)XUWKHUPRUH WKH IDUPHUVDFNJURXQG LQ 6LQGK KDV EHHQ UDLVHG DV DQ LVVX associated with participation. Previous studies have identified the influence of these characteristics (backgrounds) on the beneficiaries in water management. In this case, education level (Speer, et al., 2013; Shamiyulla & Ramu, 2010), housing categories (Awortwi, 2012; Ruth, 1997), living standard (Shamiyulla & Ramu, 2010), and location of the land on the canal network (Madhava & Chackacherry, 2004) were the significant variables on participation. Therefore, IDUPHUVDFNJURXQG GHPRJUDSKLF -VFRIDR (social, farm, and irrigation characteristics), based on their perceptions, will be queried in order to make an attachment with the participation and will be a part of this study.

7KHUHVSRQGHQWVDFNJURXQGFRRXOGEHIXUWKHUOLQNHGZLWKVFRFLDOFDSLW (Dietlind & Hooghe, 2003). Some of the scholars were of the opinion that age (Simon, et al., 2004; Whiting & Harper, 2003; Paul, 1999), education (Helliwell & Putnam, 2007; Simon, et al., 2004; Paul, 1999), socioeconomic status (Philayrath, et al., 2006), and personality characteristics (Paul, 1999; Philayrath, et al., 2006) play a considerable role in the generation of social capital. Based on previous studies, the researcher argues that the elemenWVRIIDUPHUVDFNJURXQGPLJKW contribute to the fluctuation of social capital (Helliwell & Putnam, 2007) in water management and need to be examined.

The benefits (individual and collective) arising from participation may depend on social capital, which may show a different set of results in terms of geographical location. Therefore, the researcher wants to determine to what

extent agriculture is related to the benefits, which is generated through the participation and social capital in water management in Sindh Province, Pakistan, and which may differ from the previous study areas. Based on the above-mentioned arguments, the researcher identified the following issues ± the level of participation, social capital, and individual and collective benefits among the farmers. In addition, the researcher intends to conduct in-depth investigation, to determine to what extent the farmers participate in decision-making, implementation, monitoring and evaluation, and their influence over individual benefits and collective benefits, and social capital among the respondents. Furthermore, the researcher examines in depth the function of social capital in achieving individual and collective benefits during the participatory irrigation management in Sindh.

Bowen (2005) reported that participation in social fund projects could create social capital and increase empowerment of the community. The researcher is RIWKHVDPHRS LQRQWKDWIDUPHUV\$DUWLFLSDWLRQLQZDWHUPDQDJPHQWL province lead to social capital, which contributes for empowerment and give the impression to poverty reduction. However, Bowen (2006) failed to establish clear relationship between variables. In addition, the study ignored the segments of participation, only two aspects of social capital (bonding and bridging) were considered and capacity building was considered as empowerment. Therefore, the study did not come up to scratch a comprehensive utility of social capital in the process that may describe its relationship between certain variables (Bowen, 2006). Due to certain gaps in the existing literature, the researcher decided to fill it out by taking into account the participation as bottom-up approach and attempted it quantitatively to determine the clear-cut connection between variables.

Generally, Pakistan, and particularly the Sindh Province, have been ignored in such types of study that consider the participation and social capital in achieving agricultural benefits, which the researcher perceives to be a problem that has to be studied. Although a few studies are available on water PDQDJPHQWEXWODFNLQJGLPHQVLRQRIZKDW`WKHSDUWLFLSDWLRQDQGIXQFW VRF LD OFDSLWDO LV LQRQH VWXG7R WKH EHVW RI WKH UHVHDUFKHU NQRZOHGJH similar study has been performed before in Sindh Province, Pakistan. The majority of the available studies only focused on the lining of watercourses, an aspect of water management that was externally managed. Therefore, this study attempts to fill the gap by considering the participation, social capital, individual and collective benefits in the study of water management. The effectiveness of existing community engagement activities, the level of social capital, and the extent of benefits are the core issues associated with the participation in water management in Sindh Province, Pakistan.

1.3 Research Questions

Considering the nature and magnitude of the problem statement related to the participation of farmers at the watercourse level, the study seeks to answer certain questions:

1. What is the background of the respondents?
2. What are the levels of participation, social capital and benefits (individual and collective) of farmers?
3. Is there any difference in participation and social capital in terms of IDUPHUV#DFNJURXQG"
4. Does the participation have a substantial influence on social capital and benefits (individual and collective)?
5. Is there a significant relationship between social capital and benefits (individual and collective)?
6. What is the function of social capital as the mediating variable between participation and benefits (individual and collective)?

1.4 Research Objectives

The aim of this research is to investigate the social phenomenon of farming communities during participation in water management activities, by employing the benefits of structural equation modelling (SEM). In this regard, the relationship between participation, social capital and benefits were quantified. Therefore, to meet the aim of the study, following specific objectives were identified.

1. To describe the background of the respondents.
2. 7RGHWHUPLQHWKHIDUPHUVØHYHOVRISDUWLFLSDWLRQVRFLDOFDSLWDO individual and collective benefits.
3. To determine the factors influencing the participation, and social capital.
4. To determine the predictors of participation in social capital and benefits (individual and collective).
5. To determine the relationships of social capital with individual and collective benefits.
6. To examine the mediating effect of social capital between participation and benefits (individual and collective).

1.5 Theoretical Framework

The theoretical framework helps to understand the particular social phenomena and describes the sets of research hypothesis in line with methods to answer (Ocholla & Le Roux, 2011). It also works as a structure, guiding the research

work that explains the rationale behind the justification of the study (Khan, 2010). The research experts are also advised to use established theories to conduct and relate it to the studies (Johnson & Christensen, 2000). Hence, this study is guided by well-established theories to understand the phenomenon and to make the complexities into a simple and comprehensive form.

Community development researchers depend on general principles to determine the situation and techniques for community development (Cook, 1994). The researcher followed a scientific approach, where two main theories (participation and social capital theory) were used to explain the phenomena. With regard to rural community development, participatory theory was inclined to describe WKH GLPHQVLRQ RI ŽKDW' SDUWFLSDWLRQ E&RKHQ 8SKRII where the elements (planning, implementation, monitoring, and evaluation) of participation were borrowed in water management to have better understanding in a given rural community development. There is an expected RXWFRPHV LQ WKH VKDSH RI ŁQGLYLGXDO DQG FROOHFWLYH EHQHILVV' ZKLFV researcher assumed to be empowered, therefore, Zimmerman and Warschausky (1998) theory of empowerment was chosen because it discusses the concept of empowerment with their dimensions. Social capital takes account of the structural social capital introduced by Nahapiet & Ghoshal (1998), bonding social capital (Putnam, 1993), and networking (Woolcock, 2001) to study. The structural social capital was measured through the group solidarity, bonding social capital with trust, and linking social capital was PHDVXUHGEWKHIUHTXHQFRIIDUPHUVQHWZRUNVZLWKIRUPDOLQVWLWXWLRQVVK with their community members. However, the social exchange theory was used as a macro theory to understand the community dynamics. All theories that were used in this study are well-established with a solid sociological background.

1.5.1 Social Exchange Theory

Social exchange (SE) theory is a subjective introspection and formal theory in which the unit of analysis is a small group of farmers. SE theory was introduced by George Homans (1961). He defined SE as the exchange of activity, tangible or intangible, and more or less rewarding or costly. According to the theory, people interact (participation) with each other while they have access to the information concerning social, financial, and psychosomatic features. It explains that human relationships are formed by the use of a subjective cost-benefit analysis and the comparison of alternatives (Homans, 1961). People who are engaged in relations are reasonably looking for to enhance profits. Therefore, people in this group are goal oriented and estimate the best potential means to contend in satisfying circumstances. Furthermore, the trade functions that are surrounded by cultural norms and social recognition are SUHIHUDEOH WKDQ VRFLDO JUDWLWXGH 7KH QHHG' LQGLYLGXDO SHUFHLYHV LW DV ZKLOHRWKHUVODEHOYDOXH' VRLW7KLEDXOW.HOOH)DUPLQJFRPPXQLWLHV more or less use it from an individual to collective basis for the fulfillment of personal and agricultural benefits. The study is confined with the agricultural

benefits, due to the reciprocity in their communities during the participation in water management process.

To cover up the studied social phenomenon, SE theory provides a theoretical understanding of the process regarding the social dynamics in the study area. The fact is, the participation in water management itself ensures in accessing benefits (Cohen & Uphofl ZKLOHWKHQRUPRIUHFLSURFLWIXQFWLRQVDVDVD) facilitator or catalyst to the communities in achieving the benefits to a greater extent. Therefore, conceptually farmers on a watercourse have an interaction (participation) to achieve or maximize the desired benefits. SE theory further describes that people or a community struggle to reduce their expenses and take full advantage in the shape of rewards. The postulation is that people are logically in search of, to take full advantage of benefits, and reduce the expenditure of social interactions. Among all substitutes, consequently, the farmer goes for the most advantageous course of action (Thibault & Kelley, 1952).

As farmers interact over the time, the farmers understand the requirement of reciprocity (Blau, 1983). For instance, if one person helps a community member, that person will practice a commitment to give in return at some other time in the future, giving a form of support that is equal in magnitude. If this custom of reciprocity is satisfied, a trusting and reliable relationship evolves (Cropanzano & Mitchell, 2005), and is stimulated to reply a favour than most supporters truly expect (Flynn, 2003). But, this principle can dig out the bitterness in relationships, if the farmers proposed support seems to be uncomfortable or unimportant against the expectations. Thus, they will tend to experience a sense of anger, which can compromise the stability and trust in their relationship with that person.

The overall scenario of farming communities states that farmers habituated in rural Sindh have utilized reciprocity and have certain expectations regarding the reciprocity to each other based on their cultural values. They are bound to reciprocate, not necessarily in the same way the person was benefited, but could be in another way. If the farmer is cooperating with an agricultural implement or tool by their community member, in response, the benefited farmer may reciprocate several other modes, if he does not have the same thing to be reciprocated. The benefited farmer may provide labour, honour, network sharing, etc. with him some other time and occasion. However, the reciprocity of water between them is expected to be replied only with water because there is no other source of water in the study area. But some of the farmers do not value the reciprocity, may be due to their sound background in the area. Yet, the articulations are the reciprocity of water and other agricultural things may help to increase their benefits.

In conclusion, SE theory also highlights some understated problems that compromise the interactions. For example, if individuals help someone else, they expect a favour in return that is comparable to the outlay, effort, or put out

of this act. In comparison, if individuals receive support, they return a favour that is similar to the benefit or gain, they enjoyed as an outcome of this act; almost not considering the cost or nuisance (Zhang & Epley, 2009). Sometimes SE is seen as unfair to the stakeholders to either or both parties. Because it is being felt that the help is not justly reciprocated. Such discriminations may produce conflicts (Sulthana, 1987), or psychological suffering (Bakker, et al., 2000). Keeping the situation and cultural facts, farmers make conscious that the reciprocity does not disturb them.

1.5.2 Participation Theory

This study focuses on the participation of farmers in water management. It is broadly being classified as bottom-up and top-down in terms of approaches. Bottom-up approach emphasizes local decision-making, community sharing, and grassroots movements (Blackburn, et al., 2000), while the top-down approach focuses on lobbying and bargaining with the decision-making authorities such as donor or governmental agencies to achieve the goals that are already set (Panda, 2007). In addition, top-down approach in participation is limited to consultation, and decision-making power remains in the hands of the ladders of participation. Bottom-up approach is relatively an appropriate strategy where the local people identify their problems and try to resolve by means of available resources (Saidu, et al., 2014). Reviewed theoretical knowledge about the participation in the proposed study states that the targeted water users associations or the farming communities involved in the water management activities have significant features of a bottom-up approach. Therefore, the researcher was scientifically motivated to use the participation theory of Cohen and Uphoff (1977) for the comprehension of the process in detail in the viewpoint of rural community development.

The under-discussed theory of participation was developed by John M. Cohen and Norman T. Uphoff in 1977 which became a paradigm shift from old community development approaches (Chowdhry, 1996). Cohen & Uphoff (1977) identified four main components of participation: 1) people's involvement in the decision-making process, 2) implementing programs, 3) sharing the benefits, and 4) their efforts and involvement in the decision-making process. Meanwhile, few other researchers' work on related guidelines was also reviewed. Mondal & Singh (2011) are of the opinion that participation includes planning, implementation, maintenance, monitoring, and evaluation. Furthermore, to measure the level of participation, the participation index (PPI) must be used, which could include planning,

implementation, maintenance and monitoring & evaluation (Zadeh & Nobaya, 2010). In addition, community participation has become popular in development discourse and involvement of people in decision-making, implementation, monitoring, and evaluation of water management practices are expected to increase effectively (Sultana, 2009). Therefore, the researcher included all these segments of participation in water management activities to understand and explain the particular phenomenon among the farming communities in Sindh province of Pakistan.

Moreover, Blackburn, et al., (2000) revealed that these dimensions of grassroots and managed by themselves (Finger, 1994). Cohen and Uphoff (1980) added that by promoting community participation, community members can gain more local control and better influence over their community. Therefore, empowerment can only be succeeded if people in the targeted area are involved in the planning, decision-making, implementation, monitoring, and evaluation of the community development tasks (Jones, 2003). Similarly, Xu (2007) argued that participation is the vital component for the development and this is defined as the participation of local residents in the planning, decision-making, and implementation of project activities.

development project may be seen as another form of empowerment, as argued by Iqbal (2010), empowerment can be viewed as a multilevel process, which includes individual involvement in decision-making of organizational development, and community change. So it can be concluded that empowerment means a process to establish control over resources to participate in decision-making and its implementation. Midgley (2006) make a note of that, participating in a program that is designed under social welfare policies further contributes to social and economic development, and ecological benefits (Hart, 2013).

Therefore, the proposed study absolutely covered the segments of participation; a) involvement in decision-making or planning, b) contribution to which is the segment of participation proposed by the Cohen & Uphoff (1977) was skipped, due to the confrontation and critics in the practicability of other researchers in the same area of study. At the same time, Cohen & Uphoff (1977) further indeed the evaluation is a relatively rare activity, but is taken together in principle constitute, something a cycle for rural development activity. Hence, it is included in the study. According to Cornwall (2008), a participation process promotes to be involved in all stages of the process. Similarly, Zadeh and Nobaya (2010) advised that the involvement of local people in planning, implementation, monitoring, and evaluation are the vital components of community participation. Therefore it is included in investigating the participation.

1.5.3 Empowerment Theory

Empowerment theory integrates perceived of control, a proactive approach to life, and a real understanding of the socio-political environment (Rappaport, 1987). Therefore, participation and control are vital component of empowerment theory at individual, organizational, or community levels of analysis. Zimmerman and Warschausky (1998) acknowledged that individual empowerment integrates perceptions of personal control, participation with others to achieve goals, and a critical awareness of the factors that hinder or empowerment includes processes and structures that improve participation and enhance organizational efficiency in achieving specified goal. However, community empowerment refers to joint action to improve the quality of life in a community and the connections among community organizations and agencies. Based on these three categories Zimmerman and Warschausky (1998), and Zimmerman (1995) postulated this theory of empowerment in the

Empowerment as values provide a belief system that directs how authorities and clients work together (Zimmerman & Warschausky, 1998). However, this can only be achieved through collective efforts between government agencies and local community members. In line with this idea, Midgley (2006) believed that community problems must be solved through deliberate, planned human effort which stresses the need for interventions by collective governm around a variety of local economic development initiatives should be given high priority (Walzer, 1995). This means social capital investments such as trust and reciprocity should be made with the support and involvement of local people that leads to improve their local businesses.

Empowerment as a process refers to the mechanisms through which people, organizations, and communities gain control over issues that concern them, and develop awareness on their environment and sense of participation in decisions that affect their lives (Zimmerman & Warschausky, 1998). And this is what Sen (2009) called capability approach, which simply means organization, focus here is the freedom they have to do something that they may value doing or being.

In addition, linking social capital helps local communities to promote indigenous or sustainable development (Woolcock, 1998). Putnam (1993) found that communities with a high degree of social capital are more prosperous than those with a low degree of social capital. And also communities that were well integrated and had high levels of social participation and strong social networks had a better economic development record (Uphoff, 2001). As pointed out by Asnarulkhadi and Aref (2011) that

process regarding the programmes or projects initiated for them. In this respect, Asnarulkhadi and Aref (2011) added that, viewing participation as a potentials, and provide them with opportunities to influence and share power, i.e. power to decide and gain some control over their lives. In this regard, social capital plays a significant role in empowering the farming communities during the course of action.

(PSRZHUPHQW DV RXWFRPH' UHIHUV WR FRQVHTXHQFHV RI HPSRZHULQJ processes, and which is the primary concern because it serves as dependent variable in research studies (Zimmerman & Warschausky, 1998). As mentioned by Cohen and Uphoff (1977) who explain how participation in planned rural development project yielded a positive impact to the beneficiaries. Midgley DOVR UHYHDOHG WKDW SHRSOHV\SDUJWLFLSDWLQ development programme raise income generates self-employment and ensures sustainability. In order to justify the relevance of the suggested theories to this study, the researcher argued that, any full pledge social and community development issue rest on the concept of participation. Similarly, Linnan, et al., (2001) has pointed out that the institutional level theories that focus on community organization principles, organizational decision-making, developmental and social change theories have been considered possible determinants of participation and empowerment. Therefore, the social exchange theory (Cropanzano & Mitchell, 2005) has argued that change can RFFXULQDJLYHQVRFLHWWKURXJKDQLQGLJHQRXVSURFHVVVLQJRULJLQDOVRFLH initiatives like participatory water management in Sri Lanka (Uphoff & Wijayaratra, 2000) and copied by Pakistani government which is used as a tool for making change in the life of rural communities with the structure of the society held constant. The notion has been applied in the arrangement and FDSDFLWEXLOGLQJ RI QDWLYH JURXS VZRPHQW JURXS V DQG IDURSHU\ZDWHU groups in rural communities, which works to explain the existing situation of WCAs in Sindh province, Pakistan, and builds upon the general interests and collective power of in-group connection to exercise collective action for common ends (Panth 2010).

Thus, with regards to this, Uphoff and Wijayaratra (2000) stressed that, communities should be united and dynamic in response to their needs, and be committed to raising standards of living, income and employment as well as H[WHQG QRUP RI UHFLSURFLW\ WR FRRUGLQDWHV GHYHORSPHQW HIIRUW DW DO (Flynn, 2003). Then, all these change can only be possible through peoples participation in the programmes ZKLFK&RKHQDQG8SKRIILQWKHLUWKHRU\ identified three dimensions of participation which gives an individual participant right to decide on what participation would he/she like to involved in, how is the participation going to take place and who precisely is going to participate in decision-making process, implementation, monitoring and evaluation in a given rural development perspective. As a result of participating in water management, there are expected benefits or outcome which Zimmerman and Warschausky (1998) refer to empowerment as the final result of participation process. However, Esbern & Deborah (2012) are of the opinion that there could be a scope to talk beyond empowerment rather than staying on empowerment.

Similarly, Sen (2009) advised that the measurement of empowerment must be focused away from means to real ends in trying to empowerment based on SHRSOHV\SHUFHSWLRQ 7KHUHIRUH WKH FRPPXQLW\GHYHORSPHQW VFKRODUV Esbern and Deborah (2012) considered well-being, Dinner (2009) selected happiness and satisfaction, Bowen (2006) focused on capacity building, Walzer (1995) measured human development, and Cohen and Uphoff (1977) introduced individual and collective benefits to measure empowerment.

In this regard, the researcher adopted EQGLYLGXDO DQG EHQHILWV' WR WHVW WKH empowerment of the farmers in Sindh, because it includes economic, social and psychological benefits, which were also explained by Zimmerman and Warschausky (1998) in the empowerment theory. Additionally, the HQYLURQPHQWDOEHQHILWV' 3UHWW\+XJKZDVVXSSOHPHQWHGWRFRHOHFWLYH benefits because water management has certain consequences on ecology if not properly handled. Human capital was separated from psychological empowerment; however, psychological benefits contained self-esteem and self-efficacy. In this study, human capital refers to water management knowledge and skills, self-esteem as self-respect in the communities, and self-efficacy as self-confidence to accomplish the water management tasks. The researcher tried his best to include benefits as maximum as possible in connecting with individual and collective benefits to make the study broader. 2EYLRXVO\ EHQHILWV' DUH JHQUHDWHG WKURXJK HPSRZHUPHQW ZLWKLQ W community development viewpoint and therefore replaced with the HPSRZHUPHQW'WRILQGRXWWKHILQDOSURGXFWVDVUHVXOWRISDUWLFLSDWLRQ a way, the researcher is slightly confronted with the conventional way of measurement that is based on previous literature (Davis, 1971), and proposed WKHEHQHILWV'WKDWPDSURYLGHDEDVHWRIXWXUHVWXGLHV

7KH VSHFLILF LGHD WKDW SHRSOH DUH EHQHILWHG DV D UHVXOW RI SDUWLFLSDW principally taken from the participation theory of Cohen & Uphoff (1977), cited LQWKHERRN5XUDO'HYHORSPHQW3DUWLFLSDWLRQ'&RKHQ 8SKRII TXRWHG WKDW WKHEHQHILWV DUH FRPPRQOGHQDOW ZLWKEHFRQRPLVWV LQWHUPV RISSUL JRRGV' YHUVXV \$XEOLF JRRGV' :RMWOD DOVR FRLQHG WKH WHUPV RI individual and collective benefits as the outcomes of participation, in his theory of participation. Furthermore, a number of scholars also reported individual benefits (Brown, 2005; Booker, *et al.*, 1997; Lynn, 1983), and collective benefits (Nikkhah & Mar'of, 2009; Asnarulkhadi, 1996) as a result of participation in the community development viewpoint. For this purpose, competing explanations about the final outcomes of participation need to be clear to enable the researcher to develop knowledge that meets the need of the study and thus, add individual and collective benefits (Cohen and Uphoff, 1977; Wojtyla, 1993) to the existing literature of community development. The research task is to provide an alternative perspective to further consideration about the end products of participation and make up the existing insufficiencies of theoretical and factual understanding.

1.5.4 Social Capital Theory

Social capital is used as the network structure and social resources (Seibert, et al., 2001), and transports trust, reciprocity and collective action (Esau, 2008). It is "an instantiated informal norm that promotes cooperation between individuals". Social capital can be understood as a deal in social relations with projected returns (Berzina, 2011). Indeed, social capital is one of the most difficult social phenomena to understand and attempt as it has multidimensional perspectives (Putnam, 1993). For that reason, no single theory is produced to understand it. Mainly, three most cited scholars have contributed to a greater extent and presented it in a way that people may understand and able to evaluate social capital. Putnam (1993) highlighted bonding and bridging social capital, followed by Nahapiet and Ghoshal (1998) categorized the social capital into structural, relational and cognitive. Meanwhile Woolcock (2001) later added a linking social capital to the world of knowledge. While conceptualizing the social capital, Nahapiet & Ghoshal (1998) distinguished it in three different forms; structural, relational, and cognitive. According to them, structural social capital is an overall pattern of connection (morphology or network configurations) between actors. Relational social capital is the kind of personal relationships that are developed through interactions within a group. Different than cognitive, social capital is the ability of performers to build up mutually interpretive frameworks based on language, codes, and narratives.

Putnam (1995) classified that particular people in a group or community engages in a closed set-up and expresses strong ties within the uniform groups that refer to bonding social capital. Whereas, bridging social capital indicates to have the common characteristic networks among the members of one cluster and have the rights to use the resources of another group through overlapping membership (Narayan & Michael, 2001). The organization and analysis of different dimensions of social capital revealed that relational, social capital by Nahapiet & Ghoshal (1998) and bonding social capital by Putnam (1993) are similar in characteristic of social capital but are presented at different times with GLIIHUHQWQDPHV%RQGLQJVRFLDOFDSLWDOFRXOGEHPHDVXUHGKWURXJKWUXV also indicates the reciprocity among the members (Woolcock, 1998). Later Woolcock (2001) divulged another form of social capital, which was termed as linking social capital. Linking social capital is simply defined as the relations between individuals and groups in the ladder or power-based relationships.

Table 1.1: Selected Social Capital Types

Dimension	Definition	Operational Variables	Direction	Source
Structural	Overall pattern of connection (morphology or network configurations) between actors. Involves closed networks and describes strong ties within homogeneous groups.	Density, connectivity, hierarchy, solidarity	Horizontal (within a group)	(Nahapiet & Ghoshal, 1998)
Bonding	Connections between individuals and groups in the hierarchy or power-based relationships.	Trust, norms, reciprocity, expectations, uniformity	Horizontal (within a group)	(Putnam, 1993)
Linking		The extent of relationship with number of institutions and formal organization	Vertical (Individual to formal organization)	(Woolcock, 2001)

While relating social capital with the main features of the community, the community which is a farmer-run watercourse association refers the bottom-up approach, and homogeneity with regard to agricultural land to participate in the water management activities, bonding, structural and linking social capital, appropriately support the concept, and indicated to use it in the proposed research. In addition, the bridging social capital that was repeatedly used by the research scholars was not included to measure the social capital, because it does not make sense with the existing situation. The farmers of a watercourse association in Sindh in Pakistan do not allow any farmer to utilize its resources (water) unless the member does not occupy the agricultural land/command area under the jurisdiction of a particular watercourse. In addition, the first two types (bonding and structural) of social capital function as the horizontal and later (networking) works as a vertical social capital of the community (Beugelsdijk & Smulders, 2003). Consequently, by considering the situation of watercourse association, the structural social capital, relational/bonding social capital, and linking social capital were conceptualized to understand the process by making it relevant.

1.5.4.1 Bonding Social Capital

Bonding social capital occupies closed networks and depicts strong ties within uniform groups (Christoforou, 2013). For deeper understanding, Putnam (1993) discussed some of the operating variables to study the bonding social capital.

He was of the opinion that trust, norms, reciprocity, expectations, and uniformity are referring to bonding social capital. As this type of social capital lies within the community members, it is then defined as the horizontal approach. Panth (2010) described that bonding social capital can be valuable for poor people of the society to band collectively in groups and networks and sustain their joint needs. The notion has been applied in the arrangement and FDSDFLWEXLOGLQJRIQDWLYHJURXSZRPHQYJURXSVDQGIDUPHSDVZDWHU groups in rural communities, which works to explain the existing situation of WCAs in Sindh province, Pakistan, and builds upon the general interests and collective power of in-group connection to exercise collective action for common ends (Panth 2010). Capturing the concept of bonding social capital, WUXVWIZDV VHOHFWHG DV VXJJHVWHG E'GldhahQand researchers (Coleman 1988, Putnam 1993, Uzzi 1996, Snijders 1999), and particularly very helpful to understand the reciprocity of water. Trust is observed as the most LPSHUDWLYHQRUP EHFDXVHLWPDNHVSRVVLEOHWKH H[FKDQJHRIUHVRXUFHV D infoUPDWLRQWKDWDUHWKHNHWRKLIJKSHUIRUPDQFH'8]]L)RUWKLVSXUSRVH the researcher includes bonding social capital in this study to measure social capital among the farmers of watercourse association in Sindh province, Pakistan.

1.5.4.2 Structural Social Capital

Nahapiet and Ghoshal (1998) introduced the structural social capital to the VFKRODUVFRPPXQLWLHV ZLWK WKH GHILQLWLRQ WKDW LW LV DQ RYHUDOO SD connection (morphology or network configurations) between actors. Structural social FDSLWDO GHDOV ZLWKLQGLYLGXDOV EHKDYLRXUV DQG PDLQOWDNHV WKH I networks and associations (Uphoff 2001). Uphoff and Wijayaratna (2000) proposed that the structural social capital is an asset to the farming communities in managing the irrigation water. Structural social capital can be identified through the density, connectivity, hierarchy, and solidarity, and lies within the group or community (Nahapiet and Ghoshal 1998). Considering VWUXFWXUDO VRFLDO FDSLWDO JURXS VROLGDULW ZDV FKRM198D &ROHPD SRVLWHG WKDW QHWZRUN FORVXUHLV EDVHG RQ UREXVW LQWHUFRQQHFWHG VF while Uphoff (2001) described it as the roles, rules, precedents and procedures. Marsden and Oakley (1998) indicated the group solidarity is one of the potential variables but is neglected sometimes. The researcher was convinced to include structural social capital to measure the unity among the farmers of a watercourse association. For this purpose, it was included to understand and explain the particular phenomenon (group solidarity) among the farmers of Sindh province, Pakistan.

1.5.4.3 Linking Social Capital

Woolcock (2001) divulged the networking as another form of social capital and is termed as linking social capital. Linking social capital is the relations between individuals and groups in the ladder or power-based relationships. Therefore, QHWZRUNLQJ'RIIDUPHUVZLWKIRUPDORUJDQLJDWLRQVZDV GHHPHGWREHHYDOX

reflecting the linking social capital proposed by Woolcock (2001). Jennifer and Brian (2014) also technologies (Mary, et al., 2014) ultimately helps them in achieving multiple benefits (Rudd 2000). Linking social capital permits the build-up of resources, information, and assets, which are required to gain empowerment (Njuki et al. 2008). In this study, networks of farmers in Sindh province in Pakistan with the official personals and influential persons in other areas were estimated to achieve agricultural benefits.

1.6 Conceptual Framework

ideas that provide a comprehensive understanding of a phenomenon or phenomena in a scientific way. In the same way, this study brought the concepts derived from reviewed theories. Based on this, the researcher attempt to show the inter-connectivity between the concepts of participation and benefits (individual and collective), where social capital also functions to provide benefits to the farmers. The assumptions illustrate the antecedent, dependents, independents and mediating variables for this study. Demographic, socioeconomic, and irrigation infrastructure variables represent the antecedent variables, while dimensions of participation are the independent variables. Individual and collective benefits stand for the dependent variables; and finally, social capital serves as the mediating variable.

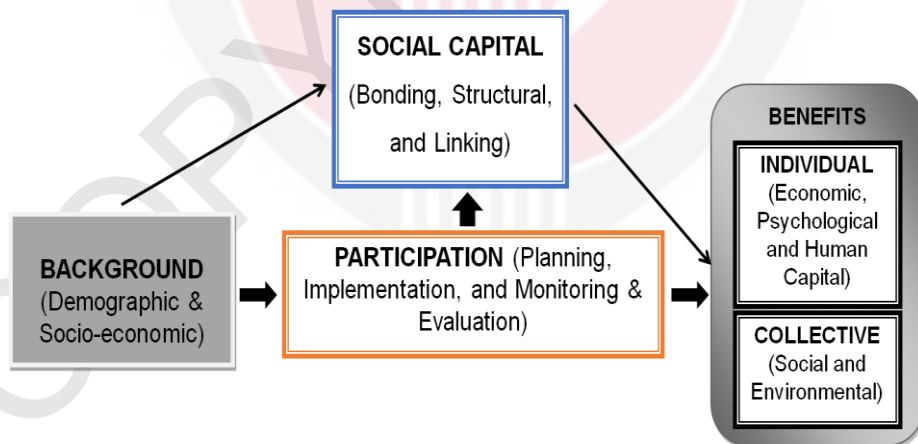


Figure 1.1: Diagram of Proposed Conceptual Framework

1.7 Rationale of Conceptual Framework

The proposed conceptual framework is indicated in Figure 1.1. It explains the social phenomena that usually occurred, and observed by the researcher, in a watercourse association for the water management. Normally, farmers receive their share of water through the irrigation system in their watercourses. The farmers collectively manage water or watercourse themselves in terms of participation. Therefore it is placed foremost on the offered agenda.

In the proposed conceptual framework, participation includes planning, implementation, monitoring and evaluation of water management. As a result of their participation in the water management activities, it is proved that the people get social capital and certain benefits (Zimmerman & Warschausky, 1998). However, supposed that under prevailing situation, social capital plays a mediating role, presuming that social capital is developed as a result of their participation to achieve particular goals, and proposed in the conceptual framework. Furthermore, the benefits were divided into two parts; keeping in the mind of public and private a good concept. Generally, people are benefited individually and collectively.

Individual benefits, refer to the personal benefits. In this study, economic benefits, psychological benefits, and human capital were considered. The human capital analysis deals with the acquired skills in relation to water management, developed through education, training or experience (Mincer, 1981). However, collective benefits designate the communal benefits as a whole, like environmental or social benefits. Collective benefits are supposed to be public property, as they are generally benefited, irrespective of participation intensity. However, in the proposed conceptual framework, the role of social capital was placed as a mediator, likely to be observed in between participation and benefits. Having theoretical understanding, structural social capital, bonding social capital, and linking social capital was attempted to be investigated.

1.8 Significance of the Study

The anticipated study was attempted in natural settings that may contribute to scientific knowledge and deliver information about the participation and social capital level of the farmers including their consequences, particularly for community development. The study also helps to identify the role of social capital in the proposed conceptual framework. Furthermore, the dissertation could contribute to theoretical understanding of individual and collective benefits by providing an incident view of the participation and social capital levels in water management that highlights the importance. In doing so, the researcher will be able to understand and explain the relationships between the preferred variables in the selected areas in Pakistan.

The proposed conceptual framework, developed on the basis of gap-spotting and combination of ideas, needs to be tested in an appropriate way that could be accepted by the scholars. In this regard, facts were collected as the main information from the respondents through a direct interaction that provided a baseline study for community development. The findings of this study could be added to generate knowledge and offer a concrete foundation for future research. The researcher did his best to establish valid and reliable criteria in evaluating the selected variables that ultimately make several important contributions to the related studies.

Furthermore, the findings may also be helpful for NGOs, policymakers, and academicians to access, observe and assess. Therefore, this study will provide an opportunity for the researchers and donor agencies to offer projects for community development at least in the study area. The outcome of this investigation could also assist the community development workers in developing professionalism and proves an effort to bring it into line with other professions.

1.9 Scope of the Study

The proposed study focused within the perspective of community development by targeting the farming communities (Watercourse Associations) of Sindh, the Southern province in Pakistan. It covers the profound sociological understanding of the communities while engaged in the water management those who have been regularly and directly participated in water management activities in Sindh. Therefore, the results of this study may generalize to the Sindh Province of Pakistan.

In this case, the province was divided into two parts (upper and lower) to widen the study area and the data were gathered from eight districts; four districts from each region. Furthermore, the watercourses occupying less than three farmers were also intentionally excluded, because it does not refer to the community concept. However, the findings of this study may be generalized only to the population of Sindh province. As a matter of fact, the characteristics of the respondents may contradict the population of other provinces and countries of the region. Therefore, the scope of this study is limited to the Sindh Province in Pakistan.

The researcher emphasized on quantitative method and developed a statistical model (SEM) which also confined its scope to describe and explain the results. Quantitative approach is a reliable technique to establish the relationship between variables that encourages structured questionnaire to collect data that may cause a barrier to explore the phenomenon in-depth. Therefore, in order to widen the research scope, observation (a qualitative method) was also included to elaborate the results of the study.

The researcher selected the watercourse association as a farming community for this study. Watercourse association is considered as a unit of water PDQDJPHQW UHVHPEOLQJ WR D #DPLOY IRU VRFLHW,Q VRPH SODFHV WKHVVH farming communities further upgraded/empowered to manage minors/distributaries collectively on a participatory basis. Therefore, the unit of water management may enlighten the picture of water management activities that covers the whole water management system of Sindh province to make it generalize.

6RFLDO HJFKDQJH WKHRU#DVVXPHV WKDW WKH UHFLSURFLW#RUJ#VLWLYH enhance benefits and change can be occur through an indigenous process. Therefore, the study did not include any external factor to individual and collective benefits in consequence of participation in water management activities, which may shorten its scope. But the studied phenomenon if found conceptually correct, may function as a guide to policymakers of poor countries to grow sustainability internally.

1.10 Limitations of the Study

In general, the researcher faced a few hurdles mainly during the collection of information. These problems were likely associated with scientific, social, cultural, and financial in the study area of Pakistan. Travelling to interview the farmers in more distant locations and to cover a wide area within a limited time frame was certainly a logical constraint with respect to finance. But the rational arrangement of travelling and the assistance of the local irrigation officials in contact with target population has made it easy and save time. The low literacy rate was also a limit to an extent; however, having grown up in the study area, EHLQJDFRQYHUVDQWRIUHJLRQDOGLDOHFW#SUHYLRXV UHVH#DUFKHU#H#SHULHQFH water management department, and relevant academic background were optimistically contributed in dealing with the native people. In addition, prior to data collection, a questionnaire was also shared with local related people for valuable suggestions.

Another problem of this study pertains to the survey instruments. Normally, reliable and valid questions are used to examine the issues by quantitative analysis. However, a number of scales were offered by different scholars related to various issues but the selection and modification of the instrument were not an easy task for a rookie researcher. In this case, a proper guidance from supervisory committee and local related academicians were proved to be beneficial for researchers. Consequently, the extent and scope of the data collection were limited to the items that will be identified in the questionnaire. Finally, the time frame for the study was short for the researcher; but hard working, consistent and scientific approaches have compensated the limitations to a greater extent.

1.11 Conceptual and Operational Definitions

1.11.1 Participation

Conceptual definition: 7KH WHUP 3DUWLFLSDWLRQ´ UHIHUV WR D YDULHW\ RI VSRQVRUHGDFWLRQV(LVLQJHUDQGGHILQHGDVWKHSHRSOH\YLQYROYHPHQWLQ decision-making, implementation, benefits, and evaluation in a community development program (Cohen & Uphoff, 1977).

Operational definition: The study defines the participation as the contribution of farmers in planning, implementation, monitoring and the evaluation of water management activities, in Sindh province, Pakistan.

Planning is defined as the ability of the farmers to independently decide and plan to get and utilize the irrigation water within a watercourse association. Participation in planning was measured using 16 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

Implementation refers to the ability of farmers to independently apply the knowledge, skills, and experience they have acquired during the planning and farming activities. Participation in the implementation was measured using 10 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

Monitoring and evaluation is defined as the aptitude of farmers to observe the planned tasks during the implementation and assessment of the objectives whether it is achieved or not. Participation in monitoring and evaluation was measured using 8 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

1.11.2 Social Capital

Conceptual definition: Social capital is described by the sum of resources, possessing a strong network or less institutionalized relationships of reciprocal acquaintance and recognition (Bourdieu, 1980), and the capability of people to make efforts with each other in groups (Fukuyama, 2002). Social capital also refers to the norms and networks that develop trust, reciprocity, and cooperation (Christoforou, 2013). In short, social capital is a complex set of relationships and can be understood as a deal in social relations with projected returns (Berzina, 2011).

Operational definition: In this study, social capital is related to connectivity, hierarchy, and solidarity as the structural social capital; trust as bonding social FDSLWDODQGQHWZRUNLQJDVOLQNLQJVRFLDOFDSLWDOGXULQJIDUPHUV\$DUWL

water management. Structural social capital refers to overall patterns of connection (morphology or network configurations) between the farmers of a watercourse association. Bonding social capital involves closed networks and describes strong ties among the farmers within a watercourse association. However, linking social capital includes social interaction and relationships between farmers and governmental or non-governmental agencies or even influential person from other localities.

Structural social capital is defined as the overall pattern of connection, morphology, or network configuration between the farmers of a watercourse association. It was measured through group solidarity using 17 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

Bonding social capital refers to closed networks and describes strong ties among farmers within a watercourse association. It was measured through trust, using 10 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

Linking social capital includes relationships between farmers and governmental or non-governmental organizations or influential person from other localities. It was measured using 9 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

1.11.3 Individual Benefits

Conceptual definition: Individual benefit is defined as the benefits that may produce as the result of participation in a community development project and benefited an individual. It includes economic benefits (Cohen & Uphoff, 1977; Ahmadu, et al., 2012), psychological benefits (Sara & Jennifer, 2012; Cohen & Uphoff, 1977), and human capital (Cook, 1994).

Operational definition: 7KHVWXGDVVXPHVHFRQRPLFEHQHILWVSVFKRORJLFDO
EHQHILWV DQG KXPDQ FDSLWDO DV LQGLYLGXDO EHQHILWV ZKLFK DUH DFTXLU
farmers as the result of their participation in water management. These individual benefits are more prone to agriculture related benefits and make a certain relation to the local farmers with participation in water management. Economic benefits included monetary advantages in the shape of materials, purchase of land, and yield per acre as the result of their participation in an agricultural background. To measure the economic benefits, 11 items were designed in reference to Cohen & Uphoff (1977) with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

Psychological benefits refer to internal or emotional benefits derived by the farmers as the result of their participation in water management. It includes self-satisfaction and contentment in their own life; and self-efficacy which means the self-confidence developed by the farmers on how to face and solve their water issues. Psychological benefits were measured in terms of self-esteem with 5 items and self-efficacy with 5 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

Human capital is defined as the knowledge and skills that the farmers acquainted during the participation process in water management. It was measured using 10 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

1.11.4 Collective Benefits

Conceptual definition: With regards to the community development, the collective benefit is defined as the community gains as the result of their participation in water management (Cohen & Uphoff, 1977). In this case, farmers get social benefits (Cohen & Uphoff, 1977) and environmental benefits (Hart, 2013). Randall (1997) further stated that once collective benefits are produced, the community members are benefited as a whole or simply it serves the community.

Operational definition: Collective benefits in this study include social and environmental benefits in water management.

Social benefits refer to the health, education, sanitation or security indicated by the Cohen and Uphoff (1977) as the result of their participation in water management in Sindh. It was measured using 11 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

Environmental Benefits are defined as the future concerns regarding agriculture, mainly developed by the participation in water management. The environmental benefit was measured using 13 items with 6 point Likert scale (1 = Strongly disagree to 6 = Strongly agree).

1.11.5 Farmer

Conceptual definition: A farmer is a person engaged in agriculture, raising living organisms for food or raw materials. The term usually applies to the people who do some combination of raising field crops, orchards, vineyards, poultry, or other livestock (Dyer, 2007).

Operational definition: In this study, a person that is directly involved in water management activities is considered a farmer. Whether he is a landlord, tenant, the owner or someone else, and could also connected with raising crops or orchards.

1.11.6 Watercourse

Conceptual definition: A watercourse is a natural or artificial channel through which the water flows. In general, it includes rivers, streams, anabranches, and so forth (Merriam, 2014).

Operational definition: In particular, the watercourse (lined or unlined) is referring to the last channel of irrigation structure that carries the water from PLQRUFKDQQHO WR WKH IDUPV DQG LW PXVW EH D OHJDO ZDWHUZD\KDYH IDUPHUV share list and command area map).

1.11.7 Community

Conceptual definition: Community refers to a unit, initiated by a group of people, emphasized by the public participation and is aimed with self-help approach (Cook, 1994).

Operational definition: In this study, the WCA in Sindh province, Pakistan was particularly assumed as the community.

1.12 Organization of the Thesis

The organization of the thesis refers to an arrangement of thesis chapters that must be aligned with the requirement of particular field of study, designed by the institution. The rest of thesis chapters are set up as the following: Chapter one consists of the background of the study, problem statement, research questions, objectives of the study, conceptual framework, rationale of conceptual framework, theoretical framework, the significance of the study, the scope of the study, limitation of the study, conceptual and operational definition terms, and organization of the study; chapter two is the review of previous literature; chapter three contains research methodology which is the research design, sampling procedure, instrumentation, preliminary data analysis, and procedures of data analysis; chapter four consists of data analysis, interpretation and discussions; chapter five includes the summary, conclusion, theoretical implication, contribution, policy implication and recommendations for future study, bibliography/references and appendix of the research. The appendices further sub-divided into five sections, namely A, B, C, D, E and F.

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