A QUANTITATIVE SURVEY OF WATER MANAGEMENT ISSUES IN RURAL SINDH

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Abstract

Agriculture and water management are of the important tools to poverty reduction among farming communities that helps to provide individual and collective benefits, and enhance quality of life. But in real, the farmers of Sindh province are largely dissatisfied with what they have, indicated by the current situation. Therefore, the researcher focused on the background of farming communities to reveal the facts and figures of rural people connected with water management. In this regard, the cross-sectional data were collected on a structured scale through personal interview method, using multi-stage cluster sampling from 457 farmers in Sindh province of Pakistan, and analysis was performed by means of SPSS-20. The results regarding the background of the farmers illustrate that the majority of the farmers aged 36 to 56 were involved in water management activities. In connection with the marital status, an overwhelming majority (98%) of the respondents were married, showing the picture of common rural values, about three fourth (75%) of the respondents are 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-farmers (owner-cultivator), however, an unfair distribution of agricultural land is frequently observed among the farmers in Sindh province of Pakistan. Water logging and salinity was found to be a major issue in the study area as reported by the respondents. Simultaneously, 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 the institutional corruption and bad governance are hurdled behind the issue.

Keywords: *Sindh, Agriculture, Water Management, Bad Governance, Institutional Corruption*

Introduction

Pakistan and agriculture are inseparable for the reason that 25% of its 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). 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).

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). In the historical perspective, the Sindh Irrigation Act-1879 placed no importance on water users' associations. However, later, the 1982 Ordinance made 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.

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). 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).

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. Based on previous research, the researcher is curious to know the benefits in the shape of socio-economic status that the farming communities are sharing together in respect of agriculture while involved in the water management activities 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 old technologies, bad 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).

The farmers' background in Sindh has been raised as an issue associated with participation in water management activities. 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) as the significant variables on participation.

Therefore, farmers' background (demographic, socio-economic, farm, and irrigation characteristics), based on their perceptions make an attachment with the participation. The respondents' background could be further linked with social capital (Paul, 1999) because different cultures generate social capital differently (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 argued that the elements of farmers' background might contribute to the fluctuation of social capital (Helliwell & Putnam, 2007) and participation level in water management and need to be examined. The benefits arising from participation may depend on social capital, which may show a different set of results in terms of geographical location. Considering the farmers' background at the watercourse level is the current issue, the study seeks to answer that "What is the background of the farmers/respondents in Sindh province of Pakistan?"

RESEARCH METHODOLOGY

1. Research Design

The attempted study is in line with a descriptive research methodology, in which a survey was administered to a selected sample from the farmers of watercourse associations. Descriptive research is designed to describe particular relationships within a single group sample, typically used as preliminary studies and generally have rather basic statistical procedures (Trochim, 2000). Surveys are commonly applied in a research methodology designed to collect data from a specific population, or a sample from that population, utilizes a questionnaire as the survey instrument. A survey design is appropriate for obtaining public opinions on social matters and societal realities with reference to the present position of phenomena and/or for defining the natural surroundings of the prevailing circumstances in a state of affairs (Cresswell, 2009; Trochim, 2000; Cohen & Manion, 1980), and adopted for the existing research in Sindh province of Pakistan. Thus, the survey method was adopted because it is proven to be economical, time saving and allows established method of data analysis that appealed to the researcher to deploy in his research as part of a time-bound task.

This study applied a cross-sectional data, which allows a sample of a larger population representative within a limited time frame. Therefore, the respondents from the farming communities or watercourse associations in Sindh province of Pakistan were identified to collect information during 2013-14. The cross-sectional survey involves the collection of data from a sample drawn from an identified population at a particular point in time, and is particularly useful for exploratory and descriptive purposes (Babbie, 2001), and offers to review relations between variables (Reis & Judd, 2000).

2. Study Area

The study was carried out in Sindh province of Pakistan. The study area was selected as the location to conduct the research on because it lies in the tail of irrigation system where the majority of rural people of the region heavily rely on agriculture to fulfil their basic needs and livelihood (John & Usman, 2005). Farming communities are socially and professionally attached with each other at the watercourse level, primarily engaging in the management of irrigation water (Shivakoti, 1991). Yet, the concerns over equity and equality of irrigation water distribution in the study area has been reported (Murray-Rust, et al., 2000), with noticeably decreased benefits in Sindh province of Pakistan (Tagar & Syed, 2013).

3. Sampling Method

In connection with the farming communities that live in naturally-occurring clusters and sub-clusters (FAO, 2012); the technique "Multi-stage cluster sampling" is more preferable and is adopted by dividing the population into justifiable stages with a reasonably large sample size. In addition, some of the researchers encourage adopting multi-stage cluster sampling methods and argue that it is comparatively economical in terms of time and money, and is normally more accurate than a cluster sampling or a single sampling technique for the same sample size (Agresti & Finlay, 2008; Trochim, 2000). For the purpose, the researcher categorized the sample into four justified stages as indicated in Table 1.

Table 1: Sampling frame based on responses

Sindh Province	District	Channel	Respondents per Channel/6 watercourses	Total
Stage-I	Stage-II	Stage-III	Stage-IV	217
Upper Sindh	Ghotki	Soonanh	60	

Lower Sindh	Dadu	Phakka	48	240
	Kashmore	Touj Raj	54	
	Khairpur	Faiz Gunj	54	
	Mirpurkhas	Potha Distry	48	
	Tando Alah Yar	Nagnah	63	
	Badin	Morjhar	49	
	Thatta	Machhki	81	
Total			457	457

4. Sample Size

The study reviewed a formula for shaping the sample size by Cochran (1963). The formula was developed for when the population is either too large or the figure is unknown. Similarly, Raosoft (2014) also recommended a sample size of 385, on the basis of estimated population. For this purpose, the researcher decided to administer 480 questionnaires to conduct this study. In this regard, the maximum sample size of 480 respondents was considered to study at 95% confidence level, and ±4.47 margin of error. Finally, 457 respondents willingly recorded their perceptions at 95% confidence level, and ±4.58 margin of error.

5. Data Collection

The researcher set up camp in four districts (Kandhkot, Khairput, Dadu, and Ghotki) of upper Sindh, for 15 to 20 days in each district. For the lower Sindh, a taxi was hired for two months, where the researcher travelled to and from the studied area on a daily basis. Furthermore, to make the procedure easier and to cope with indiscriminate approach to the farmers, frequent meetings were held by the local irrigation authorities to share the list of selected watercourses of particular minors/distributaries with water users. Moreover, the services of the local irrigation field staff were appreciated (on wages) for quick access to the respondents. However, the cultural findings regarding the values and taboos of the selected localities was also consulted with close friends, colleagues and some students, who were residing in or nearby the study area.

RESULTS AND DISCUSSION

1. Demographic Background

The analysis of data presented in Table 2 describes the demographic background of the respondents. With regard to respondents' status, a simple majority (50.5%) of

the respondents belongs to the category of landlord-cum-farmer (owner-cultivator). Landlord-cum-farmers are farmers who cultivate their land by themselves while also having property rights on the agricultural land. 28% of the respondents fell under the pure landlord category. In the cultural and study context, the landlord (*Zamindaar*) does not directly engage in agricultural practices, but holds the power of management and cultivate their land through their farm workers (*Haari*) or labours. Among the remaining respondents, 33 were tenant-cum-farmers, and the rest consists of 23 tenants, 21 relative-cum-managers, 13 partner-cum-farmers, and 8 partners. A new category "relative-cum-manager" was included in this study when a few of the farmers reported that they were just managing the land for their close relatives upon request without getting any financial benefits.

Likewise, a study conducted 16 years ago pointed out that 68% of the farmers in Sindh province of Pakistan were owner-farmers or landlord-cum-farmers. It was also reported that farmers' categories or tenure system in Sindh include absent landlords, owner-manager, owner-cultivator, owner-cum-tenant, tenants, lessee, managers, owner-cum-manager, and lessee-cum-owner. (Jehangir & Ali, 1998).

Table 2: Demographic Background of the Respondents

Respondents'		Frequency	Percent
Status	Landlord	128	28.0
	Landlord-cum-farmer	231	50.5
	Tenant	23	5.0
	Tenant-cum-farmer	33	7.2
	Partner	8	1.8
	Partner-cum-farmer	13	2.8
	Relative-cum-manager	21	4.6
Education	Illiterate	215	47.0
	Primary	111	24.3
	Matriculation	58	12.7
	Intermediate	40	8.8
	Graduate	20	4.4
	Masters and above	13	2.8
Marital Status	Married	447	97.8
	Unmarried	10	2.2
Family System	Joint Family	342	74.8
	Single Family	115	25.2
Family Members	M = 08,	SD = 5.32	

Further analysis reveals that with regard to formal education, the first majority, a little less than half (47%) of the respondents were illiterate or do not have any formal education. However, the second majority, a little less than one fourth (24%) of the respondents had only primary education, followed by 58 (13%) of the respondents were matriculate. The results disclosed that as the educational level goes up, the number of farmers falls down. The International Labour Organization also reported that literacy rates among the lowest income Quintiles were 35 percent in Sindh (ILO, 2004). However, Pakistan Bureau of Statistics presented the latest report of 2012-13, showing as high as 63.25% literacy level in rural Sindh, while those who do not any formal education, and having a primary education are 17% (GoP, 2013). Hypothetically, the contradictory figure from the Statistics Department of the study may be due to the inclusion of both irrigated and non-irrigated areas, covering the whole rural population.

The frequency of intermediate, graduate and post-graduate respondents were 40, 20 and 13 respectively, out of 457 respondents. Quite similarly, a current study conducted by Saidu et al. (2014) concluded that the majority of educated people looks for better job opportunities rather than being involved in a participatory process; therefore, the lower the education level, the higher the participation in decision making. Ghazouani et al. (2012) also reported that the highest illiteracy rate among water users in Morocco is more than 70%.

In connection with the marital status of the respondents, an overwhelming majority (98%) of the respondents were married, showing the picture of common rural values, and identical to Pakistan Bureau of Statistics report; the age category of 25 and above the majority (97%) of them are married (GoP, 2013). Another query about the family system of the farmers unveiled that about three fourth (75%) of the respondents were habituated in an extended/joint family system. Rural Sindh constitutes a significantly larger household family than the average poor person of Pakistan and they help each other in their daily matters (ILO, 2004), also gives a solid reason to introduce the category of "relative-cum-manager". This study reveals an average of 8 members per family of the respondents.

Age of the Respondents

The initial results of the collected data in Table 3 show reasonable diversity of the farmers' age, which ranges from 25 to 80 years. However, the most frequent age of

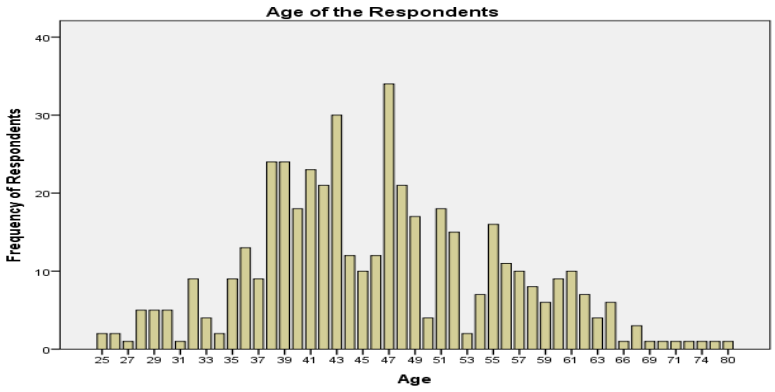
the respondents those were involved in water management activities was 47. Further analysis in Figure 1 shows that the most of farmers' age is within the range of 36 to 57 years. However, Seyed and Sabouri (2011) conducted a study on wheat farmers and reported that the average age those were primarily involved in water management activities in Iran was 32.

Table 3: Age of the Respondents

	Mean	Mode	Std. Deviation	Minimum	Maximum
Age	46	47	9.456	25	80

On the other hand, Ehrensperger and Boniface (2005) reported through an associated survey in Nigeria that almost all the respondents were aged between 30 and 50. Mutuma et al. (2009) conducted a study with the aim to assess water resource conservation in Imenti District of Kenya, and they also reported that the majority of farmers were between the ages of 37 to 54. Older respondents may probably be more mature in making decisions and may be more aware in terms of current issues concerning the water and the region; hence it is relatively unlikely for medium-aged to older people to engage in sensitive issues.

Figure 1: Distribution of Respondents' Age



Distribution of Agricultural Land

Distribution of agricultural land among farmers is a major issue for scholars and policy makers. The results of the study in Table 4 show that a total of 13,860 agricultural land (in acre) were distributed among 457 farmers, with the mean 30.35 acres per farmer in Sindh province of Pakistan. However, occupied land varies

from 2 acres to 328 acres. The analysis showed that the distribution of land is a bit unfair, which is indicated by the standard deviation (41.328) value. Therefore, 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 exceed 50 acres. On the other hand, the owner-cultivators own less than 10 acres of agricultural land (ILO, 2004). Likewise, the data show that the majority of the respondents hold 8 acres agricultural land, also showing valid and authentic information. The researcher is of the opinion that the data was collected from the majority of the small farmers due to their presence in their lands.

Table 4: Distribution of Land (in acre) among Respondents

	Total Land	Mean	Mode	SD	Minimum	Maximum
Total Land	13869	30.35	8	41.328	2	328
Cultivated	10630	23.26	4	31.838	1	218

Figure 2 also explains the same state of affairs as described in Table 4.3. According to respondents, 10,630 acres out of 13869 agricultural lands were cultivated, indicating 23.35% fallow land due to one or other reasons. The result of the study was validated through a study conducted by the International Irrigation Management Institute, Pakistan. It was reported that the Sindh province stretches over an area of about 14.09 Million Hectare, out of 3.08 Million Hectare are classified as fallow land at 22% (Jehangir & Ali, 1998).

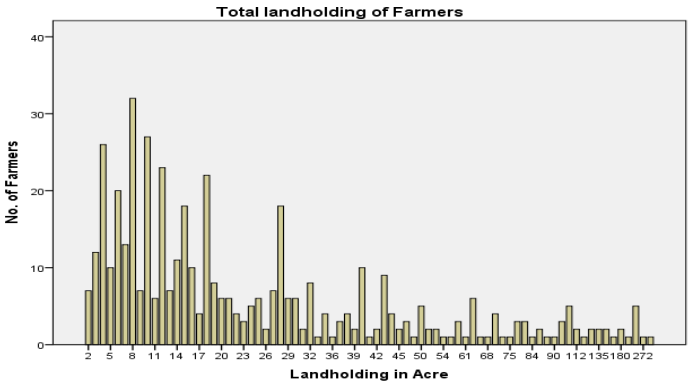


Figure 2: Distribution of Land among Respondents

2. Socio-economic Status

Normally, socio-economic status is recognized through earnings and savings. Initially, the researcher adopted the same procedure, but failed to get proper information from respondents due to the lack of financial record, high illiteracy rate and disinclination towards sharing monetary benefits. Hence, the plan was changed and it remained restricted to get information indirectly. Table 5 elaborates that an overwhelming majority (83%) of the respondents still fully depend on agriculture for their livelihood necessities. It was estimated and also authenticated by ILO (2004) that in rural Sindh, more than 80 percent of the population relies on agriculture and depends on crops alone.

Table 5: Socio-economic Status of Farmers

		Frequency	Percent
Occupational Details	Full time Farming	381	83.4
	Part time Farming	76	16.6
House Type	Muddy/Semi Cemented	172	37.6
	Cemented	265	58.0
	Bungalow	20	4.4
Residential Location	At Farm	73	16.0
	Village	359	78.6
	City	25	5.5
Proper Rights of House	Nil	40	8.8
	Rent	76	16.6
	Owner	341	74.6
Water logging and Salinity	Severe	3	.7
	High	47	10.3
	Medium	138	30.2
	Low	140	30.6
	Nil	129	28.2
Soil Fertility	Poor	29	6.3
	Fair	128	28.0
	Good	212	46.4
	Excellent	88	19.3

An overall majority 437 (96%) of the respondents were residing in either semi-cemented or cemented houses, portraying the picture of medium to low socio-economic level. An overwhelming majority (79%) of the farmers were habituated

in villages and again showing the dependency on agriculture and lacking basic facilities. About three fourth (75%) have property rights as the owner of the houses adjusted with it. Further analysis of the data revealed that 28% of the farmers had no problem of water logging and salinity. Water logging, salinity and sodicity have reduced the drainage capacity of the soils, resulting in lower soil fertility, and decline in crop yields and ultimately disturb the socio-economic condition of rural families (Shah, et al., 2011). Due to the lack of drainage facilities and other factors, 75 percent of cultivable land is degraded mainly because of water logging and salinity, which cause a serious threat to food security, income and employment in the farming community, particularly to small landowners (ILO, 2004). Similarly, regarding water logging and salinity, a little less than three fourth (72%) of the respondents showed their concern about the issue; this varies from low to severe. Increased levels of water logging and a reduced amount of soil fertility leads to low crop production and high input costs, generally supposed as weak socio-economic indicators. In contrast, a little less than three fourth majorities (74%) of the respondents were of the opinion that the soil fertility of their land is still fair enough to cultivate different crops and in obtaining desirable production.

Besides the socio-economic condition, the inquiry was made about the satisfaction level of farmers over irrigation and drainage system infrastructure prevailing under the situation. The purpose to get acquainted with this was to establish links with the socioeconomic condition of farmers, because an overwhelming majority of the farmers only relies on irrigation and agriculture for their livelihood and do not have any other source of income. On the other hand, water logging, salinity and sodicity have reduced the drainage capacity of the soils, resulting in lower soil fertility, decline in crop yields and loss of biodiversity (Shah, et al., 2011). Lack of proper drainage facilities lead to water logging and salinity, while 75 percent of cultivable land is degraded, which is causing a serious threat to farming communities, particularly to small landowners (ILO, 2004). The major factor contributing to water logging in cultivated areas of the country is an excessive penetration from the canal system, which builds up the groundwater level (Shah, et al., 2011). Therefore, a weak irrigation and drainage infrastructure may contribute inversely in order to gain desirable crop production and income. The researcher, for that reason, is keen to be acquainted to the existing irrigation and drainage system through respondents' viewpoint and connect it with their socio-economic conditions.

3. Irrigation and Drainage Infrastructure

In order to gather the perceptions of farmers regarding present irrigation and drainage infrastructure, eight related questions were asked: land is irrigated through either lift system or gravitational canal water, satisfaction over canal water availability, underground water quality, use of underground water for irrigation purpose, availability of drainage system, effectiveness of drainage system, condition of a watercourse, and cleaning frequency of their watercourses. Finally, the responses of farmers were combined together and the mean value is presented in Table 6 with three major categories i.e. completely satisfied, partially satisfied and dissatisfied. The results of the study showed in Table 6 that only 100 out of 457 (22%) of the respondents were fully satisfied with the existing irrigation and drainage infrastructure. On the other hand, a huge majority of about 78% of the respondents was of the opinion that there is certainly a room for improvement in the current system of irrigation and drainage, and is therefore rated either partially dissatisfied or dissatisfied. Due to lack of investment on the irrigation and drainage system, the irrigation water losses are higher and a total of about 37.6 percent of the gross command area is under water logging and salinity, which reduces production by 40 to 60 percent (Lashari & Mahesar, 2012). Therefore, inappropriate and inefficient irrigation has raised the water table, certainly leading to rising problems of salinity and water logging, and reducing the productivity of agricultural lands. It is therefore recommended to re-visit the irrigation and drainage system to increase its efficiency (Zaman & Ahmed, 2009).

Table 6: Responses over Irrigation and Drainage Infrastructure

Responses	Frequency	Percent
Completely Satisfied	100	21.9
Partially Satisfied	204	44.6
Dissatisfied	153	33.5
Total	457	100.0

Most of the respondents were farmers and tenants, however, some of them were pure landlords (*Zamindaars*), managers, partners and relative managers. "Relative managers" were the farmers who were looking after their relatives' agricultural land voluntarily, and were identified during the data collection and added in the questionnaire. The majority of the farmers were habituated nearby the villages or in farm houses. Houses in most of the villages were found cemented and semi-

cemented but farm houses were typically made of mud, cots under the trees, scattered agricultural implements and livestock were reared. The agricultural tools, tractors, threshers, cultivators, land levellers, spray machines, tube wells and couples of bullocks were also seen in selected districts of Sindh province of Pakistan. The houses on farms were surrounded by fences of bushes and found to have a comparatively great number of family members as compared to other localities, while living in a combined family system. In some places, women were also engaged in agricultural activities but to interact with them without the permission of their family head is totally prohibited. Breaching such values may cause a threat to life; therefore, the researcher carefully followed local norms and values.

Usually, farmers visit nearby cities and villages to purchase groceries and agricultural items, almost on a daily basis. Motorbikes were frequently observed to travel and having a car is referred to as a symbol of status by the farmers. Almost all the farmers had cell phones, which are considered as a quick and cheaper source of communication. A majority of the farmers were completely illiterate, having no formal education and could not read and write, but advocates education. However, weak infrastructure of education system in rural areas is considered a huge hurdle to provide education for their young ones.

Informal discussions with the farmers disclosed that the agriculture in Pakistan is no longer a profitable profession merely because of rising costs of inputs, climatic changes, ineffective irrigation system, government negligence, as well as conflicts between farmers over water distribution and declining rates of their products. Water logging and lack of drainage infrastructure were also frequently observed to potentially contribute to low yield and weak socio-economic status of Sindh farmers, also reported by the related scholars. Most of the farmers tend to do side businesses besides the agriculture. However, they do not want to switch over their profession completely because the land belongs to their forefathers and it still has the potential to flourish.

Conclusion

While wrapping up the results of the study, the researcher arrived at the conclusion that with regard to the background of the farmers in Sindh province of Pakistan, maturing people ran the majority of the watercourse associations, and

weak socioeconomic indicators were frequently observed among the farmers. Simultaneously, disappointing irrigation and drainage system was also detected invariably in Sindh province of Pakistan, which shows certain weaknesses and sluggish behaviour from the concerned department.

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