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## Historical overview of agricultural extension services in Pakistan

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### Abstract

*In Pakistan various agricultural extension and rural development programs were initiated in order to accelerate agriculture sector. Agriculture extension services are considered as the prime vehicle to disseminate information which encourage technology transfer, human resource and social capital development, cost-effective and environmentally sustainable policies. It also strengthens the capacity building of farmers and improves their livelihood. But the public agricultural extension services sector running insufficient funds, bureaucratic approaches, poorly motivated staff and ignoring the women and poor farmers in decision-making process. The tendencies indicate the shift towards privatization. The private extensions are growing while focusing on wealthier farmers. Their primarily purpose is to have maximum profit. Therefore, the present study is designed to fulfill the communication and knowledge gap, in order to insure institutional consistency towards extension services based on the previous studies made by different schools of thought. In this regards literature reviewed carefully over on the concept of public and private extension system at global as well as at national perspective, in order to ascertain the drawbacks of existing extension system. Through this article we contribute while discussing on institutional consistency and coherence to ensure modern agricultural extension services for amelioration of agriculture sector. In addition we recommend policy measures for the sustainable extension services in the developing countries like Pakistan.*

Keywords: Agriculture Extension; Development; Private Extension; Pakistan

### 1. Introduction

Agricultural extension is believed to be an indispensable pillar both for rural community progress and as part of a strategy of agricultural development for improving the sustainability of farming systems, promoting agricultural diversification, and integrating farmers into dynamic markets. Agricultural extension system play multipurpose role with the provision of need-based and demand-based knowledge with agronomic techniques in a systematic means so as to improve production, income, rural populations' welfare and to mitigate their problems. Furthermore, the agriculture services assist and establish the capacity building of smallholder farmers through target-oriented training and building working human relation with farmers (Sygenta, 2010). Agricultural extension is an effective vehicle to disseminate technical information of new crop technologies (Hanif et al., 2004; Khan, 1997; Nagel, 1997; Jalvi, 1996), in order to raise the rural

living standard and socioeconomic circumstances (Chambers, 1993); and to foster change in agricultural and rural development by delivering useful information to farmers and enhancing their mandatory knowledge and skills (Mulyanto and Magsi, 2014; Shafique, 2008). The main focus of agricultural extension work is to increase agricultural production and spread the benefits of improved farming techniques more widely (Picciotto and Anderson, 1997).

In global context, the agricultural services are facing new challenges regarding increasing demand for food; declining cultivated area and fiscal constraints in the public sector. International organizations and donor agencies have suggested the governments of developing countries to reform and modify their existing public sector structures with purpose-specific and need-specific approach (Rivera, 2001; Umali and Schwartz, 1994). In fact, ineffective performance of public extension system the paradigm shifts towards privatization throughout the world. The shifting of public agricultural extension ambiance reflects an all-inclusive tendency towards privatization (Johnson et al., 1989; Rivera and Gustafson, 1991; Dancey, 1993). Therefore, private agricultural extension services seem to be need-oriented and quality service providers (Ali et al., 2008). By in large the public extension systems are undergoing rapid changes. The decentralization, privatization, and demand-driven approaches are being promoted. In this regard the existing agriculture extension systems need to be redesigned in order to accelerate theme of horizontal and vertical expansion in public sector services which is responsive to farmers need. Specifically, in global prospect public agricultural extension services are facing new challenges such as lack of operational funds, lack of technical expertise and geographical mobility of extension agents.

There is growing curiosity rising in developing countries to re-orient agriculture extension system (Rogar, 2004). Therefore, the present study is designed to fulfill the communication and knowledge gap, in order to insure institutional consistency towards extension services based on the previous studies made by different schools of thought. Furthermore, it is intended to recommend policy measures for the sustainable extension services in the developing countries like Pakistan.

The article is divided in the following parts. First part is inflated over the available literature on the concept of public and private extension system at global perspective as well as it also gives the overview of the programs initiated for agricultural education extension in Pakistan. Last part illustrates and summarizes the observations from review of literature and it contributes by providing important recommendations for institutional consistency to ensure modern agricultural extension services.

## **2. Public and private extension**

### ***2.1. Global perspective***

Privatization of public extension (Marsh and Pannel, 1997; Saravanan and Gowda, 2001; Ahmad et al., 2003; Rivera, 2004; Kumar and Reddy, 2006; Ajieh et al., 2008; Oladele and Obuh, 2008; Ali, 2009), is imperative for its cost sharing and recovery (Sadighi, 2004; Carney, 1995) and decentralization (Luqman et al., 2005; Obaa et al., 2005; Lodhi et al., 2006; Luqman et al., 2007) of government services as the agenda for future research (Schwartz, 1994). Various types of experiences were used to examine the advantages and disadvantages of privatization process within public extension system, particularly in developing countries. Collective efforts and desirable reforms such as devolution, privatization, demand-driven approaches, and revitalizations required in public extension services are needed (Rivera, 2004). Furthermore,

decentralization and performance-orientation agriculture with the term of community development perspective are promoted (Rivera et al., 1997; Kidd et al., 2000). The major economic rationalization for privatization of the extension programs was is that it promotes economic effectiveness (Chirwa, 2001).

Private companies had broadly worked for large-scale farmers so as to promote their product (Schwartz, 1994). Private extension was biased towards high potential regions because it was either driven by profits (Muyanga and Jayne 2008). Umali-Deininger (1997) reported that client and location-specific extension services provided by private extension are purely market-oriented. In addition, private extension was quite superior to undertaking dissemination of agricultural information, better relationship with farmers, frequent contacts with end-users (Swanson and Samy, 2002; Onyenkazi and Gana 2009). Chapman and Robert (2003) discussed in wide range the delivery system of private extension services.

Globally, public agriculture extension system with the context of RandD prospect had faced budgetary constraints and strategic challenges (Pray and Umali-Deninger, 1998; Pardey and Beintema, 2001; Saravanan and Gowda, 2001; World Bank 2004). In addition, public extension effectiveness has been steadily decreased due to budgets constraints, extra bureaucratic duties and lack of coordination among staff consequently which were receded in public EFS competencies (Koutsouris and Papadopoulos, 1998; Kizilaslan and Halil, 2007). However, public extension services had a controlled position (Singh and Narain 2008). Swanson and Samy (2002) reported that public extension has wide range of agriculture extension and farm management programs and seems to be in better position. Public agricultural extension services have responsible to disseminating improved agricultural practices and technologies (Umali-Deninger, 1997). Public and private extension services mechanisms involved the transfer of technology and schooling the rural masses (Zijp, 1998). Insufficient technology training (computer, internet) of agricultural professionals had key restriction (Varnedoe, 1994; Thaipakdee 1997; Brosnan, 1998; Lineberger, 1998). Extension agent's computer skill and prior computer knowledge were directly correlated to their computer usage (Cantrell, 1982; Barker, 1985; Jay, 1989; Park, 1994; Pranger, 1998; Bonati and Gelb, 1999; Owen, 1999).

## ***2.2. National perspective***

Due to liberal policies of government many pesticide and chemical companies frequently entered in the market (Khooharo, 2008; Ali et al., 2011). Davidson et al. (2001) identified number of biases in both systems have competing, conflicting and overlapping programs. Private extension services concentrate more on large resource-rich, progressive farmers and overlook other small farming communities (Bajwa, 2003). Ahmad et al. (2003) reported that reservations expressed about the capability of private agricultural extension system regarding quality of extension service in Pakistan (Ali et al., 2008). On the other hand, public sector extension has inadequate operational funds, top-down nature and ignores small farmers in decision making process (Davidson and Ahmad, 2002; Bajwa, 2003). In addition, institutional constraints the role of public extension was limited (Khooharo, 2008). Haq (2009) believed that in worldwide context the public extension have not been able to address the issues of farmers. Ali et al. (2009) stated that there was need to strengthen the system by capacity building of and by providing competencies to frontline workers with respect to knowledge, attitude, and skill (Ali, 2009).

### ***2.3. Competency of extension field staff at farm level***

In extension education the competency and capability level regarded as pivotal factor to dissemination of agricultural technology at grass root level. Experienced extension workers were more knowledgeable as compared to those with less experience (Lakai, 2010). Low competency level of extension agents, limited resources and high cost of inputs were the most important constraints of technology transfer (Radhakrishna and Edgar, 1996).

### ***2.4. Teaching methods***

Extension teaching methods had effective and significant methods in extension education (Okunade, 2007). Dissemination of advance agricultural information was most important approaches for agricultural development (Farooq et al., 2007). Muhammad et al. (1990) reported that result demonstrations, method demonstrations, meetings, farm visits (Pezeshki-Raad and Agahi, 2002; Abbas et al., 2003; Siddiqui, 2006) home visits (Oladosu, 2006; Siddiqui, 2006) were among the most effective teaching methods. Similar, (Muhammad and Garforth, 1999) found that neighboring farmers, (Sadaf et al., 2006; Adinya et al., 2008) friends, (Agumagu and Adesope, 2006; Taj et al., 2009) relatives (Farooq et al., 2007; Adinya et al., 2008; Taj et al., 2009) fellow farmers, (Fadji et al., 2005; Taj et al., 2009), was the major source of agricultural information. (Irfan et al., 2006; Rehman et al., 2011) observed that television (Adinya et al., 2008; Taj et al., 2009) was the main source of agricultural information.

## **3. Agriculture extension in Pakistan**

Green revolution during the 1960s paved the way to right entry of agri-business companies for sell purpose in the agriculture field within enthusiastic mode. Private sector concentrates more on needs of larger commercial farmers, is enthusiastic to engage practices of profit maximization motives (Saravanan, 2001; Khooharo et al., 2008; Zhou, 2009). By contrast, public extension focuses on small farmers in order to increase the socio-economic condition by more educational-oriented roles along with support to strengthening their capacity building and improving their livelihood (Saravanan, 2001).

Public and private Extension Field Staff (EFS) identified difficulties they faced in transfer of technology. Majority of EFS faced lack of transport facility in large area of jurisdiction. Private EFS also faced active geographical mobility on their respective areas. Large area of jurisdiction and transport are always the cry of public and private extension field staff. Various studies also confirm this statement (Slade et al., 1988; Naqvi et al., 1988; Khan, 1997). Due to the large area of jurisdiction EFS does not pay regular visits to farmers field and thus unable to diffuse new technology (Memon, 2007; Mirani and Memon, 2011).

In Pakistan, numbers of public extension approaches and models have been tried and discarded based on the traditional linear approach. Mostly multi-sectoral extension programs were focused the rural and community development. The Village Agriculture Industrial Development Program (V-AID) was first formal attempt for the rural development in Pakistan, and designed to solve rural problems through the mobilization of the government resources with involvement of the rural community (Mallah, 1993). The Integrated Rural Development Program (IRDP), People's Works Program (PWP), Inputs at Farmers' Doorsteps Approach, Training and Visit system (TandV), and Farmer Field School (FFS) were major agricultural extension and community

development programs (Abbas et al., 2009). Largely the goals of entire multi-sectoral programs were the enrichment of material and social welfare of rural masses (Mallah, 1993). Nearly all were doomed owing to bureaucratic snag, insufficient support services, and fragile institutional relationships (Röling, and De Jong, 1998; Davidson et al., 2001; Williamson, 2002; World Bank, 2003; Khan, 2006; Lodhi et al., 2006; Shafique, 2008; Abbas et al., 2009; Ali, 2009; Haq, 2009). To address these issues, the international organizations and agencies have counseled to government of Pakistan for major structural changes and yardstick institutional reforms in existing agricultural extension setup in order to facilitate and strengthen the agricultural extension services appropriate and efficient means (Rivera, 2001; Khan, 2006).

### ***3.1. Extension program in Pakistan: an overview***

Government of Pakistan launched various extensions-cum community development and agricultural programs one after the other. They listed V-AID-P, BDS, RWP, IRDP, PWP, Traditional Agriculture Extension System, and TandV as main agricultural extension programs. (Abbas et al., 2009). Every program had its own strengths, weaknesses and most was doomed to conventional linear approaches. The fundamental rationale behind abolishes of different extension programs were: lack of effective linkage between allied departments, lack of trained technical staff, lack of operational funds, lack of participatory approaches, inadequate accountability and evaluation procedures, political instability, corruption, non-cooperative bureaucratic behavior, lack of understanding of farmers needs, and top-down planning.

In Pakistan various extension-cum-community development programs at national level were launched from time to time based on the conventional linear approach in order to enhance farm production and uplift the living standard of rural communities (Abbas et al. 2009). All these programs however had limited success and were closed down one after another due to inadequate support services, top-down hierarchically style, lack of liaison between system actors, ineffective and unreliable input supply system, lack of mobility and centralized management. Furthermore, we discuss major extension programs / approaches intitated by the government as follows:

#### ***3.1.1. The Village Agricultural and Industrial Development Program (V-AID), 1952-1961***

The Village-AID Program was first formal attempt for the rural development in Pakistan with the financial support of the United State Agency for International Development and Ford Foundation. It was comprehensive and wide-ranging community development program designed to solve problems of the rural communities through the mobilization of available resources of the public sector in synchronized manner with the contribution of the rural masses. Nevertheless, the aim of the entire program was to generate strengthen and promote the self-sufficiency initiatives to rural people towards modernization of agriculture. Moreover, elementary objective of Village-AID Program was to boast up rural capital through improved farming practices, cottage industries and animal husbandry as well as provides the effective liaison between line Departments. However, the program failed due to overloaded responsibilities of extension staff and lack of linkage between allied Departments (Abbas et al., 2009).

### *3.1.2. The Basic Democracies System (BDS), 1959-1970*

The Basic Democracies System was launched during the martial law regime of General Aayb Khan. The primary function of Basic Democracies System (BDS) was to enable the rural masses to establish their own Union Councils for discussion-making and implement of development projects. BDS encouraged the local leaders and made effort to ensured maximum involvement of the rural people in the rural development process. The fundamental initiative of BDS was to involve the wide range function and solve the rural problems which were related to agriculture, social welfare, education, infrastructure, health, and economic development. BDS was abortive and was closed due to political change in the year 1970.

### *3.1.3. Rural Works Program (RWP), 1963-1972*

Rural Works Program was commenced in 1963 in both West and East Pakistan (now Bangladesh). RWP was designed to involve rural communities with maximum participation in planning and development process in order to facilitate the rural people to improve their socio-economic conditions and stimulation of the rural economy. RWP was targeted to generate awareness and self-assurance among rural masses in order to handle their own affairs without expecting much help from the government and strengthened purchasing power of the rural masses. It also created employment opportunities with small investment. The objectives RWP emphasis on establishment of infrastructure like irrigation channels, bridges, roads et cetera in rural locations. RWP was unsuccessful due to inadequate maintenance of program and lack of participation of rural community in preparation of plans and implementation process.

### *3.1.4. The Integrated Rural Development Program (IRDP), 1970-1978*

Government of Pakistan commenced the IRDP in 1970, as on inclusive community development program which focused on a holistic method and moved toward rural improvement and development. The innermost point of integrated rural development program was the Markaz, (center of the activities of IRDP) and focal point of farm information and delivery systems which developed the welfare of rural beneficiaries. The program was designed with the objectives to increase agricultural output by utilizing modernized methods including farm planning and management, providing physical/ social infrastructure, transport, marketing, and credit facilities. The program closely harmonized and pinpointed the effective liaison between various line departments and governmental agencies through the integration of the services. It facilitated farm service delivery to the farmers at one point in order to increases the agriculture output. This program was ended up in 1978 and was merged into the Local Government Department.

### *3.1.5. The People's Works Program (PWP), 1972-1975*

The mechanism of PWP emphasized the effective rural institution establishment and agrarian reform particularly land reform in order to diminishes the polarization of rural masses and boast up rural development. The PWP program concentrated on not only infrastructure scheme in rural and urban areas but also to ensure maximum participation of rural masses in the planning process. RWP main idea was to promote awareness of self-reliance among rural communities in order to docile their own affairs without expecting much help from the government. PWP had

ended up because of ineffective involvement of rural masses, lack of planning at local level, and withdrawal of government support.

### *3.1.6. Inputs at Farmers' Doorsteps Approach, 1970 -1978*

Maximizing crop yield and improving agricultural productivity was the sole objective of government of Pakistan to launch this agricultural program in order to supply agricultural inputs to rural people. The government provided agriculture inputs such as improved seed, fertilizer and pesticides at considerable subsidy rate to the farmers. Notwithstanding achieving its required agricultural target the program was also unsuccessful to accomplish the high standard goals and was abandoned in the year 1978. The approach also proved to be expensive and eventually made pathway for the privatization of agriculture related inputs. This approach was replaced by a new specially designed extension model.

### *3.1.7. Training and Visit system (TandV), 1980-1994*

The Training and Visiting system was commenced in Pakistan in two phases with the financial, systematic and technical help of World Bank, in the year 1978. The fundamental rationale of this system was a triangular relationship between systems actors (research, extension, and farmers) and is based on the massive technology transfer in rural communities and also was responsible to provide the quickly multi-sectoral feed back towards agricultural experts and researchers for further inquiry or solution. The Training and Visit supplied dimensional flow of information from agricultural extension to the contact farmers and from contact farmers to the common farmers in order to improve level of living in rural areas. Training and Visit system was a professional method of extension derived from regularly efficient training of extension agents and frequently the field visits. Tentatively the program seems sound but this program could not meet to the desired outcome due to its rigidity, top down, autocratic in characteristics and one way flow of information (Byerlee, 1988; Antholt, 1990; Mallah, 1993).

### *3.1.8. Farmer Field School (FFS)*

Bajwa (2009) reported that the Farmer Field Schools regarding Integrated Pest Management initially were designed in Indonesia in the year 1989 with the help of FAO on rice crop and then was extended as IPM techniques in South East Asia countries such as China, Vietnam, and Philippines in order to lessen farmer's dependence on pesticides in rice crop. The activities of FFS mostly focused on group-based learning process, community-based activities, and training activities in field. The FFS a form of adult learning and was developed to facilitate the farmers regarding biological control practices under various dynamic ecological conditions. The FFS concept evolved the farmers learning approaches particularly field surveillance and site-specific experiment (Pontius, 2002). In Pakistan FFS were introduced by Pakistan Agricultural Research Council, government of Pakistan for cotton IPM in the year 2002 for fruits and vegetables during 2005. FFS provide aspiration to promote knowledge which enhances production with minimum use of pesticides for environmental protected agriculture. The FFS present community based non-formal education for group farmers.

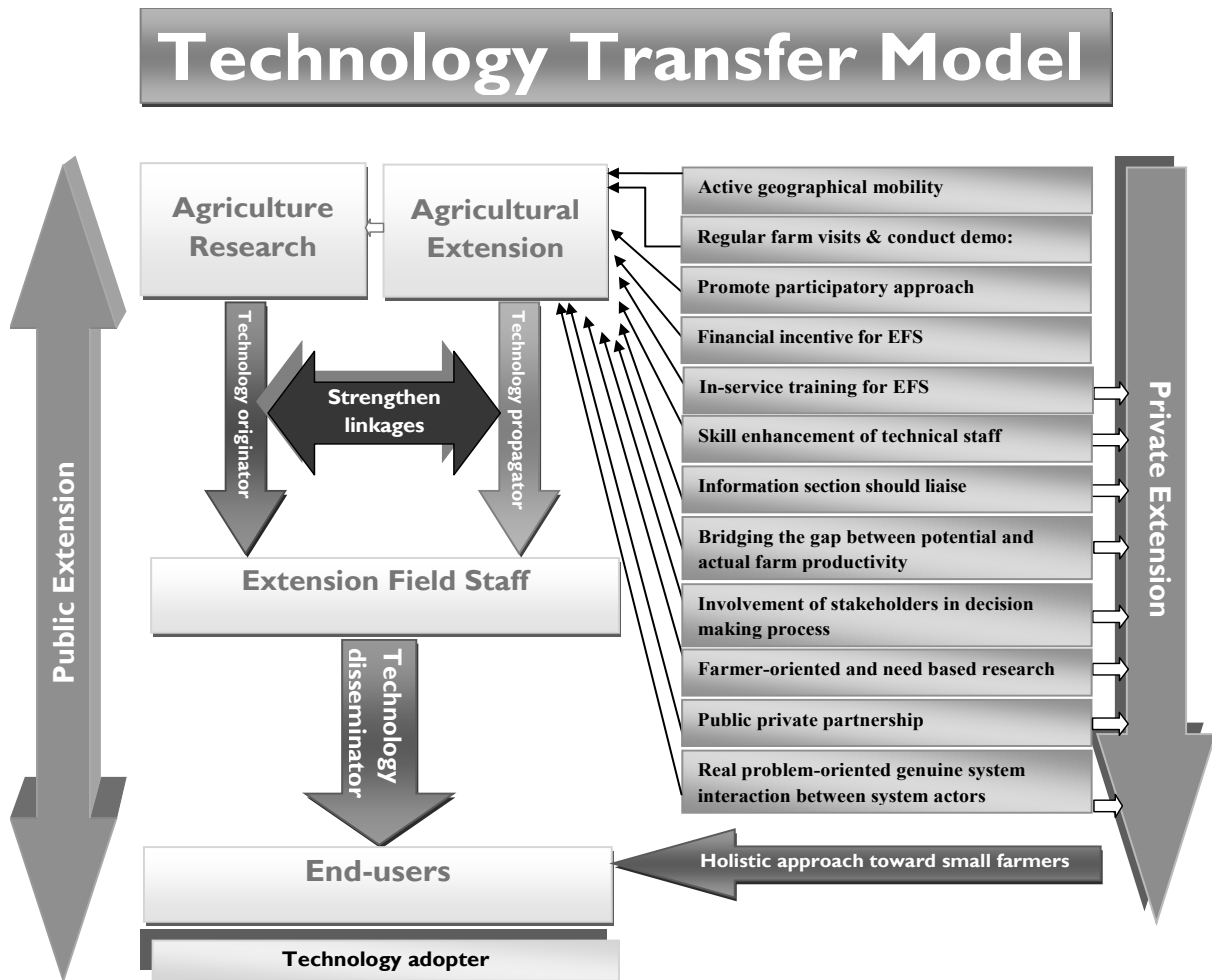


### ***3.2. Actualities of Agricultural Extension system in Balochistan province of Pakistan***

Balochistan has an elaborate bureaucratic agricultural extension system with entire provincial set up and having separate Directorates General for agricultural extension (Mellor, 1994). Area wise, Balochistan is a biggest province of Pakistan and is known as the land of fruits basket. It significantly contributes in overall economy of the country (Haider, 2004). Likewise other provinces of Pakistan, Department of Agriculture and Livestock of Balochistan provides advisory services to the stakeholders, but unfortunately the fruit of these efforts have not been harvested as yet at par with other provinces. As a result, socio-economic condition of the farming community is not yet improved which indicates that there is a gap between information dissemination and adoption process. Beside public sector extension, private extension services are also involved in extension activities but research shows that limited research work on success or failure of the delivery system has been carried out. Now question arises that how agriculture extension services could be made efficient and what policies and strategies are to be framed in order to make extension more productive. The attention is also required towards formulation of agricultural extension as need-oriented, cost-effective and responsive to specific farmers need. In an attempt to do so, there is dire need to establish the suitable strategies and take a holistic approach to systematize a positive transform through public and private extension service so as to help rural farming community which has been believed to be the ignorable and oppress object.

Balochistan province has an elaborate bureaucratic agricultural extension system. In Balochistan the Agriculture Extension characterized by top-down, linear, rigid and autocratic in nature. Balochistan extension system to give narrow focuses to farmers there was weak research, extension, farmer linkages and agricultural extension system had inadequate operating resources and lack of financial sustainability. The technology transfer model developed on the basis of the recommendations received for public and private EFS and through literate review. Therefore, the present technology transfer model was designed in order to promote the effective liaison of line-departments, encourage the bottom-up planning, promote the broad based extension advisory system, exposure visits to farmer so as to fill the gap and provide a significant edge for the extension system. According to this model Agriculture Research generate the technology and transfer to Agriculture Extension EFS which ultimately disseminate the practical aspect of the technology to the end-users which considered as the ultimate recipient of technology adopter that is farmers. Public extension require the core components to improve their efficiency such as active geographical mobility, regular farm visit, promotion of participatory approaches, in-service training, financial incentive for EFS, involvement stakeholders to discussion making process, public private partnerships and linkages development. On the other hand, private extension require the core factors to improve their efficiency such as in-service training for EFS, public private partnerships, linkages development between system actors and holistic approach toward small and needy farmers. The overall contribution of this research has been shown in this technology model.

Figure-1: Major system actors in the agricultural extension system in Balochistan, province of Pakistan



#### 4. Conclusion and recommendations

In this part we put stress on the conclusion of the findings as well as we give recommendations for sustainable agricultural extension service while ensuring consistency among the institutions.

##### 4.1. Conclusion

In Pakistan various extension and rural development programs such as V-AID-P, BDS, RWP, IRDP, PWP, and T&V programs were initiated at country level on the basis of linear approach in order to accelerate an upward movement in production in agriculture sector. Most were doomed to top-down in manner, managerial style, rigid procedures, and lack of linkage between research, extension and farmers.

Agriculture extension services are the prime vehicle to disseminate the information which encourage underlining the cost-effective, environmentally sustainable, successful technology transfer, human resource, social capital development. It also strengthens the capacity building of farmers and improves their livelihood. The public agricultural extension service come across budgetary crisis, insufficient funds, bureaucratic nature, poorly motivated staff, and top-down in nature and ignore the women and poor farmers in decision-making process. The tendencies indicate the shift towards privatization. The private extensions are focused on wealthier farmers. Their primarily purpose is to have maximum profit. In global context, the development paradigms and reforms like decentralization, privatization, and demand-driven approaches are promoting and prevailing. This scenario will ultimately accelerate the responsibility of extension agents.

#### **4.2. Recommendations**

Public and private partnership joint venture processes are emerging to solving the issues of poor farming community by coordinating both public and private extension activities which will influence farmers. Hence, in the structural paradigm changing from top-down system to participatory extension in agriculture extension is emerging. The extension methods and competency level of extension field staff were the important components in convincing the farming community for adoption of sophisticated agriculture technologies and recommendations. The communication interventions are the significant channels and bridge between technology disseminators and technology adopters. There is also need to encourage holistic approaches. Promote group-based extension programs and strategies it is therefore suggested that field-level training should be arranged for farmers in order to enhance the capacity building of the respondents. Farmers are first and last in the ladder of agricultural development, therefore, it is suggested that rather than selective approach toward better farmers the private extension services should utilize a participatory approach the farmers having small and medium size land holdings.

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