# Indigenous Response to Modern Agriculture: An Anthropological Study of Agriculture Productivity through Planned Change

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**Abstract:**

  *The ever increasing population along with global climatic changes i.e. variations in the ecosystem, thinning of arable land and diminishing soil and water resources has led us to the inevitable challenge of food insecurity and resource management. The paper advocates the need to improve the government interventions for sustainable agricultural development, by making it more participatory in its design and implementation, blending the traditional local knowledge with reference to their opportunities or constraints to bridge the transitional lag. Moreover, the extension services must engage with*

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*and seep into the community, focusing group development instead of marginalized individualistic approaches by proper administration and monitoring. The study was conducted in the villages of Ghora Gali, and Arukas, District Rawalpindi using a blend of both qualitative and quantitative techniques, by drawing a sample of 200.*

**Key words:** Agriculture productivity, Resource management, IKS, Mechanized farming, Agriculture planning

## Introduction

Population pressure and food insecurity undoubtedly fixates to the solution of agricultural intensification, to increase productivity and sustain growth by introducing various adaptive strategies for the utilization of the natural resources. Thus, as Zuberi and Thomas, (2012) cites that, 'There is a dynamic interrelation among population, food security, the environment, and natural resources', strengthened by (DasGupta 1993; Sen 1999; UNCTAD 2010) Hence, agricultural intensification is almost always followed by environmental degradation, due to ineffective resource management and lack of effective participatory interventions to support sustainability.

The faith in sustainable agriculture persists as Chaudhry and Chaudhry (2011), affirm that it strives to make the society 'independent', by building a more equitable, integrated, and resource conserving farming system. Sustainable independent agriculture has become a necessity, as a report, 'Our common future' of World Commission on Environment and Development, states that "Agriculture does not lack resources; it lacks policies to ensure that the food is produced where it is needed and in a manner that sustains the livelihoods of the rural poor."

Chaudhry and Chaudhry (2013), stressed upon the integration of Indigenous knowledge Systems by citing United Nations (1997), that 'development is and should be centered on human beings' and a multidimensional approach be adopted that focuses 'economic and social development and environmental protection". Thus, increasing productivity is a need, a necessity, while resource management and sustainability is a challenge, a goal to avoid holocaust.

The results of Chaudhry (2013) research are in harmony with the core discussion of the paper, according to the local community observed, "Participation depends upon three phases, decision making, implementation, and empowerment". Thus, the foundation for grass root level development must be participatory, revolving around the individual and group empowerment.

Agricultural development throughout the developing world has intentionally marginalized the rural poor, neglecting the significance of local participation and inclusion of traditional local knowledge. Altieri (2002) agrees and states that, "the areas in the developing world, characterized by traditional/subsistence agriculture, remain poorly served by the top-down transfer-of-technology approach, due to its bias in favor of modern scientific knowledge and its neglect of local participation and traditional knowledge."

Chaudhry (2013), further states that the promise of modernization and development has not yet been fulfilled; instead the "local people" are muddled into the "development riddle" the most decisive element 'culture' is omitted. The major breakthrough in terms of mechanization in the agricultural world was bought by the "Green Revolution", which according to Saeed was, (2007) 'in the form of inputs like high yielding varieties of seed (HYV) , fertilizers, pesticides accompanied by a greater spread of agricultural mechanization mainly in terms of tube-wells and tractors.'

However, this top-down oriented approach naturally bestowed its benefits only over farmers that had relatively more capital. Altieri (2002) cites Shiva (1991) who strengthens the arguments and states that, "the farmers with the larger and better-endowed lands gained the most, whereas farmers with fewer resources often lost, and income disparities were often accentuated." Thus, as stated by Pearse (1980), "the resource-poor farmers gained very little from the Green Revolution".

The paper projects that the government projects if want to be effective need to involve the community as a whole, and be participatory truly to the core as cited by Van Heck (IDRC report) (2003) , "Only through group approaches the large numbers of marginalized rural people can be "reached" effectively" as the "individualistic approaches benefit mostly the better-off-people". This is possible only if the social constraints of the community are truly recognized and worked out.

## Review of Literature

This millennium can be marked by the target to achieve increased agricultural productivity in the most sustainable manner possible as to cope with the issue of food insecurity. The need to increase food supply and secure these commodities is imperative "to cope with increasing population under diminishing per capita arable land, water, degrading soil resources and expanding biotic stresses". (Paarlberg, 2002)

Sustainable agricultural practices according to Chaudhry and Chaudhry (2011) abate, 'environmental degradation, maintain agricultural productivity and promote economic viability in both the short and long term'. The argument here is to develop and democratically implement a model representative of indigenous knowledge. As Chaudhry (2013) argues, that "Pakistani state never witnessed implementation of any model for development or rural development strategy that preferred indigenous knowledge".

According to the Human Development Report (2010), overtime the development agendas have significantly changed. The importance given to the impact of various aspect of development have dynamically changed from 'capital investment', to 'human capital', to 'market and policies', over to the 'institutions', and currently to 'individual' and 'group empowerment' as to extend a sense of 'country ownership'.

Riorden and Voisey (1998) point out that the, "Sustainability ideal is more inclusive, more empowering and more transparent". However, the development paradigms put into action in Pakistan as reviewed by Chaudhry (2013), have "not been democratic in nature" while the bottom up approaches are only masking the "westernized models".

Thus, a major constraint in the course of sustainable development is the divorce between the development projects and the traditional cultural practices. The local knowledge defines peoples 'cultural identities', IDRC (2003), which are often ignored and thus as FAO (2003) recognized that without the participation of people the development efforts cannot be 'effective'.

Small scale farming is considered representative of sustainable agriculture as it provides equal opportunities to empowerment, as Chaudhry (2013) sites Gripsun (2003), " social organization of small-scale farming may promote empowerment". However, it not very often that sustainable agricultural development is designed in the context of indigenous knowledge, perceptions and practices embracing the socially excluded, small-scale and landless farmers.

The South-Asian culture illustrates that the ascribed status often outlines the achieved status. As Weber quoted by Mc Gee and Warms (2004) states that the, group to which an individual belongs to is decisive of what he may acquire, like having 'property' or 'lack of property', being 'owners' or 'non-owners'. Material property is distributed in this mode where the non-owners are excluded from competing while only the

owners that provide usable returns are favored. Ownership of "agriculturally usable land, large and small holding", in this case defined who will be preferred and who will be excluded.

Power factions within a rural community can be accounted as a major constraint in the development projects. The circumstances become far more severe when the community has minimal resources. Thus, a development project, projecting to be participatory should also contextualize participation within the local framework of factions. As Van Heck (2003) states, that the "participation must be planned and promoted according to different local contexts and factions".

The local power groups are mostly based upon caste, *biradari* or political groups. Kottak (2011) defines caste as a "stratified group" which provides membership at the time of "birth" and achieves an "ascribed" status simultaneously. While, *biradari* according to Chaudhry, et al (2014), is when one belongs to an "analogous racial group" or caste having "innate affiliation" with the group members leading to reciprocity.

The power struggle among various castes, and inter *biradari* is observed by Chaudhry, et al (2014), stating that, people's participation in racial discrimination is still at large, and that they "create conflicts with other caste on land and other social and material issues, and also hinder in community development if opponent caste is in power". Social cohesion however is also on the basis of caste or *biradari* as Lyons (2002) quotes Chaudhry (1999) that the two terms caste and *biradari* can be interchangeably used, however *biradari* are "hierarchically ranked interdependent groups" that work on reciprocity.

The gender based constraints also hinder the community participation, depending largely upon the availability and accessibility of the demonstration center for the community. The males thus can participate far more easily than the females. Syed (2009) recognizes this disproportional

participation as a result of "limited access to economic opportunities, social services, restricted mobility, low social status and lack of ready access to productive assets such as land and agriculture."

## Materials and Methods

The research was conducted in the villages *Ghora Gali* and *Arokas* of *Tehsil Murree*, *Zila* Rawalpindi (Pakistan) which was selected to be the sampling frame. To collect the views from the targeted population a sample of 200 respondents were selected through a mixed sampling method, selecting 100 respondents from two clusters i.e. *Ghora Gali* and *Arokas* using convenience sampling.   An extensive socio-economic census form and interview guides were developed to generate data on the cultural response to modern agriculture.

## Results and Discussion

## Social Opportunities and Constraint

*1.  Fractured/ sundered communication channels*
The transfer of the technology and its adoption depends over various factors. The innovation to be diffused requires certain mediums or communication channels that influence the spread of a new idea. Rogers (2003) states that, 'innovation', 'communication channels', 'time' and the 'social system' are the factors that influence the adoption rate.

Communication channels, the means by which messages reach from one individual to another inevitably play a crucial role in the adoption of a new technology. In case of *Ghora Gali* and *Arukas*, the communication system was fairly fractured, hampered by various institutional flaws and limitations of the community.

The project initially interacted with the community not directly or as a whole but through certain influential's. These members of the community were chosen on the basis of their large agricultural land holdings, and agreement to assist the intervention in return of project assets. The chosen members were made the channels of communication from there onwards. The community had to interact first with these individuals, who then communicated there issue and suggestions to the project heads. These specific individuals were responsible for communicating the project meetings, demonstration timings and all the major project information to the whole community. The members of the community when inquired about the means through which they were contacted, or received information about the project stated that mostly interpersonal channels were responsible. The meetings were not announced through advertisements in television, or radio, nor through the local mosque, or banners. The community project heads, telephonically invited members of the community that had already become a part of the project, for any meetings or trainings. This not only held a lot of burden over a few individuals, but also hurdled transparency and equity.

### Case Study # 1

A case study of the community project representative in *Arukas*, further puts light on the communication methods in the locale.

"Fazal Qadir, 49, I am now the president of the local NGO that is still under the process of registration, under the name of "ASRADO" (*Arukas* Social and Rural Area Development Organization). The organization was locally made on the proposal and combined efforts of M. Saleem Pomee and M. Tariq from NARC (National Agriculture Research Centre). It started working right about at the same time as the project, as a bridge between the development project and the community. The individuals from then onwards that became a

part of the local NGO consequently became a part of the project too and became eligible for receiving the project assets.

The members of the local NGO are personally invited by me for all meetings and trainings through telephonic invitations. It must be affirmed that is exceedingly hectic to telephone each individual and request them to come to the meetings. It is not only time consuming, but also uneconomic as the project does not fund me in this matter. I have not been given any accurate instructions as regards the communication mediums that I should use to gather the community, neither m I particularly opted for the job. Since I am the head of the local NGO thus, it is merely assumed that I have to gather the individuals, with no instructions given and no questions asked policy."

### Case Study # 2

In *Ghora Gali*, the communication conditions were far more problematic, since there was no permanent demonstration office present within the locale. The community level local group or committee *'Tanzeem'* was established here too; however it did not take any formal form. The case study of the female representative of the *'tanzeem'* Naeema Bibi, wife of Zubair Abbasi, brings forth the underlying fact of the conditions of *Ghora Gali*.

"The representatives of the NARC project, M. Saleem and Sundas came to meet me, and two other males of the community M. Javaid and Muhammad Khawar. We were chosen on the basis that M. Javaid and M. Khawar had large land holdings and were agriculturalists while my husband works in the forestry department.

The project came to us with the proposal that if we cooperate with them, and help them diffuse the new farming techniques then we will receive project assets like free seeds, fertilizers and *'tankies'* for kitchen gardening. We agreed upon this condition and thus a female committee was formulated

including 15 women that were mostly my relatives and neighbors. The major meetings and trainings were all held either in *Arukas* or in *Satra Meel*. However, for Kitchen Gardening the female committee meetings were held at my place. I was responsible for gathering the females, and passing on the applications for the '*tankies*' and rest of the assets. I used to telephonically communicate the timings of the meetings or sent my daughters son to call the neighboring women. In the beginning the project worked smoothly however, eventually the project asset distribution criterion caused a lot of confusion and conflicts among the community members. People within our own *biradari* held grudge against us and gave '*gilla'* as we had received *tankies* for kitchen gardening while the others had not. We were constantly reminded and the soreness still continues as the project workers did not hold any group meetings to resolve our conflicts or clear people's confusions".

**Pearson Correlation Sig. (2 tailed)**

| Independent Variable | Dependent Variable | Correlation Sig. (2 tailed) |
|---|---|---|
| Pilot Study Conducted | Active Participation in the Project | .11 |
| Means to Approach Community Initially | | .017 |
| Community Level Meetings Before Project Implementation | | .11 |
| Number of Meetings after Project Implementation | | -.41 |
| Demonstrations and Meetings with Center (daily, weekly, monthly/6months) | | .39 |
| Means to Receive Information Regarding Project | | .19 |

Result of two tailed correlation value of, "Was a pilot study conducted", with "Are you an active participant in the project", was .11 which reflects that since no pilot study was conducted, only 11 percent affect was observed. Moreover, 69 percent

respondents agreed that no pilot study was conducted to understand the indigenous techniques or practices, neither were their opinions considered in developing the techniques that were later introduced. Moreover, Hulse (2007) points out that initially development solely focused over economic growth, disregarding the 'social factors' entirely. Thus, a pilot study could have been a means to understand the social constraints; its absence affected the adoption of modern technology immeasurably.

The correlation value of, "Means to approach community initially", and "Are you an active participant", was .017 which shows that since the community was not approached through multiple communication channels and solely depended upon interpersonal channels t i.e. face-to-face exchange of information the participation was seriously hindered, increasing the odds of inequality and discrimination. Rogers (1983) further quotes, "Mass media channels are relatively more important than interpersonal channels for earlier adopters than for later adopters."

The correlation value of, "Community level meetings before project implementation", and "Are you an active participant", was .11 i.e. 11 percent, reflecting that since community level meetings before implementation of the project were not organized nor was a pilot study conducted, the community of the locale was left ignorant and oblivious to either the initiation of or the objectives of the study which led to a mere 22.0 percent of the population to categorize themselves as "active participants", 74.0 percent were "non-participants", while 3.5 percent of the participants worked actively and then left the project due to dissatisfaction. The absence of pre-project meetings confirms that a top-down approach was adopted by the project. Award (2008) also agrees, that 'local involvement' could have led to higher "success rate of projects".

The correlation value of, "Number of meeting after project implementation", with "Are you an active participant", was -.41 i.e. the two variables had a negative effect upon each other, since the community members attended minimal meetings, were not consistent and regular. The role of change agents is crucial in the preliminary stages; the minimal meetings weakened the bond between the project and the community. To achieve participation 'mobilization' is mandatory Chaudhry (2005) to persuade people "to support the movement organization by material and non-material means". The project even though was allegedly participatory in nature yet the social mobilization tools were not actively applied to bring about change.

The correlation value of, "Demonstrations or meetings held with center (daily, weekly, monthly/6 months)" with "Are you active participant", was .39 i.e. 39 percent relation was found among the two variables. The majority, 51 percent of the respondents, agreed that the demonstrations were held after 6 months in winters and every other month in summers. The local community level meetings were nearly absent and no regular schedule of meetings was known to the community of *Ghora Gali* which obviously led to alien farming techniques. The citation enlightens the limitations of the project's model; Syed (2009) states that "constant contact" with the community members within their "own community" guarantees 'familiarity with socio-cultural and economic demands' of the community. Since there were minimal group meetings that were usually not held within the locale, the gap between the project staff and community members increased.

The correlation value of the variables "Means to receive information regarding project" with "Are you an active participants", was .19 i.e. 19 percent, since the diffusion process was solely face-to-face interaction based the information passed on was often incomplete, meeting timings were not accurately communicated, leading to domination of the opportunistic

nature of people due to minimal resources. The situation could have been avoided if the communication channels were appropriately designed to be more transparent. Rogers (2003) states, that initially at the 'awareness stage' when the community is introduced to the innovation they 'lack complete information' regarding it, thus the diffusion is slow and stuttered by influential power groups.

The overall data indicates that communication channels used for the diffusion of the innovations were relatively weak, as a major portion of the population was unaware of the project goals, or existence. 'Mass Media Channels' according to Rogers (1983) is the most 'rapid and efficient means to inform about the existence of an innovation'. It was observed that no print media, radio, television or newspapers were used to reach the community members leading to exclusion of majority of the population. While the population involved was left in dismay due to fractured communication tools, lack of group meeting for conflict resolution and transparency. This eventually became the key constraint in the adoption of new technologies for increasing productivity and resource management.

2. *Authority hijacked by the local Influentials in Case 1, by Local Power Groups in Case 2.*

The data collected sketches the accurate picture of the scenario created when the project has a frail administration and monitoring system and the authority is hijacked by either the local influential's, or local power group (*Biradari* or Caste). The socio-economic census survey indicated the different castes/biradaris found in the locale. The majority of the respondents 52.5 percent belonged to the '*Abbasi Dondh*' *biradari*. Abbasi's are native to the area, and have hold over all the major assets of the community, for example, lands more fertile, closer to the water outlet and main road belong to the Abbasi's. This factor brings them in the spotlight for all the major development interventions. The inter-*biradari,* and inter-

caste relationships within a community stuttered the diffusion of new farming practices.

It must also be kept in view that the project techniques introduced in both the locales were not similar; neither was the project assets equally distributed due to the bias shown by the agricultural staff. The locale of '*Ghora Gali*', was focused majorly for interventions in '*kanak*' i.e. wheat and '*makki*' i.e. maize farming practices and 'roof top harvesting'. To facilitate the interventions which purely revolved around major inputs like water and fertilizers, water management techniques like , '*koonwa*' i.e. 'dug wells', and '*par nalay*' with '*tankies*' to store rainwater were introduced. Economic assistance was provided to a few households, in form of cemented '*kangan*' rings for dug wells, and '*tankies*' for rain water storage, as a 'model' for water management, however, it was seriously misinterpreted by the general public who considered it as a 'scheme' that provides these assets. The general public focused only on achieving the project assets, using personnel contacts. And since the communication channels were frail and ineffective, the dogma was faced till the end.

## Case Study # 3

Muhammad Nayar Walad Muhammad Zafeer, 31, was unmarried and lived in a joint family system with his two elder brothers. He is a car-mechanic, and owns a repair shop where all the brothers work together. The total land holding they own is four kanal, which is only, partially harvested occasionally with maize. The major reason behind the inconsistency in the cropping is due to the absence of a permanent water source. Zohra Bibi, 55, Muhammad Nayar's mother bitterly conveyed that, "the people of the community that were sharp, cunning and had efficient social networks achieved all the project assets. If the criteria to attain the project assets were to actively participate in the meetings and have sufficient landholding than we were more than eligible to receive them. We went to

'*Arukas*' and '*Satra Meel*' for the community level meetings and expressed our request for a *'tankie'*, we gave our application not only to the foreigners in the meetings and the project worker Sundas, but also to the community members who had already received it. It felt like we are only running in circles, like beggars pleading for charity. The most discouraging part was that even though the project argued that the criterion of provision of 'tankies' to the households was, agreement to do kitchen gardening, and unquestionably a reasonable amount of land, people who fulfilled these criterions did not receive anything, while our neighbors who had no land or place to grow vegetables received it through her personal contact. The irony of the situation is that now she plants vegetables in pots, tins and bottles." Muhammad Nayar further expressed that the project members started avoiding them and stopped visiting since a lot of the community members were getting restless. He also informed that the community argued that instead of 'tankies' they should be provided with a permanent solution to the water scarcity and a tank should be constructed in front of the stream to accumulate the access runoff water that is exhausted every winters. The family was acrimonious and expressed their displeasure by affirming; that the inequality of the project has left the community divided and affected the public relations negatively.

The findings of this research are in complete harmony with the empirical data of the research done by Chaudhry (2013) in the District of Sheikhupura, states, "participation of people in development practices according to the village community is absent in modern farming practices due to the bias showed to them by agriculture staff".

**Pearson Correlation Sig. (2 tailed)**

| Independent Variable | Dependent Variable | Correlation Sig. (2 tailed) |
|---|---|---|
| Eligibility to Receive Project Assets were Clear | Will You Continue Work After the Project Ends | .399 |
| Rejection of Applications were Discussed in Group | | .30 |
| Dialogue Promoted for Conflict Resolution | | .41 |
| Preferential Treatment Observed in Asset Distribution | | -.0305 |

The correlation value of the variables, "Eligibility to receive project assets were clear" and "Will you continue work after the project end", was .399 i.e. 39 percent which reflects that the criterion for the distribution of the project assets was not clear thus the individuals prepared to continue working after the project ends was low. The sample interviewed, illustrated that 43.5 percent of the interviewee affirmed that there were no clear criterions that they could fulfill to receive the project assets. While, 32.5 did not know if there was any eligibility standards as they had not participated in the project. The uncertainty inevitably leads to distrust within the system leading to conflicts and faction formation. Firth (1957), also agrees that factional groups are formed due to "apposition" in interests, promoting individual objectives rather than the entire society. Moreover as the communication channels were inter-personnel, Lionberger (1960) states that 'communicators of information' can influence the information communicated 'positively or negatively', thus, the use of 'personal influence is almost a certainty'.

The correlation value of, "Rejection of Applications Discussed in Group meetings", with "Will you continue work after the project end", was .30 i.e. 30 percent association was found between the rejection of the applications to receive project assets being discussed in a group meeting and rate of participation or adoption. Nasir (2013) predicts that "intensive"

factional rivalry may lead to "perceptions of disunity" within the organization. It can be evidence for the minimal rate of adoption, since the community was outraged by the rejection of applications and then avoidance of the project staff to clear the confusions and conflicts.

The correlation value of, "Dialogue for Conflict Resolution", with "Will you continue work after the project end", was .41 i.e. 41 percent, relation was found between the two variables. The data supports that since no dialogue for conflict resolution was held, thus the participation was exceedingly low. The social bonds were affected, and the network of *biradari* was injured. Pawlitzky et al (2008) predicts that conflicts when not resolved "insecurity and the potential for more violence persist."

The correlation value, - 0.0305 of variables "Preferential treatment observed in asset distribution", with "Will you continue work after the project end", demonstrates that the preferential treatment by project workers on the basis of landownership and power, completely sabotaged the chances of fair participation. Explorations made by Eglar (2010) strengthen the results that 'having more land' leads to stretched out connections, influential social circle formation and thus attain amplified 'power, influence and prestige'. Land ownership thus was specified as a basis of preferential treatment.

The study thus confirms that exploitation, economic inequality and privileged profiting are the constraints that instigate disruption and hinder effective working of a social organization, as Filho cites Marx's claim (2003), that capitalism is a limitation which must be eliminated as 'economic equality is essential for political equality' and thus to provide all members of the society equal opportunities.

3. *Accessibility of the demonstration centers. (female oriented tech but accessibility male oriented)*

The major constraint observed, faced by the community was the accessibility to the demonstration centers. *Ghora Gali* and *Arukas* both the villages were supposed to be equipped with permanent demonstration centers for the diffusion of the modern farming technology. The availability and then the accessibility to these centers were obviously decisive of the rate of adoption. While interviewing the project staff, there was a clear distinction among their opinions regarding the communities of the both locales. The community of the *Arukas* village was said to be, "hard working, cooperative, active and adopted the modern technology more rapidly", while the community of *Ghora Gali* was simply labeled as being "traditionalist, indolent and laggards". Participant observation, and in-depth interviews, unraveled the reality behind the apparent non-adoption and laggardness of the community.

It was firstly observed that a permanent demonstration center, a working office with permanent extension service was unavailable in *Ghora Gali*, while was present in *Arukas*. Apart from a few demonstrations within the locale all the major demonstrations and meetings for the people of the *Ghora Gali* were organized either in *Arukas* or *Satra Meel*. *Satra Meel* was a center established exclusively for research purpose and as an ideal model for water management and modern farming techniques, with no community interaction. *Arukas* had a center office with project staff members, which shaped up a nursery as a model. Two workers were taken from the community while two staff members were head officials who were responsible for providing information regarding new farming techniques, mobilizing and motivating by providing assistance in case of any farming problem. However in the time periods of research the staff heads were usually found absent from the locale, the community did not consider them responsible for any assistance, and did not contact them even in

case of farming emergencies. The project provided them with money and the heads of the community level '*tanzeem*' arranged for maximum two cars that used to take only specific, selected members of the community to the demonstrations. This obviously restricted the females to a large extent, since leaving their homes and families and breaking from their daily routines became a major constraint.

Secondly it was observed that the project techniques introduced both in *Ghora Gali* and *Arukas* had a stark contrast. *Ghora Gali* was introduced with modern techniques of wheat and maize harvesting that was solely dependent upon natural assets like water which was scarce in the locale. Further they were introduced with the techniques of Kitchen gardening, mushroom cultivation and honey bee farming which were strictly female oriented, required vigorous training and motivation. However, the lack of a permanent demonstration center within the locale, and restricted mobility of the females led to first non diffusion of the project techniques thus leading to non adoption. *Arukas* on the other hand was not only introduced with the modern wheat and maize harvesting techniques and kitchen gardening but also tunnel farming. Even though the locale was labeled as active adopters and had relatively a reduced scarcity of water did not actively adopt the modern methods of wheat and maize harvesting. They were more inclined towards kitchen gardening and tunnel farming which was taken care by females and males respectively. Since the locale had a permanent source of water in the form of a *"Kass"* thus the landholders closer to the water outlet adopted rapidly while the households far it were more or less similar to *Ghora Gali* in their conditions.

Apart from the availability and accessibility of demonstration centers, the gender roles and decision making to participate and adopt modern farming techniques was also observed to be a constraint for both genders. The females of the community were kept quite busy with the household chores and

the daily routine was itself very demanding. Moreover, the males were not purely agriculturalists, had full day jobs and practiced agriculture for subsistence purposes only.  Thus the gender roles and the time consuming modern farming techniques came into a clash. Most of the females of the community traditionally had mobility constraints; thus could not actively participate in the demonstrations. Moreover, farming was considered male oriented, and since the landholdings were owned by males the decision making was also in the hands of males.

**Pearson Correlation Sig. (2 tailed)**

| Independent Variable | Dependent Variable | Correlation Sig. (2 tailed) |
|---|---|---|
| Is the Center Within Your Area | Active Participation in the Project | -.005 |
| Is the Demonstration Center Easily Accessible? | | .117 |
| Do the Women have Mobility Constraints? | | -.046 |
| Means to Reach the Demonstration Center. | | .418 |

The correlation value of "Is the center within your area" with "Active participation in the project", is -.005 that reflects that the role played by a demonstration center in the participation and eventually adoption had no relationship. A demonstration center within the locale with an active extension system is crucial for successful participation and adoption of new farming technologies however; as 49 percent of the respondents revealed that no permanent center office was present within the locale which was registered to be true for *Ghora Gali* village. While, 51.0 percent of the respondents said that a center was available within the area, which was true in case of *Arukas* village.

The correlation value of "Is the demonstration center easily accessible" with "Active participation in the project", was .117 i.e. 12 percent relationship. It further reveals the

restrictions faced by the community members since after availability, the accessibility to the demonstration center becomes a crucial factor that determines the effectiveness, and degree to which an innovation will be diffused. 36.0 percent of the respondents affirmed that the demonstration center was accessible while 64.0 expressed that the center was quite far off and thus not easily accessible. As 70.0 percent of the houses were in highland areas and only 23.9 percent were settled in relatively low land areas, the issue of accessibility becomes evident. The issue of female based techniques and the issue of accessibility are also cleared.

The correlation value of "Do women have mobility constraints" with "Active participation in the project" was -.046 shows that the relation between the mobility constraints and participation were confirmed as negative impact over participation. Syed further (2009) confirms, "Restricted mobility" as one of the various constraints that hinder equal participation of both genders.

The correlation value of "Means to Reach the Demonstration Center" with "Active participation in the project" was .418 i.e. 42 percent association was found between the two variables. The data showed that the people of *Arukas* reached the demonstration centers on their own, however, the members of *Ghora Gali* had to hire a cab to go to *Satra Meel* or *Arukas* for the major demonstrations. This clearly restricted a large group of people to travel specifically females due to the cultural constraints of mobility, issues of *'parda'*, leaving household chores.

## Conclusion

If the development world understood that the present profligacy can only lead to an inevitable holocaust then the transition to traditional sustainability models determined by social limitations and opportunities would have spurted onwards. The

spirit of development cripples whenever the saddle of social constraints is ignored and not taken in account, as the research findings unquestionably unraveled. The project faced various barriers in the dissemination of modern innovations, mostly related to project limitations. The communication channels were fairly frail, letting the power groups seep in and hijack the authority to distribute assets. The flawed monitoring system and laggardness on the part of the extension system made the participation restricted. Furthermore, the major failing in the project design was the blinded idea of not making the demonstration centers available and accessible to both the locales. The social trepidations, division of labor and mobility constraints attached to the female gender were simply overlooked with the result of non-adoption. The allegedly participatory sustainable techniques were un-contextualized because of omitted local involvement and thus were neither socially, ecologically nor economically compatible.

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