CRITICAL ANALYSIS OF THE PERCEPTIONS OF STAKEHOLDERS REGARDING COMMERCIALIZATION OF AGRICULTURAL EXTENSION SERVICES IN THE PUNJAB, PAKISTAN: FUTURE IMPLICATIONS

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Declaration

I hereby declare that contents of the thesis, "critical analysis of the perceptions of stakeholders regarding commercialization of agricultural extension services in the Punjab, Pakistan: Future implications" are product of my own research and no part has been copied from any published source (except the references, standard mathematical or models/equations/ formulate/protocols etc.). I further declare that this work has not been submitted for award of any other diploma/degree. The university may take action if the information provided is found inaccurate at any stage. (In case of any default, the scholar will be proceeded against as per HEC plagiarism policy).

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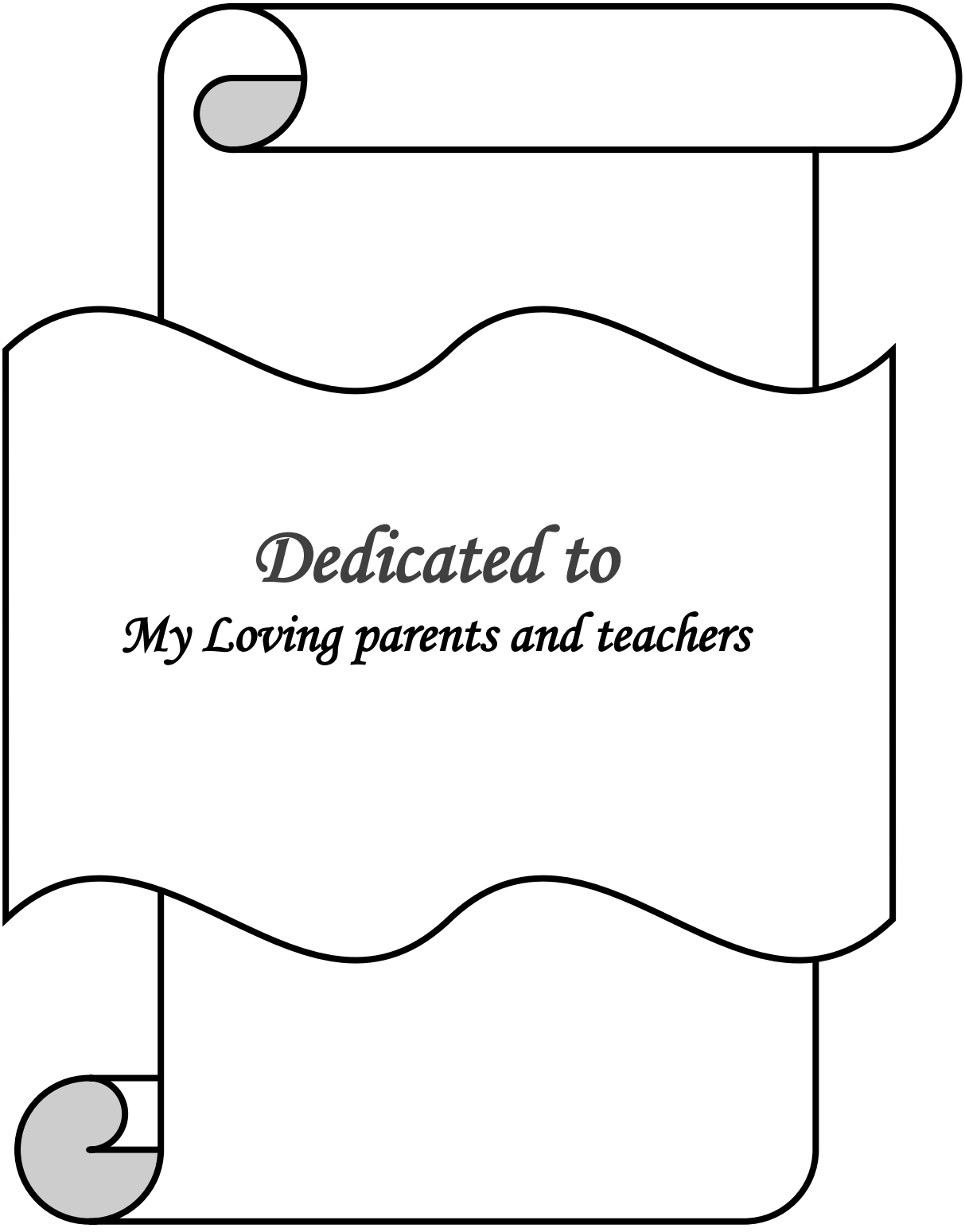
Dedicated to
My Loving parents and teachers

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All praises to **ALLAH**, Lord of all the worlds, the most Affectionate, the most Merciful, who taught writing by pen, taught me what I knew not. After Almighty ALLAH, all praises and thanks to the **HOLY PROPHET MUHAMMAD (PBUH)** who is forever a model of guidance and knowledge for humanity.

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Muhammad Iqbal

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTARCT

Globally, public sector extension has been under severe criticism for not performing effectively and efficiently and in case of Pakistan the situation is not different. Since independence of the country, several extension approaches and models have been introduced to enhance agricultural production and improve farm income with ultimate objective of raising living standard of rural people but these could not met the required targets and were discarded with the passage of time. Privatization of extension services changes the ownership from public to private sector which is also facing so many other challenges. In the situation when the economy of the country is sinking and public sector extension is facing financial constraints, commercialization of extension services is being suggested an alternate option. Keeping in view the above facts, present study was planned to explore and critically analyze the commercialization of agricultural extension service. The study was conducted in purposively selected one district i.e. Sargodha from citrus growing areas in the Punjab. Multistage sampling technique was used for data collection. At the first stage one district (district Sargodha) was selected purposively, at the second stage four tehsils (Silanwali, Kot Momin, Sargodha and Bhalwal) were selected randomly. As it was extremely expensive to interview all the units of the population. So, keeping in view the limitations of time and financial resources, a sample of 400 (100 from each tehsil) was drawn from the entire population by using Fitz-gibbon and Morris (1987) table. The data was analyzed by using computer software i.e. Statistical Package for Social Sciences (SPSS). It was found that less than half of the respondents had knowledge about commercialization of agricultural extension services. The results showed that more than one-third of the respondents were willing to pay for advisory services. It was concluded that among all the strengths of commercialization it would lead higher farm output was ranked at 1st position. Commercialization would lead to enhance financial burden on farmers was ranked at 1st position among all the weaknesses in the way of commercialization according to the response of farmers. It was found that commercialization would only be acceptable when these services will be cost effective. It was found that inadequate government guarantees, regulations and control over extension service providers and abuses were one of the major potential constraints identified by the respondents. Among different strategies for reforming of agricultural extension services, structural issue was found major potential constraint among all other obstacles that may found in the way of commercialization. Policy, governance and legal constraints were also found other potential threats in the way of commercialization respectively.

CHAPTER-1

INTRODUCTION

The generation of agricultural knowledge is the responsibility of agricultural research and on the shoulders of agricultural scientists. This knowledge is, then transferred to end users i.e. commodities as an innovations generated by applied researchers. Delivery of new technologies and their adoption by farmers can be accomplished through a proficient and an efficient agricultural extension advisory services. The innovations can be considered useful when applied by the farmers on their farms (Fliegel, 1984; Swanson, 1997; Khan, 2010).

Agricultural extension, since its initiation has been aimed to provide latest advisory services and helping farmers to achieve desired level of crop production by transferring new innovations or practices from research stations to farmers at their doorstep (Uzokwe and Ofuoku, 2006). This service helps farming community via need-based educational procedures, advanced farm practices, boosting up of output level and earnings, making their level of livelihood better and raising the living standards of farmers (Maunder, 1973; Ladel *et al.*, 2008). The foremost objective of agricultural extension lies in the conveying, transforming and providing useful package of agricultural and advisory serves to farmers and assisting them to follow how to utilize the information to fabricate an improved life for themselves, their family members and community (Chuks, 2006).

Agricultural extension is believed to be a central pillar for the progress of farmers and rural community and as part of strategy of agricultural development for improving the sustainability of farming systems, promoting agricultural diversification and integrating farmers into dynamic markets. Agricultural extension systems play multipurpose role in providing need-based and demand-driven knowledge of agronomic techniques in systematic way so as to improve production, income, rural populations' welfare and to mitigate rural poverty. Furthermore, agricultural advisory services play a vital role in the capacity building of farmers through target-oriented training and developing relations with farmers. Agricultural extension is powerful tool to disseminate technical information of new crop technologies (Hanif *et al.*, 2004) in order to raise rural living standard (Chambers, 1993) and bring changes in agricultural and rural development 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).

Specifically, in global perspective public agricultural extension services are facing new challenges such as increasing demand for food, lack of operational funds, lack of technical expertise, severe decline in cultivated area and geographical mobility of extension agents. The International organizations and donor agencies have suggested governments of developing countries to reform and modify their existing public sector structures with purpose-specific and need-specific approach (Rivera, 2001). In fact, poor performance of public extension system is shifting the paradigm from public extension to private extension services throughout the world. The shifting of public agricultural extension ambiance reflects an all-inclusive tendency towards privatization (Johnson *et al.*, 1989). Therefore, private agricultural extension services seem to be need-based and quality service providers (Ali *et al.*, 2008). The public extension systems are undergoing rapid changes. Involving decentralization, privatization, and demand-driven approaches are being promoted. In this regard, the existing agricultural 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' needs.

A number of factors hampering the efficiency of public agricultural extension and advisory services around the globe which include limited capacity, lack of policy support formulation and inadequate departmental and organizational support to work efficiently (Gebremedhin and Hoekstra, 2006).

Agricultural and advisory activities in Pakistan are under the umbrella of provincial agricultural ministries. Since 1947, a number of extension models and approaches have been implemented till now which include different programs related to rural and agricultural development. Unfortunately, these programs could not meet the expectations of different stakeholders and got wiped off one after the other (Afzal, 2008).

Due to squeezing of indispensable financial and human capital, public agricultural extension system has been assumed as an unproductive and hopeless system. It is being criticized for wasting public wealth and property (Mahaliyanaarachchi, 2004). The basic and most common problem being faced by the agricultural advisory system especially in developing countries is the lack of adequate public funding which is making this system ineffective and services inefficient. The situation is much critical if we look at the

operational budget. High operating costs are badly affecting the success and quality of the extension service delivery systems (Axinn, 1988). In several developing countries dearth of modern agricultural information disseminating technology is a major hurdle being faced by the extension services-a problem that is more severe in resource poor countries (Axinn, 1988; Purcell and Anderson, 1997). The worldwide services of agricultural extension are facing common problems that are related to coverage, insufficient public funds and lack of appropriate and pertinent technologies. According to an estimate, almost 0.8 million extension agents are serving to 1.2 billion users all over the world. In present scenario, out of four, three farmers are in no contact with services of extension. This is due to a number of factors including less motivated extension personnel, pre-dominance of non-extension responsibilities, insufficient operational funding, top-down extension approach, central oriented management and lacking of accountability.

Private investment in agricultural sector is increasing day by day while at the same time, public budgets being allocated for agricultural extension services are squeezing not only due to shortage of resources (both from government and donors) but also due to downsizing and privatization of public sector institutions, upward accountability and a result-oriented approach. These public investments in agriculture sector are closely linked with the changing priorities of international donors, national and local governments, unless the agriculture sector is considered to be 'the engine of development' (NEPAD, 2002; FARA, 2006). Now-a-days, the demand for market-oriented and client-responsive agricultural advisory services are increasing significantly within the context of livelihood perspective and food security (Neuchâtel Group, 2002, GTZ, 2006).

Currently, agricultural extension advisory services are not meeting the emerging demands and challenges faced by the farmers. It is need of the time to bring structural and administrative policy reforms in agricultural extension sector for good governance and effective administration. Further in context of the governance, three types of reforms are possible; first one is the administrative reform, it includes issues related to the people and processes. Second is the structural reform which is related to bring a change in the structure and function of the department i.e. result of the technological change. Third one is the legal reform i.e. change in the function of an institution as a result of policy changes. While the extension needs three types of reforms to be addressed i.e. livelihood extension, entrepreneurial extension and clinical extension (Prasad, 2014).

One of the major reasons for weak connection between public and private extension is the distinction between their financial systems. Actually, private extension is reliant on public extension for financial causes in many countries likewise. Another issue that results in weak connection between public extension and private extension is the top-down structure (Swanson, 2008). Moreover in this structure, public extension is in the topmost place and after that private extension occupies place, whereas the farmers are in the buck position. Similarly Singh *et al.* (2013) stated that participatory approaches will assist to sturdy public-private linkage of agricultural extension.

One of the major problems that meets the extension service is insufficient public funding. The problem is particularly severe with a view to operational financial plan. Operating expenses are usually accountable to budget cuts. Shortages of operating expenses seriously influence the effectiveness of the extension service (Axinn, 1988). In many developing countries, shortage of pertinent and appropriate technologies to get better productivity is a major constraint confronting the extension service; a difficulty which is more serious in poor resource environments (Purcell and Anderson, 1997). Lack of suitable technologies is the major drawback to strong linkage between research, extension and farmers.

A large number of extension services in developing countries are explained as pluralistic (Eicher, 2004). The purpose of pluralistic extension system is to have a co-ordinate system of corresponding extension services that would arrive and respond to the various necessities of farming systems and the diverse desires of farmer groups (World Bank, 1977). As such, pluralistic extension system is described by the co-existence of the different extension models and approaches. Pluralistic institutional display of extension service is also pains taking as a step towards privatization of the service. For institutional pluralism to work, it is significant for the central government to acknowledge the staffing. If efficient, institutional pluralism can solve problems of reporting, economic sustainability, accountability and contact with knowledge and technology invention.

Decentralization is aimed as transmitting the roles and authorities of government functions from central government to local governments and also at local level, therefore private sector has expanded at higher pace over the 1980s and 1990s. Countries with different traditions and farming systems have taken decentralization initiatives for many reasons, including that of the failure of public sector extension to address the expectations of farming communities under centralized approach to financial management. Although,

decentralization approach is not yet applied completely but it has significant potential to make trustworthy addition to agricultural knowledge and information systems (Johnson, 2003).

The shifting of public sector extension into privatization did in many countries due to many reasons. In Iran, the procedure of privatization was in progress because of a number of issues such as the low efficiency and low eminence of public extension services, lack of correspondence and dexterity between training modules and client's needs, directorial and managerial limitations, low capability of managers in decision making process, increasing subsidies, and heartrending the qualified workers from public extension services (Toudeh-Rusta, 2004).

It is the necessity of the time to rethink about the agricultural advisory systems. Keeping in mind the worldwide issues and economic miseries of the current scenario, the extension advisory services for the delivery of latest technology needs to be revamped (Rivera, 2000; Khan, 2010). For superior and expanded extension activities, with the philosophy of optimum involvement of governments in the matters of national economy has opened avenues for strategies to improve the extension service delivery system (Nazarpour and Emami, 2011).

The diversity and complex focus of the extension service emerged from the necessity to cope with the diverse and versatile sources of transferring agricultural information to farmers, giving valuable information in the form of advices. This type of situation also demands and stresses for structural and financial reforms in extension system in its present state of affairs. Thus commercialization of extension services of agriculture might be a potential solution (Ozor, 2010). Precedents in France indicate that almost seventy five percent of the operating cost is raised at the farm-gate by direct payments, contribution of cultivators' organization and direct and indirect levies on the inputs and products of agriculture. In Ireland, client fees are calculated according to the viability of farm (Phelan, 1995). The Government of Australia has also introduced the concept of mutually financed projects under which users pay for operational and non-fixed costs (Coffey and Clark, 1996).

While describing the idea of commercialization in context of agricultural extension, firstly it is taken as a commercial service which is interchanged between two groups over a payment on which both parties should agree. In this process, extension agents act like sellers and clients as purchasers. Secondly, the demand and supply theory

is applied on this phenomenon. Services of agricultural extension in commercialization assume the form of a complete demand driven activity. Thirdly, the services of extension can be taken like an input such as recommended fertilizers, viable seed, chemicals and farm equipment which are necessary for commercial farming. The users pay for the services according to their affordability and same is the case for other kinds of agricultural inputs. The fundamental theme is that clients are paying for the services which they obtain. Moreover, it depends upon the extension approach whether clients pay full or partially (Mahaliyanaarachchi and Bandra, 2006).

The rapidly developing inclination towards commercialization has raised several debates which still remains unaddressed. Those favoring commercialization, they think, let the organizations develop into more independent, especially in situations when government funding is unable to provide sufficient funds. The people with opposite thoughts believe that this trend is against the social values as it greatly affects the working and output of organizations (Guo, 2006). By commercialization, we do not mean only privatization. Commercialization, in fact, does not need to change its ownership. The government can also take the ownership under commercialization. Commercialization involves the revamping of a public enterprise and setting of commercial principles and methods of operation which include the fee structure, commercial performance objectives, accounting with the aim to make it feasible and potentially viable enterprise (UNO, 1995). The commercialization design will be anticipated to perform effectively in critical conditions and based on commercial basis and be capable to collect funds from capital markets without any government warranties. Such type of enterprises are more likely to expand the private sector measures in organizing their business. Whereas the partial commercialization designated will raise sufficient profits to fulfill the operating expenses of the commercial organization (NCP, 2000).

In privatization, an enterprise remains public unlike in commercialization. The client fee is charged for the provision of these services while other services remain public commodities. Under the umbrella of commercialization of extension services, the organization of extension is required changes in its structure, the nature of clients, the type of advisory services, educational level of the employees and the fee charges for various services (Dinar, 1996).

In commercialization, extension agents get a reward for sharing the quality of the service they offer to farmers (Mulhall and Garforth, 2000). In Ecuador the government

supply inputs of agriculture and technical consultancy through agreements of shared-cropping and in exchange extension agents get a contribution from the profits of the harvest. Water, labor and land are provided by the farmers and extension personnel gives technical consultancy and inputs they buy from suppliers. In scenario of the commercialization, organization depends on consultancy charges for annual budget, obtained from users and by contracts and agreements with government for the provision of policy delivery and rural information to government. Commercialization leaves positive effect on moving away from farm door to the inclusion of extension workers in entire chain of the production – processing -transportation and ultimately marketing (Ozor, 2010).

Public extension advisory services with its relatively high cost is facing with ostensibly numeral intractable problems that can merely be remedied by a detailed overhauling; one of probable choices can be the privatization and commercialization (Rivera, 1996). Due to monetary constraints, many countries began to scrutinize alternative structural preparations, including the viability of curtailing public sector extension, alteration in tax raising, charges for government extension services, commercialization and privatization (Howel, 1985).

Up to 1980s, many resource mobilization and many similar activities used commercial enterprises in many developing countries. The inability of public sector to perform its role efficiently was the major factor for introducing private sector to many fields including agriculture, commerce, mining, banking and finance etc. (Uzokwe and Ofuoku, 2006). The commercialization process which is controlled and run skillfully, is very much valuable for organizations working for innovations and innovative technologies. Many research studies have pointed out this fact that participation or contribution in the form of networks is very effective not only in research field but also in the field of development and commercialization. Evidently, research studies on networks which are related to commercialization is much diverse and is spread over many fields of study. Individual effort to accomplish such tasks is rarely accurate and successful like commercializing a technology or practice. Additionally, success demands participation and collective effort from the individuals and organizations with support of the stakeholders also. Therefore, involvement or achievement of the task in the form of networks, is of much importance (Aarikka-Stenroos *et al.*, 2014).

To alleviate the generic problems of extension an array of institutional preparations has been tried, including those of the development in extension administration, decentralization, and commodity focused approach, fee for service public stipulation, institutional pluralism, empowerment and participatory approaches, commercialization, service contracting, and inter-connecting countryside people and use of suitable media (Anandajayasekeram *et al.*, 2005). Decentralization can smooth the progress of flexibility and adaptability of the extension service to environment and the desires of proposed beneficiaries, although it can also enhance local political meddling on technical matters.

In Pakistan, the focus of public sector extension services is merely based on commercial farmers. Small farmers are not given considerable importance therefore, these services did not affect their socioeconomic conditions or needs. The competencies for community extension are principally in the practice of participatory extension approaches and local farmers' association development. Development and provision of extension personnel with those competencies are critical to help in managing small farmers and serving them to eloquent demand for the services they need.

In 1988, a national commission on agriculture was formed by the government to look into farmers' problems regarding the extension services and provision of recommendations. At the end, the national commission recommended to government to introduce private sector in providing agricultural inputs to farmers which could ultimately enhance the effectiveness of extension services (Government of Pakistan, 1988). Resultantly, private sector started to provide a variety of extension services such as innovative technology regarding harvesting, cultivation, pesticides and spraying in total package of services rather than single service to farmers. Due to changing and emerging global economy, private sector is considered as an alternative to public sector in developed as well as developing countries which could play a vital role in transferring the agricultural inputs/ technologies to the farmers in an effective and efficient way and also market agricultural products. The role of private sector could be enhanced by the policies of the government which ultimately set the rules and regulations for the working of private sector. The government should enhance the role of private sector by increasing its involvement in the transfer of agricultural inputs/technologies to the farmers.

The part which the extension has to play becomes more critical for the farmers especially those dealing with commercial oriented or subsistence farming. When farmers

produce any crop with the basic purpose of keeping in view market demand (both domestic and export markets), then the standard value of the crop will become relatively much more important than when during the subsistence production, since the degree of competitiveness depends moderately on quality of the produced (Gebremedhin and Hoekstra, 2006).

For the purpose of effective extension, it is needed to introduce reforms in the public extension system such as result oriented extension services in terms of community development, inclusion of private sector to play an effective role, need based research, demand based approach, and decentralization (Rivera *et al.*, 1997; Kidd *et al.*, 2000).

Keeping in view the benefits involved in privatized extension system, Netherland privatized half of its extension system in 1990s. They transformed the extension system to farmers associations which were initially funded by the government. The linkage of such organizations or associations was then built with research wing through involvement of government's department of agriculture (Le Gouis, 1991). Privatized extension is the topic of high discussion among those favoring this extension system for efficient service delivery among the farmers of developing countries (Rivera, 2001). The concept of privatization and commercialization arose due to inefficiency and incompatibility of public extension system due to poor funding by the government (Uzokwe and Ofuoku, 2006). A continuous changing trend has been observed in extension advisory system of different countries around the globe. Three major strategies have been observed to be adopted regarding the privatization of extension system by different countries as well as funding organizations including people funding for people, direct individual payments for providing services and mutual funding between government and private associations for services (Le Gouis, 1991).

To eradicate most common problems in extension system, various type of approaches have been tried including those of privatization of extension system, decentralization etc. Among all these efforts, decentralization can prove to be most facilitative and adjustable to the local conditions (Anandajayasekeram *et al.*, 2005).

In Pakistan, it is generally believed that the provision of agricultural extension services to the farming community is the core responsibility of government while in developed countries, the trend has been changed. Agricultural extension in developed countries is carried out with collaboration of private sector or it is totally privatized. In developing countries, due to the serious emerging issues like budgetary problems, cost

effectiveness, lack of accountability parameters, lack of relevancy etc., agricultural extension system is under pressure. It is demanded by the international agencies to reform existing agricultural extension system by enhancing the role of private sector in delivering the extension services to the farmers (Antholt, 1994).

1.1: NEED FOR PROJECT

Agricultural extension is an important wing of agriculture sector that supports the exchange of information which ultimately takes the form of functional knowledge. It enhances production and improves farm income which is leading to alleviate poverty in developing countries (Kaimowitz, 1990; Alston and Pardey, 1996; Carney, 1998; Wanga, 1999; Anderson and Feder, 2003). Regrettably, the public agricultural extension in developing economies has remained unsuccessful in diffusing novel technologies to the farming community and with the passage of time, the situation is worsening (Lodhi *et al*., 2006).

The services of agricultural extension are facing worldwide common problems that are relevant to coverage, insufficient public funds and lack of appropriate and pertinent technologies. According to an estimate, almost 0.8 million extension agents are serving to 1.2 billion users all over the world (Swanson *et al.,* 1990). Services being rendered are gender biased and major portion of clients is male (Anandajayasekeram *et al.,* 2005). Shortage of operational budget is hindering the efficiency of extension services (Axinn, 1988; Gebremedhin and Hoekstra, 2006).

In the present scenario, three out of four farmers are not in contact with services of extension (Maalouf *et al.,* 1991). This is due to a number of factors including those of less motivated extension personnel, pre-dominance of non-extension responsibilities, insufficient operational funding, top-down extension approach, central oriented management and lacking of accountability (Antholt, 1994). On the whole, public extension system has miserably failed to cope with site – specific needs and problems of farming community. Extension services system of Pakistan is facing the same problems (Sofranko *et al.,* 1988). As noted further, a large number of farmers frequently bypass extension workers and are inclined to contact directly with research scientists. These farm people are not satisfied with technical competencies and staff of the public extension (Davidson *et al*., 2001).

The private extension sector serves the interests of big and resourceful farmers and ignores small ones to generate profits (Davidson *et al.*, 2001). Private sector treats the knowledge and information like a profitable product and minimizes its focus on public good information (Rivera and Cary, 1997). The primary concern is that privatization is introduced without taken into consideration the socio-economic conditions of the country on the behest of outsiders. Private ownership does not focus on social progress. Minority of individuals are able to control all business activities instead of majority. Employment opportunities are reduced to economize the expenditures. Private goods are efficiently delivered by private sector but not public goods. Due to low income, only minor groups or people who are rich able to participate effectively in private ownership (AFRODAD, 2007).

Commercialization of extension services of agriculture seems proficient and effective than public extension system. It is demand-driven instead of supply-driven. Moreover, it improves the quality of the service due to healthy competition among commercial agencies. Flexible decision-making and program implementation by commercial firms enhance the effectiveness. Commercial agency especially provides services in line with particular needs of the farmers. In privatization, ownership of the extension services changes from public to private sector. For decades, extension services have been supported financially and delivered free of cost by the government departments. This is how the idea of commercialization appeared on the scene in present times. Commercialization is not just privatization. In commercialization, ownership does not change and is retained with government or semi-government organization and service is supplied on commercial foundations. In privatization, ownership is given into the hands of private agencies (Mahaliyanaarachchi and Bandra, 2006).

So far no comprehensive study was conducted on commercialization of extension advisory services in Pakistan. Therefore, present study was designed to analyze the strengths, weaknesses, acceptability and constraints in the way of commercialization of agricultural advisory services. This study was direly needed in the country because in past there were little efforts made to seek out the alternative of public advisory services. Keeping in mind how farmers view commercialization of extension services, the present study was planned with the following objectives.

1.2: OBJECTIVES

1.2.1: General Objective

A critical analysis of commercialization of agricultural extension services in the Punjab, Pakistan: future implications

1.2.2: Specific Objectives

Following specific objectives were formulated to:

1. Determine the socioeconomic characteristics of the respondents
2. Find out perceptions of farmers regarding the strengths of commercialization of extension services
3. Identify the perceptions of the farmers regarding weaknesses of commercialization extension services
4. Determine the perceptions of the respondents regarding acceptability of the commercialization of agricultural extension services
5. Identify potential constraints in the way of commercialization of agricultural extension services
6. Propose a strategy for reforming of agricultural extension services

1.3: Assumptions of the Study

The study was conducted with the following assumptions:

- The population of study was a normal population.
- The respondents were willing to provide relevant information about commercialization.
- Although this study was conducted in Punjab province and on one crop only but the results of this study were expected to be equally applicable for the rest of crops and provinces of the country.
- Face to face interviews would generate more reliable data than any other method of data collection.
- The respondents had the ability to analyse the strengths and weaknesses of commercialization.

1.4: Limitations of the Study

Following were the major limitations for this study

- The study was confined to one province and one district only.
- The citrus crop was selected especially as this was the major commercial crop of the area.

- The reliability of the data was dependent on the accuracy of information provided by the respondents.
- The study was limited to quantitative data provided by the farmers.

1.5: List of Hypotheses

- Lower the age of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services
- Higher the education of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services
- Higher the size of land holding of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services
- Higher the income of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services
- Age of the citrus growers will be influencing on their willingness to pay for advisory services.
- Education of the citrus growers will be influencing on their willingness to pay for advisory services.
- Size of land holding of the citrus growers will be influencing on their willingness to pay for advisory services.
- Age of the citrus growers will be associated with the access of advisory services.
- Education of the citrus growers will be associated with the access of advisory services.
- Size of land holding of the citrus growers will be associated with the access of advisory services.
- Economic status of the citrus growers will be associated with the access of advisory services.
- Perceptions of citrus growers regarding the strengths of commercialization of extension services will be associated with the access of advisory services.
- Acceptability of commercialization of extension services will be associated with the access of advisory services.
- Constraints in the way of commercialization will be associated with the access of advisory services.

CHAPTER-2

REVIEW OF LITERATURE

Review of literature is an important component of the research cycle as it highlights the findings of past studies relevant to the questions under investigation. It also helps to identify the areas for future research and provides basis for interpretation to discuss research findings. Borg and Gall (1989) stated that the review of literature involves reading and evaluating reports of research as well as reports of causal observations and opinion that are related to individual's planned research projects. It provides the foundation upon which all the research work must be built (Fleshman, 1967). For this study various sources of literature such as research journals, online resources, books, newspaper etc. were consulted, but only a limited amount of literature was found related to the present study which is given below.

Explaining the term privatization, Wise (1990) narrated that it can never be considered simply as an approach but the basic point to be focused is that only certain areas or topics must not be taken into account but the expected outcomes must be kept in view before taking any decision related to privatization or commercialization. The experience demonstrates that private services provided by the public extension system generally provides private benefits to individuals privately, rather than cost recovery by government fee charging. On the contrast, services provided by private extension system are more efficient and beneficial than that of public extension system. However, the provision of universal type services is hard to arrange because of fluctuating extent of development in agricultural sector and limitations related with it (Findlay and Watson, 1992).

Commercialization and diversification related to the field of agriculture includes the slower and regular transformation of incorporated system of farming by few renowned organizations for example crop sector, poultry sector, livestock sector and aquaculture products. Variations in product mix and input usages are generally determined by the market forces throughout this transition. Publicizing agricultural produces is an endogenous process and it is joined by trade and industry development, rural-urban migration and exclusion of labor from this sector. Based on an evaluation of the whole procedure practiced in different selected countries are that the commercialization procedure can never be taken as a smooth process, and major equity

and other ecological repercussions may occur, not less than from the range between short to medium, especially in case when unsuitable and improper policies are tracked. Though, they highlighted that many of the suitable and proper government policies including those spending in rural communications, transportation development, crop management, improvement exploration, extension, development of safe and sound rights related to rural development i.e. land and water, improvement, making liberal capital markets, can play a pivotal role in alleviating a variety of potential unfavorable inter-mediatory consequences (Pingalia and Rosegrant, 1995).

The organizations or departments which are publicized should also be properly manage to generate suitable and profitable results. The organizations which are to be privatized should not involve divestiture, although it is hoped that commercialization will earn utilities. It is the most inevitable aspect to differentiate between the fully and partially commercialized organizations. A completely publicized organization expectedly becomes self-reliant in all of its basic needs. The normal activities involve in commercialization were not in a position to produce the resources level that were inevitable for capital development. They must also have the ability to uplift these types of funds from the central market. Those organizations that are to be partially publicized have similar expectation to function as the fully commercialized organizations do in terms of high quality administration and revenue, that is due to the public sector products or services offered by those organizations (Zayyad, 1996).

Dinar (1996) showed that by commercializing extension services, it would probably need to be more expanded and would have to offer a variety of different types of servicer packages depending upon their clients. Politicians, extension specialists and business or production experts have been supporting and reviewing or re-thinking public advisory services delivery and traditional system of extension in Pakistan which also needs to be developed and renovated. Commercialized advisory system with its relatively sky-scraping cost has faced a number of apparently inflexible troubles that can be removed only by adopting continuous renovation and changes with time to make it compatible with compatible environment. One of the possible solutions to such problematic circumstances can be the privatization and commercialization. There are many economic barriers, different nations of the world have begun to look at substitute structural changes which include possibility of restricting and controlling expenses in

public sector advisory services, alteration in tax uplifting, payment for public advisory services, commercialization and privatization.

If we discuss about agricultural extension, the term “privatization” is always taken in its broadest meanings of establishing or encouraging participation of private sector, which does not essentially involve a transmission of elected and nominated publicly owned resources to the private sector. Commercialization and other different alternative options or solutions related to privatization have been taken on to develop rural extension and advisory system. In most of the cases, is not willing to "privatized" agricultural advisory services. Actually, privatization involves a complete shift and transformation of possession from public to a private body, with that unit fulfilling all costs and getting earnings. As far extension is concerned, different governments of the world have chased a number of unique ways of development such as commercializing the advisory services while maintaining it as a public identity, that will leads to lapse primary funding for transfer, or following cost-recovery procedures to pay for these services. Therefore the idiom privatization of extension system is generally ambiguous in other words. When advisory services are provided with private funding, then it symbolizes a commercial decision and when extension is carried out publicly, it is always conceived as a political or bureaucratic decision. In case of privatizing anything, the most primary and important thing is to get complete knowledge whether an extension program is developed to help commercial organizations or small-scale agricultural and rural development. Generally, a more commercial oriented strategy widens the effort of extension field staff and builds an advisory service which is more receptive to user needs and varying financial and communal circumstances. Other instant insinuation of privatization appears to involve (i) the inclination towards a decline in linkages among both organizations and among the rural people especially farming community in the replacement of rural and other relevant information; (ii) the inclination to improve very extensive farm activity to the loss of the small-scale farming; (iii) the retreating stress on commercialized product information and the progression of information as a profitable and commercial commodity and the drift towards agricultural advancement activities that provide primary to large-scale farming (Rivera and Cry, 1996).

Carney (1998) explained that the involvement of non-governmental organizations in extension system is very effective when government maintained the important responsibilities of the paying for these services, and supplies with all required training

equipment and supervision. A similar case in which government's participation has been maintained where the role of government is helping and harmonizing with private sector extension system.

MAF (1999) reported that the most primary barriers in the development of agricultural sector were also obtained from the diverse issues that might be a slight dissimilarity between agricultural as well as geographical zones but the lowland areas are have inadequate marketplace knowledge and connections as well as non-existence of goods rating, rankings and values and insufficient commercial credit opportunities in many rural areas that also scarce flow of output and escalating cash crop expertise in more inaccessible rural areas.

The activities like public advisory services the delivery of that services have been constantly unsuccessful to cope with the site-specific desires and difficulties faced by farming community (Ahmad, 1999). This practice comparatively reduced performance record of public extension services creating a thirst for the initiation and intervention of private extension system of service delivery which is thought to be relatively more successful, proficient and well-organized services to customers, though the entire commercialization and privatization of rural advisory system will have influenced the agricultural industry, because most of our farmers have weak resources to be capable of paying fully for extension services. Moreover, unawareness and low education level will create a hindrance in the use of services provided by private agencies.

The public extension advisory system is now seemed to be out-of-date, top-down oriented, strict, rigid, and as a result it is incapable of dealing with the forceful requirement of modern agriculture (Rivera, 2000).

Universal donors community had stressed for reformation of agricultural services that emphasized on privatization, and client-oriented systems. The strategies, techniques and concepts were applied to help those activities varied from country to country and were according to agendas items of donor agencies. Similar financial incentives offered by donors were variable and context specific. On the one side, it had revealed high demand by the clients, exporters, processors and producers while on the other hand, it depended on the frame conditions of the country, i.e. the availability, cost and perceived efficiency of services, Agricultural Service Systems (Albert, 2000).

The privatization represented one of many choices to cover the budget deficit of public extension system. It was further highlighted that the challenges to privatization

were needed for site- specific advanced technologies, dominated work force of women in rural areas, competition among private agencies leading to conflicting messages (Gowada, 2001).

Public extension services are found to be unsuccessful in managing the site-specific desires and troubles of the farmers. This comparatively outdated performance record of public extension resulted in looking for another proposed alternative in the form of private extension system that could play a very important part in service delivery. Privatization of extension has become the topic of widespread focus and has attained high level of attention for those considering the challenge of providing a well-organized agricultural advisory services for farming community in developing countries (Rivera, 2001).

The early stages of public involvement in the development works (1960-1985) were based on three major objectives: (i) to develop a safe, trustworthy communication and controlled system for national defense purposes, (ii) to support the concept of cooperative research among government departments and among academic organizations and (iii) to proceed in the field of information technology by themselves. However, the initiation of surprising, yet highly attractive, applications propelled a drift from public funding and people-oriented management of its research outputs towards the commercialization and privatization (Frischmann, 2000).

The race to make more money may force private extension and advisory services providing organizations to pay more focus on high land owners (landlords) who are likely to have all types of resources required to pay for such services. Hindrance in bureaucratic processes normally slow the progress in the execution and application of government programs that partially extracted or obtained from the non-preparation of the government for many of the complexities faced in program accomplishment (Odii, 2001).

Ozor and Madukwe (2001) evaluated and determined the discernment of extension experts on privatization and commercialization (P&C) of rural and agricultural advisory services there is the higher level of awareness of the exercise, but we are frightened that the experts may lose their occupations after this practice.

Dinar and Keynan (2001) analyzed the performance of paid extension services providers by comparing the output of paid as well as public extension services at four different levels including farmers, extension agent, government and the society. Farmers were taken as net benefit maximizers, the extension agent was considered as agency profit

maximizers or cost minimizers, the government level was seeking cost-effectiveness, while the fourth levels under study i.e. society was expected at least to do the same or more with limited resources. The main utilities involved in this process, consisted of all four levels e.g. 'the farmers', the extension agents' and government utilities.

FAO (2002) reported the actors involved in the pluralistic agricultural extension system were extension agencies and public research institutions, donor-supported rural development programs, private input suppliers, farmers' organization, commodity processors and exporters, private and international research centers, NGOs and bilateral donors. Some organizational, technical and political factors that would draw a line between collaboration of organization at operational and administrative levels to collaborative different constraints were highlighted. It was further observed that collaboration between NGOs which worked for temporary period i.e. for 5-6 year had become difficult with government agencies working on the basis of long-term policies.

Odurukwe *et al.* (2003) suggested that the impacts of commercialization of low landholding farms of maize enterprise on farming households. It was found that males, females and children were actively involved in small farm maize production and commercialization, and found that women playing more active roles than men. The impact of commercialization of maize on the household members was found to be ambivalent. It led to a gain of financial capital (such as income, purchasing power, improved household food and nutrition security etc.), and a loss of human capital (such as less time available for social activities, child care, education, leisure, etc.). The effects being greatest on women than men and children. The major determinants were found to include farm size, farming experience, volume of credit available and accessible, household size, expected profits and primary education. The policy measures geared towards land tenure reforms, market development and micro credit provision as well as other change agents should be vigorously pursued. Farmers were encouraged to form and maintain functional groups or cooperatives for easier access to credit and group marketing.

Chapman and Tripp (2003) perceived that privatization of extension services can be fruitful and result oriented only in that case, if there are well qualified and educated staff who are keen, eager and competent enough to react to farmers' needs and wants; significant amount of public sector investment in the field of education and training. In the same way, the rural people require high capacity to be capable of dealing;

administering, supervising and assessing the private extension provision. This capability can also be improved by proper strengthening of farmers' organizations, societies and by decentralized political and bureaucratic structures.

Ngwu (2004) reported that response of farmers to privatization and commercialization of agricultural advisory services in Ebonyi State Agricultural Development Program. He focused on respondents' opinion regarding privatization and commercialization of rural advisory services. An inadequate consideration has been paid to the studies related to the opinion of farmers on their reservations regarding privatization and commercialization of agricultural advisory services as farmers were primarily affected by such steps taken by the governments.

Private extension does not necessarily reduce the public sector role, but allows a better priority setting. Training of extension agents could be a government task. Professional competency of extension agents is necessary for the improvement of any extension system. The vast majority of extension workers begin their careers in the field with a weak knowledge of agricultural science and limited skills in extension communication (SAA, 2005).

Various discussions favoring the privatizing or commercializing of advisory system propose that: (i) the private sector can be considered as the most effective service providing agency, (ii) there is an effectual demand for consultative services and ,therefore, the rural people can bear a little if not full of the expenditures of extension services charged; and (iii) the existence of private advisory services smother the expansion and progress of a private sector potential and ability in the area (Rasheed *et al*., 2005).

Most of the extension agents had most favorable (50%) and favorable (24%) attitude for commercialization of extension services. The data indicated that a greater part of extension staff of Govt. and NGOs was prepared not to collect fees for advisory services of land preparation and paddy farming. They deemed that technical land preparation was essential for improved crop and also for environmental safety, reducing soil erosion and securing flora. It was revealed that to commercialize the extension services for the sector of live-stock production, horticultural farming and seed production. The majority of EFS from private organizations was engaged in the marketing of seeds particularly of horticultural crops. Moreover the majority of the public EFS was agreed to commercialize the extension services of farm management operations and marketing. The

reason was that these two practices had higher commercial value and proficient and relevant extension services in the areas like farm management, horticultural production, livestock production and marketing services which were profit-oriented operations. So extension staff preferred to raise fees for above services. The commercialization leads to large income farmers, plantation and horticultural crops. So that's why the commercialization is for improved-income on farmers' sides whereas contraction of advisory services and farmer taxation and 50 percent of them suggested for public cost recovery and pluralism. The main sources of extension services were neighbor farmers and input sellers in the locality. A large number of private companies which were exclusively selling chemicals, seed and fertilizers the sellers of the companies were disseminating the essential information to the farmers while using their inputs. A majority of the farmers had preferred to give money for such advisory services in the area of farm management, marketing services and production of livestock, production of horticultural crops and seed production. In the area of post-harvest technologies and land preparation, a majority of respondents preferred a free of cost extension service. The farmers were ready for cost sharing when the products' value was more than their costs. Livestock farmers were also ready to pay for rural advisory services. The primary reason for this was that their profits were speedy and clearly evident. The farmers were ready to pay fee for horticultural crops due to high commercial value of horticultural crops and economic advantage of export market. Further, the majority of respondents was ready to pay fee of farm management and marketing because they were receiving proper and exact information about their farm operations and investments. About half of the farmers preferred contraction of extension services and public cost recovery approach. Only a small number of famers preferred total privatization approach. The commercialization of extension services of agriculture were impeded by a large portion of population of small and poor farmers, a large majority of resource scarce farmers, highly variable socio-economic imbalances and highly variable agro-climate imbalances. The provision of profit-oriented commercialized extension services could not deal effectually with poor farmers. Whereas the poor and small farmers would be unkempt by extension agents and would not be able to compete in open market (Mahaliyanaarachchi, 2005).

Nambir *et al*. 2005 reported that in the past extension services which were provided free of cost, it was difficult to establish the commercialization phenomenon that show about 49 percent farmers were ready to pay for extension services. Moreover, if

high quality services were provided by extension then there would exist significant demand by farmers for the services of extension as well as the cost recovery could improve the finances. Especially, access to or ownership of telephone, radio and television positively and significantly increase willingness to pay for extension services.

Uzokwe and Ofuoku (2006) conducted a study on farmers' view about privatization and commercialization of rural extension service providers. In 1980s, the service delivery was only dependent on public sector for transferring latest technologies to the farmers. After this, various factors like financial losses due to poor performance of the field staff forced the government to change the strategy and stop relying merely on public enterprises. The Government looked for commercialization to solve this problem. The study indicated that the mean age of the farmers was recorded as 46 years which clearly indicated that the respondents were quiet experienced. 60% of the extension workers had contacted with farmers but they were not being visited. 83% got inputs but only 49.8% paid for the inputs they had got and 33.2 did not pay for the inputs. 80% farmers were ready and prepared to pay for inputs but 90.6% were found to be unwilling to pay for advisory services. 70% farmers were not in favor of privatizing extension services. It could not be recommended whether the extension services should be privatized or commercialized as the farmers were not financially strong enough to pay for this.

The commodity-specific and privatized advisory service strategies could work well in monoculture and profitable or export oriented production of crops and farm animals. In such circumstances where several low landholders grow different types of crops mainly for the cases i.e. subsistence and for trade, these strategies are most probably to make many of the farmers producing any commodity depart, recommending the dire need for a multi-dimensional advisory system that can also tackle the primary wants and requirements of the smallholders regarding such service. The pay-for-service technique, basically aimed at cost recovery technique, is most probably to get a better economic continuity of the advisory services. Expenses can be recovered by farmers as well as the public sector. Proper selection and focusing of farmers, which cannot be called an easy job at all in many circumstances, is essential to formulate this strategy much result-oriented (Gebremedhin and Hoekstra, 2006).

Chuks (2006) evaluated the information and awareness level of farmers related to the commercialization and privatization of agricultural advisory services. He reported that

farmers had a low to moderate awareness level in relation to the idea, values and goals or aims of privatization and commercialization. The farmers had also a favorable awareness towards privatization and commercialization of the rural advisory services. There were no significant differences in the perceptions of small, medium and large-scale farming community. The study determined that the promising perception supposed by the respondents was a sign of their enthusiasm to accept the introduction of privatization and commercialization in delivery of agricultural extension services.

The nature of agricultural extension required to overcome the rice market problems is neither completely public nor completely private. Local conditions like long distances, low education of farmers and the presence of different ethnic groups create excludability and thus conditions for private participation. The complexity of rice production, small rice areas and the low demand for local rice hamper the incentives for private investment. Extension in the case of rice must then be a public task, but financial participation from farmers is still a possibility (Horna and Oppen, 2006).

The lower level of commercialization in production of agriculture shapes an important reason of lower income for farming community and poverty incident. For that reason, agriculture has turned out to be the first importance for development and poverty alleviation. Commercialization is an important approach for increasing income of the farming community. Whereas, most of the nonfarm activities denotes those activities that are highly commercialized. The development of market access is important too as a source for the development of commercialization. The deficiency of well-designed value chains is caused for the low agricultural commercialization and decreased farming community incomes. The farmers with small holdings are isolated or arranged in small groups and have troubles in accessing inputs, technology and credit. Their inadequate knowledge of markets and technology is mirrored in low productivity which results in low income than potential income. Enterprises, marketers and farmers are unable to connect with each other effectually and have less ability to capture opportunities arousing from rapidly rising urban, regional or international markets. For that the reason they don't belong to a commercial networking, they find it difficult to get access to these flea markets. Numerous policies on specific crop production are significant in order to improve the capability of farm families particularly in agricultural production to meet the requirements of a more commercialized business and marketing system. Intrinsically, a demand driven approach to commercialization will affect more than targeting definite

commodities on the base of a transitory concept of competitiveness. The capability of farmers to produce crops for markets will be influenced by the interaction of their skills and knowledge whereas the effectiveness of extension services, the available technologies, access to information, credit and finance and access to land (including land tenure issues) (ITC forum, 2006).

In line with the current world trends of less government but more market intervention, the federal government is now encouraging privatization. The public extension was considered as old fashioned, top-down, paternalistic, inherited, subject to bureaucratic inefficiency, non-flexible and was not able to meet with the modern trends in agriculture. A number of factors were induced the failure of public extension i.e. insufficient operation funds, scarcity of appropriate technology, absence of accountability, poor planning, meager operational financial support, center-oriented supervision and management and burden of non-extension duties. The public extension failed to cope the site specific problems and needs of the growers. Due to worsening performance of public extension system there were proposals to move for privatization and commercialization (Ajieh *et al.,* 2008).

JICA (2008) compiled negative aspect of decentralization that was insufficient availability of funds for decentralized staff as well as for extension services. A few parallel financing systems that deteriorated the quality of local planning, allotment of personnel and resources non-transparently, extensive pilot schemes and introduction of new models and principles parallel to the on-going ones. Additionally, a few key challenges for decentralized service delivery were reported that were the balance between sector planning and non-sector local planning and balance among counter planning, fiscal devolution and local budgeting, the balance between specific groups and local elected councils, intergovernmental fiscal transfers and local government owned revenues and challenges related to local government personnel.

Swanson (2008) found that it was an enormous task to convince senior management and staff of extension at provincial / state level, the ones who had been working for decades within the top-down approach, that they must delegate powers to junior level management or sub-level of government. A number of factors were affect the efficiency of decentralized extension system. These were accountability, improving technical capacity, legal frame work, strengthening local level management, operational level funding and stakeholder participation.

Maram (2008) concluded that non-profit organizations can perform much better for development if they are commercialized. Commercialization will make such organizations more innovative. Rivera (1996) stated that the government system of advisory services has facing numerous difficulties due to its high cost and the only possible way to overcome these difficulties is privatization and commercialization of extension advisory services. Howell (1985) commented that due to financial problems, various countries have made structural adjustments to their agricultural advisory system by reducing expenses of public sector extension, by making changes in tax payments, charges on government extension system and most importantly privatization and commercialization.

After the failure of public extension system, privatization and commercialization was proposed. A lot of constraints that create hurdles in the way of privatization and commercialization. The results indicated that poor trained extension staff, subsistence farming on large scale, weak government legislation to back up privatization and commercialization, fear of job insecurity among extension personnel were taken as main impediments to effective privatization and commercialization approach. These constraints should be given heed by the concerned government authorities and policy – makers before final implementation of privatization and commercialization (Ajieh *et al.,* 2008).

Commercialization of public enterprises, including agricultural extension service, is to meet the challenges of economic growth in the twenty-first century. The effectiveness in implementing the program in the state is, however, bedeviled by the following constraints: high cost of agricultural inputs, poverty, high interest rates, corruption, illiteracy, political interferences, unfavorable government regulatory environment, and information gap, among others. It was suggested that for commercialization of agricultural extension service to work effectively, the identified impediments must be considered with utmost seriousness by agricultural extension policy planners and administrators (Isife *et al.,* 2009).

Agricultural extension is needed to compete with the ever increasing technological and specialized problem of farm production and the productivity of extension services is being improved and increased with specialized skills of extension agents (Ahmed and Morse, 2010).

The spreading and utilization of advanced technology of agriculture brought its origin thousands of years ago in various parts of the globe including those of Egypt,

China, Iraq and also in America. The public funded or advisory services system originated during the 19the century. In the period of the potato famine in Ireland (1845-1851), of the agricultural advisors assisted potato growers in growing other food crops and diversified their skills. This was how extension came into being (Swanson and Rajalahti, 2010).

Reforms that increased formers influence over program governance included adoption of participatory extension approaches, supervisory committees and incorporation of farmers into governance, planning and monitoring in participation of farmers in identifying priorities, feedback procedures for evaluation of programs, working through farmers groups and using the technique of participatory evaluation. Small farmers, women cultural and ethnic minorities' representation was minimum. Disadvantages were likelihood of program captured by land lords, problems in making sure the real representation of participating groups, high costs of participatory approaches, risk of aggravating clashes. A large number of famers were facing hurdles in privatization of extension services. The private extension workers were deceiving the clients and they delivered information only to those farmers who gave them money (Farhad and Hosseini, 2011).

Omotesho *et al.* (2011) described that government or public sector was unable to fulfill the major aim regarding the modernization of agriculture which would also guarantee the poverty reduction in the state. This situation called for adopting other substitute approaches for developing the agricultural system. The most common among these is commercialization of rural advisory services. The study found that the respondents were not quite convinced and inclined towards commercialization along with the years of schooling, income level from farming and farming income and landholding. The study thus concluded that commercialized, along with extension system leads towards more accelerated diffusion and adoption rate.

A survey of farmers of Maize was conducted during 2010 in Gombe North Senatorial district of Gombe state regarding the commercialization and privatization of agricultural extension services. A designed questionnaire was used to collect data from one hundred farmers of maize. Binaryprobit and descriptive statistics models were the tools of analysis. The results showed that a large majority (83%) of the respondents had opposed commercialization and privatization of extension services. About 31% showed willingness to pay for it only if the quality and timely extension services would be

provided in addition to membership of cooperative, access to credit, educational level, farm size and extension contact significantly favouring commercialization and privatization of extension services. Moreover, the main hurdles in the way of the acceptance of the purposed idea highlighted by farmers were included financial constraints over quality of extension agents, high ratio of extension agent/farmer and high cost of inputs of production. Thus, affordable credit and enhancing access to quality of extension services would help in promoting the process of commercialization and privatization of agricultural extension activities.

They described that competencies of extension agents and on and off of the job were improved through extension organization. To ultimately provide effective services to the farmers to meet the technical and management requirements of demand driven extension service a wide range of formal and in-service courses were tended. The diverse nature of in-service courses could be an indicator of gaps in the formal curriculum and contemporary issues in agricultural extension that were required to be tackled at the pre service level. The role of extension agents was appeared as knowledge workers who were providing consultancy and advisory services (Lopokoiyit *et al.,* 2012).

Chuks (2015) examined the congruency between extension professionals and farmers regarding their perceptions of privatization and commercialization of agricultural extension services. Results of the study showed a high congruency between extension professionals' perception and their estimate of farmers' perception (rho = 0.92), while the congruency between farmers' perception and their estimate of extension professionals' perception was low (rho = 0.08). The study recommends that farmers' knowledge of issues relating to privatization and commercialization should be enhanced through seminars and workshops organized by the appropriate extension agency.

Babu *et al.* (2014) tried to determine the outcome of agriculture sector through commercializing it. Altering the typical local needs based agricultural system to market-based system of farming has positive impact on nutritional level of the farmers and their families. The results of the study found positive correlation between crop type cultivated and economical, financial and social status of farmers.

Lewis (2014) provided a general picture of prevailing situation of commercialization and explored that for making commercialization successful, it requires adoption of dual methodology. The author further added that major challenge for

commercialization is that it must be long-lasting, consistent, trustworthy and inexpensive or economically stable and within the reach of common man.

Aarikka-Stenroos *et al.* (2014) explained the importance of networks in commercialization. Authors' major objective was to incorporate the information on the ways which research and business fields had adopted to improve and accelerate the commercialization of new ideas or products. The study emphasized that working in clusters or in a specific hierarchy always guaranteed useful results. The findings of the study showed that all the stakeholders could play a vital role in improving results in commercialization by efficiently accomplishing the task assigned which would also help in improving diffusion rate of the innovative ideas and finding new markets for innovations. The study found that there is a dire need to build up, develop and pool up the knowledge for strengthening the theoretical dimension of research.

Muriithi and Matz (2015) evaluated benefits of commercialization. Through various techniques, the author has tried to explore how commercialization is helpful in improving the living condition of farmers in backward countries. He surveyed in Kenya and found a strong significant relation between commercialization and wellbeing of the family of farmers. Amazingly this impact also varied from the type of market for which the commodity is grown and in which the product is sold. Strongly significant correlation was observed between commodity produced for export markets and the level of returns. Commercialization in local marketplaces was rarely or limitedly correlated with the benefits.

Mengal *et al.* (2012) after conducting study in Pakistan, reported that the public sector extension was suffering from several crises such as budgetary crises, bureaucratic nature, and poorly motivated staff. Public sector ignored the marginalized people and women participation in decision making. This situation led to the emergence of private sector. However the private sector tends to focus on profit maximization and covers the needs of commercial farmers. In Pakistan, both the public and private sectors were working in marginalized and rural poor areas to provide information related to agriculture through extension services. Both the sectors were working with the objective of bringing improvement and prosperity in the social and economic living standards as well as in livelihoods of rural people. The research revealed that both sectors were using electronic and print media in order to disseminate their information. The Public and private sectors were providing services in the field of adult education, capacity building, vaccination of

livestock, input supply and awareness related to modern agricultural practices but overall the performance of private sector was found better than public sector.

Babu *et al.* (2013) concluded that a number of factors hindered the organizational performance of public sector agricultural extension and reduced its efficacy. These include low level of partnership, limited staff and continued top-down linear focus. He further suggested that a well-functioning and efficient agricultural system is required to provide advisory services. Extension system should be retrieved in a way that it could address the resource needs of the poor, marginal and women farmers which often remain untouched/unreached by the existing system. The reformative measures in extension system should also be focused on sustainability.

Labarthe and Laurent (2013) stated that small farms were isolated when the semi-public and perennial coordinating bodies, where they were represented, were dismantled. This phenomenon, along with the exclusion of many small-scale farms from front office activities, where questions and solutions are co-produced, makes it difficult to formulate an updated demand and deal with new technical problems. This has long-term and cumulative effects. In addition, privatization has also a powerful impact on the very content of the knowledge produced and made available in back office activities where small farmer has to pay for access. If the current trend continues, this knowledge is likely to become less relevant for small farms; both for the decreased demand, and the increased dominance of large farms, which play a key role in the profitability of private advisory service providers. It was suggested that the policy reform is needed here so that solutions could be produced for small scale farmers.

Hu *et al.* (2009) stated that Chinese agricultural extension agents spent much less time than that of their duties. Allocation of time being spent in field, depends upon the source of their income, education level, experience and seniority. It was found that after commercial reforms, Chinese agricultural extension agents (AEA) spent much less time as compared to the time they had spent prior to commercial reforms. The Chinese AEA were categorized according to the source of income fully funded by commercial activities, partially funded and self-funded agents. The agent whose salary came from government, spent more time in agricultural extension services (AES) delivery than those whose basic income was connected with the commercial activities. When commercialization motivated AEA to be self-sustained, they were distracted by profit and increased the sale of agriculture input supply which ultimately made the agriculture

unsustainable. The commercial reforms in agricultural extension reduced the quality of information. It was suggested by the researcher that government should separate commercial activities from the extension services.

Co-orientational studies have been descripted among researchers, extension workers and farmers concerning attributes of plant cultivars (Groot, 1970), community consensus construction (Broom, 1977), listening behavior states (Buchili and Pearce, 1974) and shared behavior among rational partners (Gantz *et al.,* 1995). The co-orientation model has, also, been used to compare the views of society leaders and local people concerning Hudson River ecosystem restoration in New York State (Connelly and Knuth, 2002).

Adoption of the World Bank supported Training and Visit (T&V) system is considered as the key approach for extension delivery. While the system was adopted with different home grown modifications, the extraction of World Bank funds during the last two decades has confirmed that the system is not sustainable. Whereas the system is supposed to integrate feedback from farmers, they are often inactive receivers of agricultural information. Like in numerous other countries, where the T&V system is being implemented, messages are usually based on perceptions of farmer's needs or on the desires of public sector agencies like the Agricultural Development Program (ADP) in the case of Nigeria. Studies and critiques have exposed that the T&V system had not met user's demand for suitable content and proper learning methods (Omotayo, 2005). Anderson and Feder (2003) observed that "regardless of the fact that public financing for extension is mostly justifiable, the general trend towards economic restraint and abridged role for the public sector have directed to financial crisis in many extension services". Since 1990s, insufficient funding has almost led to the collapse of research and extension institutes that made services unavailable to small farmers and rural communities in Nigeria (Omotayo, 2004).

Several researchers (Adebayo *et al.,* 1999; Agwu and Chukwuone, 2005; Ogunbameru, 2005;Omotayo, 2004) have revealed that one of the most significant lessons learned from the past extension programs in Nigeria is that it is not possible for government only to support extension program with all its facets. The private sector should play a more dynamic role in both financial support and physical transfer of the accessible improved technologies.

Ajieh *et al.* (2008) in their study regarding limitations to privatization and commercialization of agri. extension services, stated the limitations and their mean perception scores involved: fear of job uncertainty among extension workers, lack of farmer's interest in extension program and high risk and improbability in agriculture.

Riaz (2010) observed the role of the private sector in agricultural extension in Pakistan and stated that the farmers stated in most cases that the advisory services are made available by the private sector while the public extension service is seldom available. According to Hanchinal *et al.*(2001) privatization and commercialization of extension refers to the services offered by extension workers in the private association for farmers supposed to pay the services and is also considered as a match or alternative for the governmental extension services.

Agricultural information offered as a private good can occur in different circumstances and does not essentially require the existence of an extremely commercial agricultural system. For example, in the 1930s, villagers in northern Thailand engaged lowland rice growers to instruct them how to terrace and farm irrigated ground (Kunstadter, 1987). But generally, instances of extension information offered through private market systems are more likely to arise with extremely commercial agriculture. In UK, for instance, a privatized extension sector has been working for many years, even earlier than the public Agricultural Development Advisory Service (ADAS) was privatized (Garforth, 2002). In USA, many farmers pay private conferring with firms to offer technical extension services. In the state of Illinois, precision of agricultural services such as gridiron soil testing by geographic information system (GIS) software for accurate mapping of individual fields and the cohort of soil fertility charts are available from different suppliers. Farmers have a tendency to contract this service straightforwardly from the neighboring cooperative, private input providing firm or a private agricultural confer with firm. Farmers are capable of using the analysis to describe their utilization of fertilizer and agro-chemical input necessities with the potential of reducing costs on inputs and improving on the whole yields. A reduction in the use of nitrogen in Illinois subsequent the adoption of precision agricultural practices has also resulted in public environmental profit by lessening some of the harmful effects of nitrogen being introduced into the local fresh water and Mississippi River delta ecosystems (Swanson *et al.,* 2002).

The growing curiosity is rising in developing countries to re-orient agricultural extension system (Rogar, 2004). Therefore, the present study was designed to fulfill the communication and knowledge gap in order to ensure 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.

Due to liberal policies of government, many pesticide and chemical companies were entered frequently in the market (Khooharo, 2008; Ali *et al.*, 2011). Davidson *et al.* (2001) identified a number of biases in both systems in regard to competing, conflicting and overlapping programs. The private extension services concentrate more on large resource-riched, progressive farmers and overlook other small farming communities (Bajwa, 2003). Ahmad *et al.* (2003) reported that the reservations were expressed about the capability of private agricultural extension system regarding quality of extension service in Pakistan (Ali *et al.*, 2008). On the other hand, the 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 confined the role of public extension (Khooharo, 2008). Haq (2009) believed that in worldwide context, the public extension had not been able to address the issues of farmers. Ali *et al.*, (2009) stated that there was the need to strengthen the system by capacity building of the frontline workers and by providing them with competencies in respect to knowledge, attitude, and skill.

The Green Revolution in 1960s paved the way for accurate entry of agri. business companies for selling idea in the field of agriculture within eager mode. The private sector focuses more on requirements of larger commercial farmers, is passionate to engage in practice of profit maximization motivation (Saravanan, 2001; Khooharo *et al.*, 2008). By difference, public extension concentrates on small farmers in order to enhance the socio-economic situation by more educational tilting responsibilities along with support to spiraling their capacity building and improving livelihood (Saravanan, 2001).

Khatoonabadi (2005), while explaining the extension expert's perspectives on privatization of agri. extension in Isfahan, demonstrated that private extension services were extra favorable for high income farmers in contrast to lower income farmers. The major activities of the private extension were to manage pests, scientific information, and mechanization, planting and marketing agricultural goods.

The matter of privatization of agri. extension in Nigeria is not totally a new phenomenon (Dimelu and Madukwe, 2001), while privatization of agri. extension services in Nigeria is still in the shape of improved private sector participation in the provision of agri. extension services and not an absolute transfer of state resources to private hands. Contado (1997) stated that agri. extension is slightly decentralized in Nigeria but in most of the cases, the federal government works as a coordinator for the actions of other organization concerned with extension programs. These organizations provide quasi private extension services in Nigeria: Nigerian Tobacco Company, Shell Petroleum Development Company, United African Company, Leventis Foundation, John Holt Nigeria Company, Agip Oil Company, and various Famers development Unions. Akele and Chukwu (2004) explained that these private bodies were found to bring positive changes and progress to the areas where they were providing agri. extension services. There is informal private sector as well; these are privatized organizations that offer extension services in the areas of agro-chemicals, micro financing, agro-processing, farm tools and general consultancy which are agricultural in nature.

Under the Dutch system, transfer of duty and funding from the public to the private sector have been limited to approximately half of the extension staff and remaining half still financed and administered by the ministry of agriculture. Vanden and Hawkins (1996) has recommended different techniques in which farmers can give price of services under privatized extension services to take account of: (a) They can give a fee for each appointment (b) A tax can be charged on definite agricultural products from which agri. research and extension are budgeted; (c) Costs can be gathered from membership fees given to farmer's association; and (d) The extension service can get a specific portion of the more income, a farmer gets as a result of recommendation given by the extension agent.

Synthesis of literature reviewed and justification of the research

Agricultural extension system is intended to compete with the ever increasing technological advancements and specialized problem of farm production but these services are found to be unsuccessful in managing the site-specific wants, desires and troubles of the farmers. This comparatively outdated performance record of public extension resulted in looking for another alternative in the form of commercialized extension system that could play a very important part in service delivery. These public sector extension services are now seemed to be out-of-date, top-down oriented, strict,

rigid, subject to bureaucratic inefficiencies and as a result these are incapable of dealing with the changing requirements of modern agriculture (Rivera *et al.,* 2000). Privatization and commercialization of extension system has become the topic of widespread focus and has attained high level of attention for those considering the challenge of providing a well-organized agricultural advisory system for farming community in developing countries (Rivera, 2001).

It was concluded from review study that non-profit organizations can perform much better for development if they are commercialized. In addition, commercialization process will make such organizations more innovative. Howell (1985) commented that due to financial problems, various countries have made structural adjustments to their agricultural advisory system by reducing expenses of public sector extension, by making changes in tax payments, charges on government extension system and most importantly privatization and commercialization. After the failure of public extension system, privatization and commercialization was proposed as an alternative solution of the problem. It is an important approach for increasing income of the farming community. Commercialization and diversification related to the field of agriculture includes the slower and regular transformation of incorporated system of farming by few renowned organization for example crop, poultry, livestock and aquaculture products. The farmers with small land holdings are isolated or arranged in small groups and have troubles in accessing inputs, technology and credit. Their inadequate knowledge of markets and technology is mirrored in low productivity which results in low income than potential income. Intrinsically, a demand driven approach to commercialization will affect more than targeting definite commodities on the base of a transitory concept of competitiveness. The capability of farmers to produce crops for markets will be influenced by the interaction of their skills and knowledge, the effectiveness of extension services, the available technologies, access to information, credit and finance; and access to land (including land tenure issues) (ITC forum, 2006). The farmers were ready for cost sharing when the products' value was more than their costs. Majority of the farmers was ready to pay fee for horticultural crops (fruits, vegetables) due to high commercial value of these crops and economic advantage of export market. The primary reason for this willingness was that their profits were speedy and clearly evident. Furthermore, the majority of respondents was ready to pay fee of farm management and marketing because they were receiving proper and exact information about their farm operations and

investments. On the other hand some famers were reluctant to pay for these commercialized advisory services as they were not financially strong enough to pay for this. Thus, affordable credit and enhancing access to quality of extension services would help in promoting the process of commercialization and privatization of agricultural extension activities.

CHAPTER-3
MATERIALS AND METHODS

3.1: Introduction

The social scientists are confronted with the problem of measurement and conceptualization. Methodological procedures and ways of analyzing the information are important considerations for social investigation. According to Farooq (2001) "Research method refers to the general strategy followed in the collection and analysis of data for solving the problem". Wimmer and Dominick (1994) stated that "the typical research process includes the following eight steps: select a problem, review existing research and theory (when relevant), develop hypothesis or research questions, determine an appropriate methodology/research design, collect relevant data, analyze and interpret the results, present the results in an appropriate form, and replicate the study (when necessary)". Thus the major objective of this chapter is to explain various tools and techniques employed for the collection, analysis and interpretation of the data relating to the present study. These methods and techniques are briefly discussed in this chapter.

3.2: Punjab: The study province

3.2.1 History and geography

The word "Punjab" was indicated first time in Tarikh-e-Sher Shah (1580) book, which reveals the construction of Fort by a fellow renowned "Sher Khan of Punjab". The word Punjab literally is derived from the Persian words "Panj" means Five, and "Ab" means Water (Ali and Dogar, 2010), thus the word Punjab means "five waters/five rivers," and indicates the land drained by the branches of the Indus river which are Chenab, Jhelum, Ravi, Sutlej, and Beas rivers. These five rivers originate from the Himalayas and surpass from northwest to southwest. In summer after monsoon rains, the volume of water increases resulting sometimes in floods (Govt. of Punjab, 2009).

Area wise after Balochistan, Punjab is the second largest province, with an area of 205,344 square km and is the largest populated province of Pakistan as about 60.00% population of Pakistan's resides in the Punjab (Ali and Dogar, 2010), which is 81,593,586 (World Gazetteer, 2009), and the density of population is 386.8/km² (Ali and Dogar, 2010). To the northeast Punjab is bordered by the Azad Kashmir, in the east and south the Indian states of Punjab and Rajasthan, Balochistan and the FATA to the west, Sindh to the south, Islamabad and Khyber Pakhtunkhwa to the north (See Figure: 3.1) (Govt. of

Punjab, 2009). Lahore is the capital of the Punjab. The Punjab is mostly a fertile region by the side of the river valleys, while near the border with Balochistan and India skimpy deserts (Cholistan and Thal) can be found. From north to south the Indus River and its many branches pass through the Punjab. It is amongst the most heavily irrigated landscape on earth and all over the province canals can be found (Ali and Dogar, 2010). Table 3.1 shows that the total irrigated area in Pakistan is 19.07 million hectares of which Punjab province occupies 14.57 million hectares which is three-fourths of the total irrigated area in Pakistan (Govt. of Pak., 2007).

3.2.2 Economy

The economy of Punjab is mainly agricultural, although industry makes a considerable contribution. Now the area under cultivation of citrus crop is 2.10 million acres. In agricultural production, Punjab is playing an important role. It adds about 68.00% to annual food grain production in the country. Cotton and wheat are the main crops followed by the other crops including rice, sugarcane, pulses, corn (maize), millet, oilseeds, vegetables, and fruits. Poultry and livestock are also increased in large numbers (Govt. of Punjab, 2015). Pakistan as a nation produces about 8 percent of the world's citrus fruit but sells out only 0.5 percent of its harvest abroad. These fruits are grown nearly in all the four provinces in varying proportions. But then the product is concentrated in Punjab which grows 95 percent of national output. And it is the Sargodha business which alone accounts for 70 percent of provincial production.

Punjab is the Pakistan's most industrialized province; its industries manufacture sports goods, metals, surgical instruments, machinery, textiles, electrical appliances, rickshaws and bicycles, processed foods, and floor coverings (Ali and Dogar, 2010). There are more than 48,000 industrial units in the Punjab, with the abundance of cottage and the small industries (Govt. of Punjab, 2009). The largest concentrations of small light engineering units are in Gujranwala and Lahore divisions, while, the Sialkot district is outclass in sports & cutlery goods and surgical instruments (Govt. of Punjab, 2006).

3.2.3 Education

In the Punjab the literacy rate remained static during 2007-08 to 2008-09, 59.00% of the population of the province was estimated to be literate (Govt. of Pak., 2010).

3.2.4 Language and tribes

Punjabi is the major language spoken in the Punjab, while Urdu is the official language of the Province and in the Constitution of Pakistan Punjabi language is not given any official recognition (Ali and Dogar, 2010). The other local languages through

which the people communicate include Seraiki, Pothohari, Dogri and Shahpuri. The important tribes in the Punjab province comprise the Syed, Rajput, Jatt, Arain, Gujjar, Dogar, and Shaikh. Over 99.00% population of the Punjab (Pakistan) is Muslim and minor non-Muslims groups of Christians, Hindus Bahais, Zorastrians, Sikhs, and Ahmadiyya community (Ali and Dogar, 2010).

3.2.5 Cultural heritage

Since times immemorial Punjab has been the cradle of civilization (Govt. of Punjab, 2009). The carcasses of Harappa are the evidence for a highly developed urban culture that flourished above 5000 years ago. Another momentous sight of the Punjab is Taxila, which stands out as an evidence of the achievements in the field of learning, arts and crafts and was a major centre of Buddhism, Hinduism, Zorastrian, and of Hellenic influence in past ages. The mosques, mausoleums, forts, palaces, and gardens are expressive reminders of the great tradition in Muslim architecture (Govt. of Punjab, 2006) including the Shalimar Garden, Lahore Fort, the Badshahi Mosque, Jahangir's Tomb, and Anarkali Market are prominent in the city of Lahore (Ali and Dogar, 2010). They jog our memory of the magnificent Muslim tradition in the area, which gives the province a tradition that is really Islamic in nature (Govt. of Punjab, 2006). There is also the largest salt mine in Asia (Khewra Salt Mine) situated in the Punjab.

3.2.6 Arts and crafts

Punjab is famous for its fine quality hand knotted carpets; spectacular fabrics of cotton and silk including the block printing & embroidered cloth and hand-woven cotton cloth (khaddar); silver & gold work, tile & woodwork, skills, ivory, architectural crafts, and *naqqashi* (Govt. of Punjab, 2009).

3.2.7 Folklore

Punjab's folk heritage is the traditional incite of thousands of years of its history. The folk tales which are popular in the Punjab are Heer Ranjha, Mirza Sahiban, Sassi Punnun, Sohni Mahiwal, Sayful Muluk, Yusuf Zulekha, and Dulla Bhatti. While the mystic folk songs include the Khwaja Farid's Kafees in Saraiki and Punjabi and the Shalooks by Baba Farid. The other folk songs also include Baits, Dohas, Jugni, Lohris, and Sehra. Bhangra, Dhamaal, Dharees, Dhola, Sammi, and Giddha are the romantic Punjabi dances (Govt. of Punjab, 2009).

3.3: Sargodha district: The population of the study

Sargodha district is situated in the North-East of the largest Punjab province in Pakistan. The district was created in 1934. It spans between rivers Jhelum (NE) and

Chenab (SW) over an area of 5864 Sq KM. The population is 3.15 million. The largest air base of Pakistan (PAF Mushaf) is located close to Sargodha city, hence it is famously known as- "The City of Eagles". Sargodha is a predominantly an agricultural-cum-rural district. Due to its proximity with Faisalabad district- which is the hub of industrial and commercial activity, it has a stunted industrial base. Sargodha remains renowned today for its "Citrus Orchards" and its worldwide exports of *kinnow*-the tasty local orange specie. District Sargodha consists of following 7 tehsils.

Tehsil	Population	No. of Unions
Bhera	100,000 (Estimated]	16
Bhalwal	820,000	16
KotMomin	420,000	30
Sahiwal	236,000	14
Sargodha	1,081,000	62
Shahpur	274,000	16
Silanwali	255,000	16

Citrus holds a significant place in Pakistani agriculture and is ranked as the first among other fruits in terms of area and production. Citrus (Kinows) is a prized fruit of Pakistan and occupies 1st position among all fruits in terms of both area and production. However, Pakistan is at 12th position in citrus production in the world (FAO, 2005). It is grown on an area of 192.3 thousand hectares with annual production of 2458.4 thousand tons. Average yield of citrus in Pakistan is about 12.78 tons per hectare (Govt. of Pak., 2006). While the potential yield of citrus is 18-20 tons per hectare (PHDEB, 2006), so there is a big gap between its average and potential yield. This yield gap may be attributed to a number of problems faced by citrus growers, which need to be properly addressed. Among these, the problems regarding information and inputs seem to have been playing an important role towards this big yield gap. According to Niazi (1993) the lack of technical knowledge, non-co-operation of agricultural extension field staff and non-availability of agricultural extension field staff, were the major difficulties faced by respondents. He also reported that high price of inputs, adulteration in chemicals and fertilizers, lack of technical knowledge, non-availability of fertilizers at proper time, lack of finance, were the major difficulties faced by respondents. Also Hassan (1991) reported that lack of technical knowledge, non-co-operation of agricultural extension field staff and non-availability of agricultural extension field staff, were the major difficulties faced by respondents.

The beginning of citrus growth at the government level was on track in the early sixties when two citrus research locations were established at Pokhara (1961) and Dhankuta (1962). These stations were mostly involved in research work. Endorsing commercial citrus-culture in the country was initiated with the institution of the National Citrus Development Program (NCDP) in 1972. While, NCDP was mandated for both research and progress, it emphasized further on development and initiated to promote plantation of citrus on commercial scale in various potential districts (FAO, 2011).

3.4: The population

Population defined as "a unit from which the survey results are to be obtained" (Moser and Kalton, 1992). The population of the study consisted of all the citrus (kinno) growers residing in district Sargodha in the Punjab province, Pakistan.

3.5: Selection of study sample

A sample is a subset of population that is taken to be representative of entire population (Wimmer and Dominick, 1994:11). Or "a sample is a small proportion of population selected for observation and analysis" (Farooq, 2001). Multistage sampling technique was used for data collection. At the first stage one district (district Sargodha) was selected purposively, at the second stage, four tehsil (Silanwali, Kotmomin, Sargodha and Bhalwal) were selected randomly. As it was extremely expensive to interview all the units of the population. So, keeping in view the limitations of time and financial resources, a sample of 400 (100 from each tehsil) was drawn from the entire population by using Fitz-gibbon and Morris (1987) table.

3.6: Instrumentation

The researcher arranged several meetings with the academic staff of the Institute of Agricultural Extension and Rural Development, University of Agriculture, Faisalabad and the members of supervisory committee to develop a structured interview schedule based on the review of relevant literature, personal insights of the researcher and qualitative field interviews. The instrument was later discussed with experts of agricultural extension department. Then a meeting was arranged with ten prominent literate citrus growing farmers of the area who were part of the population but not that of sample to discuss the questions and items included in the instrument. In designing the instrument, the objectives of the study were kept in view.

Likert scale was used to assess the level of availability and correctness of the sources of information. Six number was also on the scale, six number NA means not

applicable and NR means no response. The scale used to know these levels was defined as:

1 = Strongly disagree
2 = Disagree
3 = Somewhat agree
4 = Agree
5 = Strongly agree
6 = NA/NR

Data were collected with the help of a well-structured interview schedule which was consisted on open and close ended questions. The instrument was reviewed by the members of supervisory committee of the researcher. Once all the needed suggestions and recommendations were considered, the instrument was field tested for validity and reliability.

3.6.1 Validity of data collection instrument

Validity is that quality of a data-gathering instrument or procedure that enables it to measure what it is supposed to measure (Best and Kahn, 2006). Validity is concerned with the question whether the research truly measures that which it was intended to measure (Nachmias and Nachmias, 1992; Joppe, 2000). "A valid measuring device measures what it is supposed to measure" (Wimmer and Dominick, 1994). "The validity of interview schedule is asking the right questions phrased in the least ambiguous way, the meaning of all the terms must be clearly defined so that they have the same meaning for all respondents" (Best and Kahn, 2006).

To check the content and face validity of the survey instrument, a panel of experts that included one professor, two assistant professors from the Institute of Agri. Extension and Rural Development and one associate professor from the Department of Rural Sociology, University of Agriculture Faisalabad was requested to look critically into the instrument.

A copy of the instrument along with the objectives of the study was provided to each member separately; they reviewed the survey instrument and concluded that the survey instrument was the representative of the objectives of the study. They also suggested few points for addition and deletion for further improvement of the instrument. The researcher included the mutually agreed points in the instrument.

3.6.2 Reliability of data collection instrument

Reliability refers to the "consistency" or "repeatability" of measures (Wimmer and Dominick, 1994; Moskal and Jon, 2000; Best and Kahn, 2006; and Trochim, 2006), a measurement that yields consistent results over time is said to be reliable (Spector, 1981). “Reliability refers to the extent to which a measuring instrument contains variable errors, that is, errors that differed from observation to observation during any one measuring instance or that varied from time to time for a given unit of analysis measured twice or more by the same instrument” (Nachmias and Nachmias, 1992). Reliability of the questionnaire may be inferred by a second administration of the instrument with a small subsample, comparing the responses with those of the first (Best and Kahn, 2006).

Pre-test method was used for this purpose. Fifteen interviews were conducted and analyzed. The researcher calculated the reliability of the instrument using Cronbach’s alpha with the help of computer software i.e. Statistical Package for Social Sciences (SPSS), the average value of Cronbach’s alpha was 0.741 which was regarded quite satisfactory and the instrument was administered in the field for data collection.

3.7: Data collection

Data were collected by using an interview schedule. Following techniques listed by Bowe *et al.* (1999) and Shepard (2001) were used for enhancing the response rate:

- Simplicity,
- Avoiding bias, rhetorical questions, and poorly worded response categories,
- Providing adequate time to fill it out,

The respondents were interviewed by the researcher along with a trained ten member team considering the cultural norms. The interview schedule was administered to each respondent individually and separately to ensure unbiased and uninfluenced response. The study subjects were briefed regarding the goals prior to proceeding for interviews so that they may provide correct information based on reality and the results of this study be as correct as possible.

3.8: Analysis of data

The data thus collected were coded and entered into the computer for analysis. The data analysis was accomplished by using SPSS software (i.e., 22.0 version of statistical package for social sciences). Descriptive statistics were calculated, interpreted and discussed and formulated the recommendations. Four types of indicators were used in the tables.

1. Percentage
2. Arithmetic mean
3. Standard deviation
4. Weighted score

3.8.1 Percentages

Percentages were calculated in simple and cross tables for the purpose of comparisons. The formula used for computing percentages is:

$$F / N \times 100$$

Where F represents the class frequency and N stands for total respondents.

3.8.2 Arithmetic mean

Arithmetic mean or average can also be used for tabulated presentation of data. It is true representation of the whole data.

$$\bar{X} = \frac{\sum x}{n}$$

Where:

$\bar{X}$	=	The sum mean of a sample of size
$\sum$	=	Sum of observation
X	=	The responses obtained by all the respondents in a sample
n	=	Sample size

3.8.3 Standard deviation

Deviation of a data from its mean is called the standard deviation. If a deviation of its mean is squared then the resulting deviation is called standard deviation.

$$S.D = \sqrt{[(\sum x - X^*) / n]}$$

Where

x = Value of Observations

X* = Mean of a Variable

n= no. of Observations

$\sqrt{}$ = Square Root

$\sum$ = Summation

3.8.4 Weighted score

F×S= Weighted Score

Where

F=frequency

S= Scale

3.9: Difficulties faced during data collection

- The researcher faced certain unavoidable difficulties during the process of data collection. Some respondents were found very accommodating and fascinated data collection process but the other was reluctant to give the required information. At time it became rather difficult to make the respondents understand because they readily begin to recount their own problems.
- Data collection becomes fairly difficult when respondents were not literate. Despite the fact that researcher tried his best to let the respondents know about the purpose of the study, some farmers were still suspicious about the nature of study and questioning. They thought that the information collected may be used against them, especially when questions such as size of land holding and area under citrus crop and land rented in were put to them.
- Some respondents hesitated to give accurate information due to the fear that government might impose some new taxes on them. Some respondents were hesitated to give information because they thought that the researcher might be some government employee. The suspicious farmers were also satisfied by showing university identity card and telling them that the researcher is a Ph.D. scholar at the University of Agriculture, Faisalabad and has nothing to do with tax department, pesticide company or any other organization. The researcher also assured that it was an essential part of the study to collect accurate data from the respondents, which may lead to valuable results for the betterment of the farming community.
- In some cases researcher had to wait long for the respondents because they were not available at village or/ at farm. Usually all the respondents were not available on the first visit and researcher had to manage repeated visits.

- The poor condition of unpaved “Kacha” roads/ the roads under construction posed problem to access the respondents. Moreover, the area was unsecured in sense of theft.
- The researcher had to bear all the expenses from his own pocket carried out on the research. It was difficult to manage it within his own resources.
- Transportation and communication facilities were not properly available in the study area. Some of the villages were not connected by metal road and thus researcher had to face much difficulty in having meeting with the respondents on scheduled time. The researcher approached such villages on foot in order to collect the required information. Despite all these difficulties the researcher tried his best to manage his efforts, time and money in judicious way.

CHAPTER-4

RESULTS AND DISCUSSION

4.1: Introduction

In this chapter the researcher has presented a broad view of the respondents under study. The present study focused on the commercialization of agricultural extension services in the Punjab, Pakistan. In this chapter, an effort has been made to analyze, discuss and interpret the data with a purpose to draw conclusions and to suggest strategic measures that may be helpful in enhancing the role of public sector in the dissemination of agricultural technologies among farmers.

4.2: Univariate analysis

4.2.1: Socio-economic characteristics of respondents

Socio-economic characteristics of the respondents have multifarious effects on their general attitude and behavior. Socio-economic characteristics of the respondents like age, education, size of land holding and type of tenure played an important role in determining their attitude towards adoption or rejection of new ideas (Tarar, 1983; Lynne *et al.*, 1995; and Abuzar, 2003).These attributes may have positive or negative effect on the awareness and adoption levels of the respondents. The socio-economic characteristics of the respondents are discussed in the tables Nos. 4.1 to 4.10.

Age

It is assumed that with the passage of time individual becomes mentally mature and takes rational decisions. Kashif (2006) explained that with an increase in age, the awareness about production practices is also increased. Similarly, Ramzan (2003) found that with the increasing age, knowledge about plant protection is also increased. Bashir and Albarbarawi (2011) argued that the age of the respondents had a strong effect on adoption of technologies by them. Therefore, age can be one of the important factors influencing the adoption behavior of the individual (Amir, 2003). Keeping in view the importance of age, the farmers were inquired about their age and the data are given in table 4.1.

Table 4.1: Distribution of the respondents according to their age

Age (in years)	Frequency	Percentage
Young (Up to 35)	65	16.3
Middle (>35-50)	190	47.5
Old (Above 50)	145	36.3
Total	400	100.0

Data given in table 4.1 reveal that 16.3 percent of the respondents who belonged to young age group (up to 35), whereas, a major proportion (47.5%) of the respondents were belonged to middle aged (>35-50 years) category followed by 36.3 percent who belonged to old aged (above 50 years) category. The results of the present study are in accordance with those of Demiryurek *et al.* (2008); Ofuoku *et al.* (2008); and Omobolanle (2008) who had found that most of the farmers belonged to middle age category.

Education

Education is the process for bringing positive change in the behavior of an individual (Khan, 2008; and Amir, 2003). It is obvious that an educated person is always keen and logical towards innovations. It is concluded in many research studies that education plays a vital role in the adoption process of recommended production practices (Muro and Burchi, 2007). It is extremely vital to get education if one wants to achieve success in one's life (Sahni, 2000). Education has an enormous impact on the human society. It guides and trains human mind to think and take right decisions. Education is necessary if a nation aims to achieve growth and development. Rehman (2011) reveal that as educational level of farmers increases, the output in terms of changed behavior also increases. The extension agents' communication also becomes easier and effective with educated person. Keeping these facts in view, the respondents were asked about their educational level. The data regarding educational status of the respondents are presented in table 4.2.

Table 4.2: Distribution of the respondents according to their educational status

Education (in years)	Frequency	Percentage
Illiterate (o)	17	4.3
Up to Primary (1-5)	21	5.3
Primary to Middle (>5-8)	88	22.0
Middle to Matric (>8-10)	196	49.0
Above Matric (>10)	78	19.5

Total	400	100.0

Table 4.2 indicates that only 4.3 percent respondents were illiterate and 5.3 percent of them had up to primary level education, whereas 22.0 percent of the respondents had primary to middle level education and about a half (49.0%) of the respondents had middle to matric level education. About one-fifth (19.5%) of the respondents had above matric level education.

The results of the present study have very close resemblance with those of Arshad (2009) who found that 77.33 and 74.0% of the respondents were literate. Similarly, the results of Ashraf (2012), Talib (2012) and Aftab (2014) showed a similar trend with those of present study with a little bit variation.

Table 4.3: Distribution of the respondents according to their marital status

Marital status	Frequency	Percentage
Single	18	4.5
Married	382	95.5
Total	400	100.0

Table 4.3 indicates that only 4.5 percent respondents were single whereas a large majority (95.5%) of the respondents was married. Married farmers might belong to middle age category while being single might infer to those of young ones. Being married and holding complete family supports farming as women are an integral part of farming system working in the field side by side of their males. These results are moderately similar to those of Safder (2004) who found that majority (86%) of the respondents was married while 4.1 percent unmarried and 5.8 percent widow.

Table 4.4: Distribution of the respondents according to their social status

Social status	Frequency	Percentage
Ordinary farmer	303	75.8
Govt. employee	28	7.0
Numberdar	24	6.0
Extension agent	19	4.8
Livestock farmer	26	6.5
Total	400	100.0

Table 4.4 shows that a great majority (75.8%) of the respondents was those of ordinary farmers, while 7.0 percent of them were government employees, 6.0 percent of them were numberdars, 4.8 percent of them were extension agents and 6.5 percent of them were livestock farmers.

Sources of income

To run a farm, sufficient capital is a necessary element. It is general observation that farmers having enough farm income are considered as more successful farmers than those having low income. In addition to farm income, other sources of income like rent and wages/salaries may also contribute to enhance farmers' overall income and thus improving their living standards through poverty reduction (IFAD, 2002). Similarly, Adeniji and Ega (2008) explained that the income earning other than farm income has positive influence on adoption of innovations. The respondents were asked about their sources of income and their response is given in following table.

Table 4.5: Distribution of the respondents according to their source of income

Source of income	Frequency	Percentage
Citrus farming	253	63.3
Citrus and vegetable farming	25	6.3
Citrus farming + Job	31	7.8
Citrus farming + Private business	8	2.0
Citrus farming + agriculture + Job	37	9.2
Citrus farming + Livestock	46	11.5
Total	400	100.0

Table 4.5 represents the source of income of the respondents. The results show that a large majority (63.3%) of the respondents was depending on citrus farming, while the other (36.7%) respondents were not dependent on farming only; they were also having some secondary income sources like vegetable farming (6.3%), job (7.8%), private business (2.0%), agriculture & job (9.2%) and livestock (11.5%). These results are contradicted to those of Adil (2008) who found that majority (58%) of the respondents derive their income from farming while less than half (42%) of the respondents were relying on non-farming sectors.

Size of land holding

The size of land holding refers to the piece of land cultivated by a farmer and his family. Land holding size is assumed as an important factor having impact on adoption of new technologies by the farmers. The size of landholding may have some influence on farmers' decisions to acquire knowledge about improved agricultural technologies (Chaudary, 2006). The data regarding the size of landholding of the respondents are presented in table 4.6.

Table 4.6: Distribution of the respondents according to their size of land holding

Size of land holding (acres)	Frequency	Percentage
Small (Up to 12.5)	276	69.0
Medium (>12.5-25)	97	24.3
Large (Above 25)	27	6.8
Total	400	100.0

Farmers were directly associated with farming and they were well aware of the significance of their lands. Farmers were asked to depict their farm size that they possess. The results in this regard indicate that the respondents with a comparatively higher percentage (69.0%) were commanding up to 12.5 acres land, followed by 24.3 percent of the respondents had >12.5-25 acres land and remaining 6.8 percent of them had above 25 acres land. The results of the study are also in consonance with those of Butt (2002) that a large majority of the respondents was small farmers possessing up to 12.5 acres of land. These results clearly show the dominance of small scale farmers in agriculture of Pakistan.

Area under cultivation

The area under cultivation might have some association with commercialization of advisory services. For example farmers having small area under cultivation might not have easy access to the advisory services provided by extension field staff because of their deliberate negligence. However, growers with large area under cultivation can be expected to get these services more efficiently. The data in this regard are given below in table.

Table 4.7: Distribution of the respondents according to their area under cultivation

Area under cultivation (acres)	Frequency	Percentage
Up to 12.5	286	71.5
13-25	96	24.0
Above 25	18	4.5
Total	400	100.0

The data mentioned in table 4.7 indicate that a majority (71.5%) of the respondents had up to 12.5 acres cultivated land. About 24.0 percent of the respondents had 13-25 acres cultivated land and remaining 4.5 percent of them had above 25 acres cultivated land. These results are in contradiction to those of Rana (2002) who found that 49.3% of the respondents belonged to small farmer category cultivating land up to 5 acres followed by 33.4 and 17.3% of the respondents who had land holding between 5-10 and 15-20 acres, respectively.

Type of tenure

Farmers are generally divided into three categories based on the ownership of land i.e. owner, owner-cum-tenant and tenants. The owner farmers who are generally considered independent in making decisions may adopt latest technology more easily or readily than the tenants who are not sure about their tenure-ship (Siddiqui, 2006). The data which represent the type of tenure are given in table 4.8.

Table 4.8: Distribution of the respondents according to their tenancy status

Tenancy status	Frequency	Percentage
Owner	367	91.7
Owner-cum-tenant	28	7.0
Tenant	5	1.3
Total	400	100.0

The data given in table 4.8 clearly indicate that a fair majority (91.7%) of the respondents was that of owner cultivator. However, only 7.0 percent of the respondents belonged to owner-cum-tenant category and remaining 1.3 percent of the respondents were tenant. The results of this study were also in line with the study of Butt (2002) that a fairly large majority of the fruit growers was that of owner cultivators. The findings were not according to Ashraf (2012) who found that a large majority (60.71%) of the respondents was owner and more than one third (37.85%) of the respondents belonged to owner-cum-tenant category, while only a few (1.42%) of the respondents belonged to tenant category.

Annual income

The farmers have various income generating sources. The overall income from all the sources during a year is called annual income. The income affects the adoption of improved technology by farmers (Ahmad, 2003). Similarly, Khan, (2008) explained that the farmers' annual income showed highly positive association with the future use of mobile phone for obtaining agri. information. Likewise Haq (2008) narrated that the population pyramid of any community reflects its prosperity and socioeconomic status of individuals surviving in that society based on per capita income. Income, earning and saving of a family show its standard of living. The farmers were enquired about their income and their responses are summarized in Table 4.9.

Table 4.9: Distribution of the respondents according to their annual income from all sources

Income (Rs.)	Frequency	Percentage
Up to 100000	69	17.3
100001-200000	86	21.5
200001-300000	101	25.3
300001-400000	67	16.8
Above 400000	77	19.3
Total	400	100.0

The data presented in table 4.9 show that 17.3 percent of the respondents had annual income of up to Rs. 100000, while, 21.5 percent of them had annual income of Rs.100,001- 200,000, about one-fourth (25.3%) of them had Rs. 200001-300000, 16.8 percent of them had Rs. 300001-400000 and 19.3 percent of the respondents had annual income of more than Rs.400,000.

These results are more or less contradicted to those of Shahid (2013) who reported that slightly more than half (54%) of the respondents were belonged to medium category and had their annual income ranged from 150000-500000 rupees, followed by (38%) of the respondents which fell in small category who had their annual income up to 150000 rupees. While only small quantity of respondents were belonged to large category who

had their annual income above 500000 rupees. According to FFC (2011), farm advisory services had good impact on farmers' income.

Table 4.10: Distribution of the respondents according to their sources of advisory services

Source of advisory services	Frequency	Percentage
Public sector	78	19.5
Private sector	224	56.0
Other sources	98	24.5
Total	400	100.0

Various factors are responsible for the efficiency of extension system but farmers' demands and their needs for advisory services are decisive factors in determining the effectiveness of extension services. Since creation of Pakistan, public and private sector extension services had made valuable contributions in agricultural development (Shaukat, 2013). The table 4.10 reveals that about 56.0 percent respondents had got advisory services from private sector and 19.5 percent of the farmers had mentioned public sector as their source of advisory services while remaining 24.5 percent farmers had used other information sources.

Table 4.11: Distribution of the respondents according to their satisfaction with the performance of public sector extension services

Satisfied	Frequency	Percentage
Satisfied	59	75.6
Not satisfied	19	24.4
Total	78*	100.0

** 322 respondents were NA because they were not taking advisory services from the public services*

The table 4.11 represents the satisfaction with the performance of public sector extension services. It was found that 75.6 percent (out of 78) of the respondents were satisfied with the performance of public sector extension services, while 24.4 percent selected citrus farmers were not-satisfied with the public sector.

The results of present study are contradictory to those of Shaukat (2013) who reported that this current status of agriculture and prevailing scenario in agriculture system of rural areas of Pakistan rejects the impression that farmers are not interested in advisory services. Farmers realize that they do need advisory services for commercial and successful farming. They demand quality services which could satisfy their needs.

Table 4.12: Distribution of the respondents according to their access to advisory services

Response	Frequency	Percentage
Yes	89	22.25
No	311	77.75
Total	400	100.0

The table 4.12 reveals that 22.25 percent of the respondents was having full access to advisory services, while 77.75 percent of them was never having full access to advisory services.

Table 4.13: Distribution of the respondents according to their satisfaction with the availability of these services

Response	Frequency	Percentage
Satisfied	74	18.5
Not satisfied	326	81.5
Total	400	100.0

The table 4.13 shows that only 18.5 percent of the respondents reported that they were satisfied with the availability of these services, whereas 81.5 percent of them were never satisfied with the availability of these services. The results of this study were also in line with the study of Davidson *et al*. (2001) who found that majority of farmers were not satisfied with the technical competencies and availability of the public extension services.

Table 4.14: Respondents' knowledge about commercialization of agricultural extension services

Response	Frequency	Percentage
Yes	175	43.75
No	225	56.25
Total	400	100.0

Today extension services for the many countries of the Asian region are facing numerous newly emerged challenges. The most promising and prominent challenges include: Pluralism, privatization, globalization and market liberation, World Trade Order (WTO), Information and Communication Technology (ICT), devolution and decentralization. Now- a-days, the extension clienteles have preference for demand driven and participatory approaches. The need for an up-to- date extension advice to the farmers on farming systems and marketing linkages is becoming increasingly important. In the past, extension systems of the region have not been able to make positive impacts on increasing agricultural production (Baig and Aldosari, 2013).

The table 4.14 depicts that less than half (43.75%) of the respondents had knowledge about the commercialization of agricultural extension services, whereas 56.25 percent of them replied negatively. It is clear from the above table, less than a half of the selected citrus growers had knowledge about commercialization of agricultural extension services so Chuks (2015) recommends that farmers' knowledge of issues relating to privatization and commercialization should be enhanced through seminars and workshops organized by the appropriate extension agency. Mahaliyanaarachchi and Bandra (2006) explained the concept of commercialization in the context of agricultural extension, firstly agricultural extension is taken as a commercial good or service which is interchanged between two parties over a payment on which both the parties agreed. On the one hand, the extension agents act like seller and the clients perform as purchasers. Secondly, demand and supply theory is applied on this phenomenon. The services of agricultural extension in commercialization assume the form of a complete demand driven activity. Thirdly, the services of extension can be taken like an input such as recommended

fertilizers, viable seed, chemicals and spray and farm equipment which are necessary for commercial farming.

Table 4.15: Distribution of the respondents according to willingness to pay for advisory services

Response	Frequency	Percentage
Yes	149	37.25
No	251	62.75
Total	400	100.0

The table 4.15 reveals that more than one-third (37.25%) of the respondents reported that they had willingness to pay for advisory services, while a majority (62.75%) of the respondents replied negatively.

These results correlate with the findings of Chuks (2006) who reported that the favorable perception held by the respondents is an indication of their willingness to pay for the agricultural extension services delivery. He also recommended that the government should think about privatizing or publicizing rural advisory services in the state. Similarly, Nambir *et al.* (2005) also revealed that the access to or ownership of telephone, radio and television positively and significantly increases willingness to pay for extension services.

Table 4.16: Distribution of the respondents according to their response regarding strengths of commercialization of extension services

Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat agree, 4 = Agree, 5 = Strongly agree

Commercialization would	Weighted score	Mean	Standard Deviation	Rank order
Lead to higher farm output	1218	3.04	.977	1
Ultimately lead to higher income	1177	2.94	1.371	2
Help reduce Govt. financial burden on agriculture	1124	2.81	1.339	3
Have highly qualified staff as compared to government extension workers	1098	2.75	1.074	4
Make agricultural information delivery to become more effective	1063	2.66	1.307	5
Provide job opportunities to a large number of agri. Graduates	1039	2.60	1.097	6
Enhance farmers' knowledge base	996	2.49	1.023	7

Commercialization would	Weighted score	Mean	Standard Deviation	Rank order
Encourage competition among extension service providers	991	2.48	.965	8
Improve farmers' management skills	986	2.47	1.038	9
Make extension services to be directed at specific needs of the people	990	2.47	1.059	10
Make it possible for more farmers to be reached	980	2.45	1.056	11
Provide an opportunity to the farmers to get information according to their choice	970	2.42	1.180	12
Break the monopoly of public extension service	957	2.39	.960	13
Have higher credibility of the information	938	2.34	1.019	14
Improve linkage between research and extension	933	2.33	1.175	15
Make easy availability of extension services for every farmer	930	2.32	1.078	16
Make easy accessibility for each farmer	924	2.31	1.083	17
Provide opportunity for neglected areas of agricultural production to be attended to	919	2.30	1.260	18
Increase priority areas of extension coverage	912	2.28	1.058	19
Increase the quality of services by encouraging competition between service providers	899	2.25	1.140	20
Increase overall effectiveness of agri. extension services	876	2.19	.711	21

Today commercialization of agricultural extension services is an inevitable reality throughout the world. There are a number of factors affecting the commercialization process in agriculture. Some of them could be named as rapid growth of economies in both developed and developing countries, introducing of new technologies, market expansion, market liberalization (Mahaliyanaarachchi and Bandara, 2006).

The respondents were asked about strengths of commercialization of extension services and their responses in this regard are presented in appendix 1.

The data given in table 4.16 shows that "lead to higher farm output" was ranked as No. 1 with mean 3.04 and weighted score 1218 on the basis of farmers response regarding strengths of commercialization of extension services. Ultimately lead to higher income (mean = 2.94, weighted score 1177), help reduce government financial burden on agriculture (mean = 2.81, weighted score 1125), have highly qualified staff as compared to government extension workers (mean = 2.75, weighted score = 1098), make

agricultural information delivery to become more effective (mean = 2.66, weighted score = 1063) and provide job opportunities to a large number of agri. graduates (mean = 2.60, weighted score = 1039) were ranked at 2nd to 6thpositions respectively.

Enhance farmers' knowledge base (mean = 2.49, weighted score = 996), encourage competition among extension service providers (mean = 2.48, weighted score = 991), improve farmers' management skills (mean = 2.47, weighted score = 990), ultimately lead to higher income (mean = 2.47, weighted score = 986), make it possible for more farmers to be reached (mean= 2.45, weighted score = 980), provide an opportunity to the farmers to get information according to their choice (mean = 2.42, weighted score = 970), break the monopoly of public extension service (mean = 2.39, weighted score = 957), have higher credibility of the information (2.34, weighted score = 938), improve linkage between research and extension (mean = 2.33, weighted score = 933), make easy availability of extension services for every farmer (mean 2.32, weighted score = 930), make easy accessibility for each farmer (mean = 2.31, weighted score 924), provide opportunity for neglected areas of agricultural production to be attended (mean = 2.30, weighted score = 919), increase priority areas of extension coverage (mean = 2.28, weighted score = 899) were ranked at 7th to 19th, respectively.

Whereas the statement 'increase the quality of services by encouraging competition between service providers' (mean = 2.25, weighted score = 899) and increase overall effectiveness of agri. extension services (mean = 2.19, weighted score = 876) were ranked at the lowest 20th to 21st, respectively.

The results are in agreement with those of Maunder (1973) and Ladel *et al.* (2008) who indicated that commercialization of advisory services helps farming community via educational standard procedures, advanced farm practices and procedures, boosting up level of output and earnings, making their level of life better and raise the societal and learning standards of farmers.

Similarly Haug (1999) concluded that the role of agricultural extension in the commercialized agricultural system mainly depends on the type and way of commercialization in a given society. As in the past, today also we have to expect that agricultural extension services are supposed to fulfill many aims, from reducing rural poverty and improved livelihoods for rural households in order to increase the overall production and contributing to foreign exchange earnings from export.

Table 4.17: Distribution of the respondents according to their response regarding weaknesses of commercialization of extension services

Scale: 1 = Strongly disagree, 2 = Disgree, 3 = Somewhat agree, 4 = Agree, 5 = Strongly agree

Commercialization of extension services would	Weighted score	Mean	Standard deviation	Rank order
Enhance financial burden on farmers	1697	4.24	1.383	1
Lead to job insecurity among public extension workers	1691	4.23	.934	2
More business oriented less serving	1647	4.12	1.297	3
Make agricultural extension services unaffordable by farmers	1603	4.01	.677	4
Encourage exploitation of farmers	1565	3.91	1.218	5
Pay attention only to increase the production without considering other factors such as environmental, social etc.	1537	3.84	.891	6
Encourage income inequality	1520	3.80	1.019	7
Lead to poor capacity building	1514	3.78	.825	8
Create doubt in farmers on sustaining of the commercialization	1481	3.70	1.258	9
Make farmers to lose their independency in decision marking due to commercialized extension services	1476	3.69	1.326	10
Encourage foreign domination in the provision of extension services	1470	3.68	1.203	11
Create hindrance to group extension service	1366	3.41	1.118	12
Promote corruption and nepotism	1230	3.08	1.073	13
Increase the regional imbalance	1108	2.77	1.098	14

The respondents were asked about weaknesses of commercialization of extension services and their responses in this regard are presented in appendix 2.

The data given in table 4.18 show that "commercialization would enhance financial burden on farmers" was ranked at 1st position with mean value 4.24 and weighted score 1697 on the basis of farmers response regarding the weaknesses of commercialization of extension services. Commercialization would lead to job insecurity among public extension workers (mean = 4.23, weighted score = 1691), commercialization would be more business oriented less serving (mean = 4.12, weighted score = 1647), commercialization would make agricultural extension services unaffordable by farmers (mean = 4.01, weighted score = 1603) were ranked 2nd to 4th

respectively. These weaknesses fell in between agree and strongly agree categories but tended more towards agree category.

Commercialization would encourage exploitation of farmers (mean = 3.91, weighted score = 1565), commercialized extension service will pay attention only to increase the production without considering other factors such as environmental, social etc. (mean = 3.84, weighted score = 1537), commercialization would encourage income inequality (mean = 3.80, weighted score = 1520), commercialization would lead to poor capacity building (mean = 3.78, weighted score = 1514), farmers may have a doubt on sustaining of the commercialization (mean = 3.70, weighted score = 1481), farmer may lose their independency of decision marking due to commercialized extension services (mean = 3.69, weighted score = 1476), commercialization would encourage foreign domination in the provision of extension services (mean = 3.68, weighted score = 1470) and commercialization would create hindrance to group extension service (mean = 3.41, weighted score = 1366) were ranked 5^{th} to 12^{th}, respectively.

Whereas the 'commercialization would promote corruption and nepotism' (mean = 3.08, weighted score = 1230) and commercialization would increase the regional imbalance (mean = 2.77, weighted score = 1108) were ranked lowest 13^{th} to 4^{th}, respectively.

The results of Mahaliyanaarachchi (2004) are almost similar to those of the present study who stated that due to squeezing, indispensable financial and human capital public agricultural extension system has assumed the form of an unproductive and hopeless system. It is being criticized for wasting of public wealth and property. Swanson and Rajalahti (2010) also reported that one of the major reasons for weak connection among public and private extension is the distinction among their financial system. Actually private extension is reliant on public extension for financial causes. Singh *et al.* (2013) stated that participatory approaches will assist to have sturdy public-private linkage of agricultural extension.

Table 4.18: Distribution of the respondents according to acceptability of the commercialization of agricultural extension services

Scale: 1 = Strongly disagree, 2 = Disgree, 3 = Somewhat agree, 4 = Agree, 5 = Strongly agree

Statements regarding acceptability of the commercialization	Yes		Weighted score	Mean	Standard deviation	Rank order
	F.	%				
Need oriented services would be more acceptable to the farmers	380	95.0	1402	3.69	.898	1
Commercialization would only be acceptable when these services are cost effective	390	97.5	1374	3.52	1.131	2
Authenticity of commercialized extension services would encourage more acceptability	397	99.3	1370	3.45	1.122	3
Commercialization would be more acceptable if these services are affordable for each farmer	347	86.8	1172	3.38	.949	4
Commercialization would provide an opportunity to neglected areas of agri. production to be addressed	333	83.3	1117	3.35	1.210	5
Focus on small and medium farmers	388	97.0	1267	3.27	1.356	6
Commercialization would be more acceptable if these services are compatible to the farmers	386	96.5	1252	3.24	1.070	7
Commercialization should be backed by control authorities	344	86.0	1086	3.16	1.279	8
Commercialization would be more acceptable if these services are timely available	346	86.5	1082	3.13	1.231	9
Commercialization would develop professionalism among extension workers	344	86.0	1074	3.12	1.147	10
Easy accessibility of information would enhance more acceptability	311	77.8	955	3.07	.994	11

The respondents were asked about acceptability of the commercialization of agricultural extension services and their responses in this regard are presented in appendix 3.

The data given in table 4.18 shows that "need oriented services would be more acceptable to the farmers" was ranked as 1st with mean 3.69 and weighted score 1402 on the basis of acceptability of the commercialization of agricultural extension services.

Commercialization would only be acceptable when these services are cost effective (mean = 3.52, weighted score = 1374), authenticity of commercialized extension services would encourage more acceptability (mean = 3.45, weighted score = 1370) and commercialization would be more acceptable if these services are affordable for each farmer (mean = 3.38, weighted score = 1172) were ranked 2nd to 4th, respectively.

Commercialization would provide an opportunity to neglected areas of agri. production to be addressed (mean = 3.35, respectively = 1117), focus on small and medium farmers (mean = 3.27, weighted score = 1267), commercialization would be more acceptable if these services are compatible to the farmers (mean = 3.24, weighted score = 1252), commercialization should be backed by control authorities (mean = 3.16, weighted score = 1086) and commercialization would be more acceptable if these services are timely available (mean = 3.13, weighted score = 1082) were ranked 5th to 9th, respectively.

Whereas commercialization would develop professionalism among the extension workers (mean = 3.12, weighted score 1074) and easy accessibility of information would enhance more acceptability (mean = 3.07, weighted score = 955) were ranked lowest 10th to 11th position, respectively.

The results are correlated with the findings of Dinar (1996) who showed that after commercializing extension services, it would probably need to be more expanded and have to offer a variety of different types of servicer packages depending upon their clients. At initial stages, the 25% cost of extension in Nigeria and 10% in Benin are acceptable up to a certain limit. Politicians, extension specialists and business or production experts have been supporting and reviewing or re-thinking for public advisory services delivery and traditional system of extension in Pakistan also needs to be developed and renovated.

The results of present study are similar to those of Hanif *et al.* (2004) who reported that the agricultural extension system plays multipurpose role with the provision of need-based and demand-driven knowledge with agronomic techniques in a systematic way so as to improve production, income, rural populations' welfare and to mitigate their problems. Furthermore, the agricultural services assist and establish the capacity building of farmers through target-oriented training and building working human relation with farmers. Agricultural extension is an effective vehicle to disseminate technical information of new crop technologies)

Table 4.19: Distribution of the respondents according to their potential constraints in the way of commercialization of agricultural extension services

Potential constraints	Weighted score	Mean	Standard deviation	Rank order
Inadequate Govt. guarantees, regulations and control over extension service providers for overcharging and abuses	1663	4.16	.905	1
Huge reluctance on the part of farmers to pay for extension services	1618	4.05	1.025	2
Fear of exploitation by extension service providers	1603	4.01	1.597	3
Farmer' poor economic background	1599	4.00	.793	4
Fear of job insecurity among extension staff	1592	3.98	1.064	5
Unequal access to resources	1590	3.98	.819	6
Lack of farmer' interest in extension programs	1578	3.95	.924	7
Irresponsiveness of extension services provider to clients' needs	1578	3.94	.885	8
Inadequate Govt. legislation to backup commercialization program	1531	3.83	1.143	9
Tendency to focus more attention towards large-scale farmers thereby neglecting the medium and small farmers	1501	3.75	1.525	10
Difficulty in attaching monetary value to extension services	1495	3.74	1.727	11
Poor linkages between research and extension	1490	3.72	1.069	12
Lack of better marketing facilities to sell increased farm outputs resulting from improved extension services	1441	3.60	1.073	13
Administrative and bureaucratic issues in policy implementation	1435	3.59	1.379	14
Insufficiently trained extension personnel	1401	3.50	1.259	15
Unfavourable Govt. policies towards commercialization of extension services	1378	3.45	1.477	16
High level of subsistence farming	1333	3.33	1.459	17
Political instability	1304	3.26	1.741	18
Poor capacity building of extension staff	1236	3.09	1.455	19
Corruption and nepotism among extension staff	1233	3.08	1.551	20
High risk and uncertainty about extension personnel	1172	2.93	1.461	21

The respondents were asked about their potential constraints in the way of commercialization of agricultural extension services and their responses in this regard are presented in appendix 4.

The data given in table 4.19 shows that "inadequate government guarantees, regulations and control over extension service providers for overcharging and abuses" was ranked as 1st with mean 4.16 and weighted score 1663 on the basis of constraints that might be occurred in the way of commercialization of agricultural extension.

Huge reluctance on the part of farmers to pay for extension services (mean = 4.05, weighted score = 1618), fear of exploitation by extension service providers (mean = 4.01, weighted score = 1603) and farmer' poor economic background (mean = 4.00, weighted score = 1599) were ranked at 2nd to 4th, respectively.

Fear of job insecurity among extension staff (mean = 3.98, weighted score = 1592), unequal access to resources (mean = 3.98, weighted score = 1590), lack of farmer' interest in extension programs (mean = 3.95, weighted score = 1578), inadequate Govt. legislation to backup commercialization program (mean = 3.94, weighted score = 1578), inadequate Govt. legislation to backup commercialization program (mean = 3.83, weighted score 1531), tendency to focus more attention towards large-scale farmers thereby neglecting the medium and small farmers (mean = 3.75, weighted score = 1501), difficulty in attaching monetary value to extension services (mean = 3.74, weighted score = 1495), poor linkages between research and extension (mean = 3.72, weighted score = 1490), lack of better marketing facilities to sell increased farm outputs resulting from improved extension services (mean = 3.60, weighted score = 1441), administrative and bureaucratic issues in policy implementation (mean = 3.59, weighted score = 1435) and insufficiently trained extension personnel (mean = 3.50, weighted score = 1401) were ranked at 5th to 15th, respectively.

Unfavorable Govt. policies towards commercialization of extension services (mean = 3.45, weighted score = 1378), high level of subsistence farming (mean = 3.33, weighted score = 1333), political instability (mean = 3.26, weighted score = 1304) and poor capacity building of extension staff (mean = 3.09, weighted score = 1236) were ranked at 16th to 19th, respectively.

Whereas corruption and nepotism among extension staff (mean = 3.08, weighted score = 1233) and high risk and uncertainty about extension personnel (mean = 2.93, weighted score = 1172) were ranked at the lowest 20th to 21st, respectively.

According to Rivera (2000), in global context, the agricultural services are facing new challenges regarding the 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. The experience shows that private service provided by public extension system offers mainly private benefits to individuals, instead of cost recovery by government fee charging. In contrast with this, the service delivered by private sector extension is more beneficial and efficient than that of public extension system. However, a universal type service delivery is difficult to arrange because of varying degree of development in agricultural sector and constraints associated with it (Findlay and Watson, 1992).

Table 4.20: Distribution of the respondents according to strategy for reforming of agricultural extension services

Scale: 1=Strongly disagree, 2=Disagree, 3=Somewhat agree, 4=Agree, 5=Strongly agree

Strategy for reforming of agricultural extension services	Weighted score	Mean	Standard deviation	Rank order
Structure	1689	4.22	.824	1
Policy	1640	4.10	1.088	2
Governance	1575	3.94	.920	3
Legal	1225	3.06	1.802	4

The respondents were asked about strategy for reforming the agricultural extension services and their responses in this regard are presented in appendix 5.

The ranking of various strategy for reforming agricultural extension services based on the respondents' interest is presented in table 4.20 which reveal that the structure fell in between agree to strongly agree categories but tended towards agree category and was ranked 1st with weighted score 1689 and mean value 4.22. The policy also fell in between agree to strongly agree categories and tended towards agree category, and was ranked 2nd, with weighted score 1640 and mean value 4.10. Furthermore, the government and legal fell in between somewhat agree to agree categories and were ranked 3rd and 4th with weighted scores 1575, 1225 and mean values 3.94 and 3.06, respectively.

Rivera *et al.* (2001) also stated that the 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. According to Prasad (2014), in context of the governance, there are three types of reforms possible; first one is the administrative reform. It includes issues related to the people and processes. The second is the structural reform which is related to change in the structure and function of the department i.e. results of the technological change. Third one is the legal reform i.e. change in the function of an institution as a result of policy changes effected by the law or legislation.

4.3: Bi-Variate Analysis

4.3.1 Relationship between independent and dependent variables

The socio-economic characteristics like age, education, size of land holding and income were taken as independent variables, while perceptions of farmers regarding the strengths of commercialization of extension services were treated as dependent variable. These variables are briefly discussed as under:

Age: Age of the respondents was calculated by counting the number of years completed till the day of data collection. The respondents were grouped into three categories i.e., young (up to 35), middle (>35-50), and old (>50).

Education: Education level was calculated by counting the number of years completed by a respondent in an educational institution. The respondents were grouped into five categories i.e., illiterate, up to primary, primary-middle, middle to matric and above matric.

Size of the land holding: Size of the land holding of the respondents was calculated on the basis of farm size in acres. The respondents were grouped into three categories i.e., small (up to 12.5 acres), medium (>12.5-25 acres), and large (>25 acres).

Income: Income level was calculated by counting the income (in rupees) of one year from all sources. The respondents were grouped into five categories i.e., up to Rs. 100000, Rs. 100001-200000, Rs. 200001-300000, Rs. 300001-400000 and above Rs. 400000

Perceptions of farmers regarding the strengths of commercialization of extension services: The Perceptions of farmers regarding the strengths of commercialization of extension services was calculated by having a sum of the scores of 21 statements related to perceptions of farmers regarding the strengths of commercialization of extension services. The total score ranged from 21 to 105, the respondents were divided into three

categories i.e., low, medium, and high with the group intervals of 21 to 49, 50 to 77, and 78 to 105, respectively.

Hypothesis 1: Lower the age of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services

Table 4.21: Relationship between age of the respondents and their perceptions regarding the strengths of commercialization of extension services

Age (in years)	Perceptions of farmers regarding the strengths of commercialization of extension services			Total
	Low	Medium	High	
Up to 35	36	23	6	65
	55.4%	35.4%	9.2%	100.0%
>35-50	96	62	32	190
	50.5%	32.6%	16.8%	100.0%
Above 50	81	43	21	145
	55.9%	29.7%	14.5%	100.0%
Total	213	128	59	400
	53.3%	32.0%	14.8%	100.0%

Chi-square = 2.92 d.f. = 4 P-value = 0.570^{NS} Gamma = $-.014^{NS}$

NS = Non-Significant

The table 4.21 represents the association between age of the respondents and their perceptions regarding the strengths of commercialization of extension services. Chi-square value (2.92) shows a non-significant association between age of the respondents and their perceptions regarding the strengths of commercialization of extension services. Gamma value also shows a non-significant relationship between the variables. It means that the age of citrus growers had no relationship with their perceptions regarding the strengths of commercialization of extension services. So the hypothesis "lower the age of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services" is rejected.

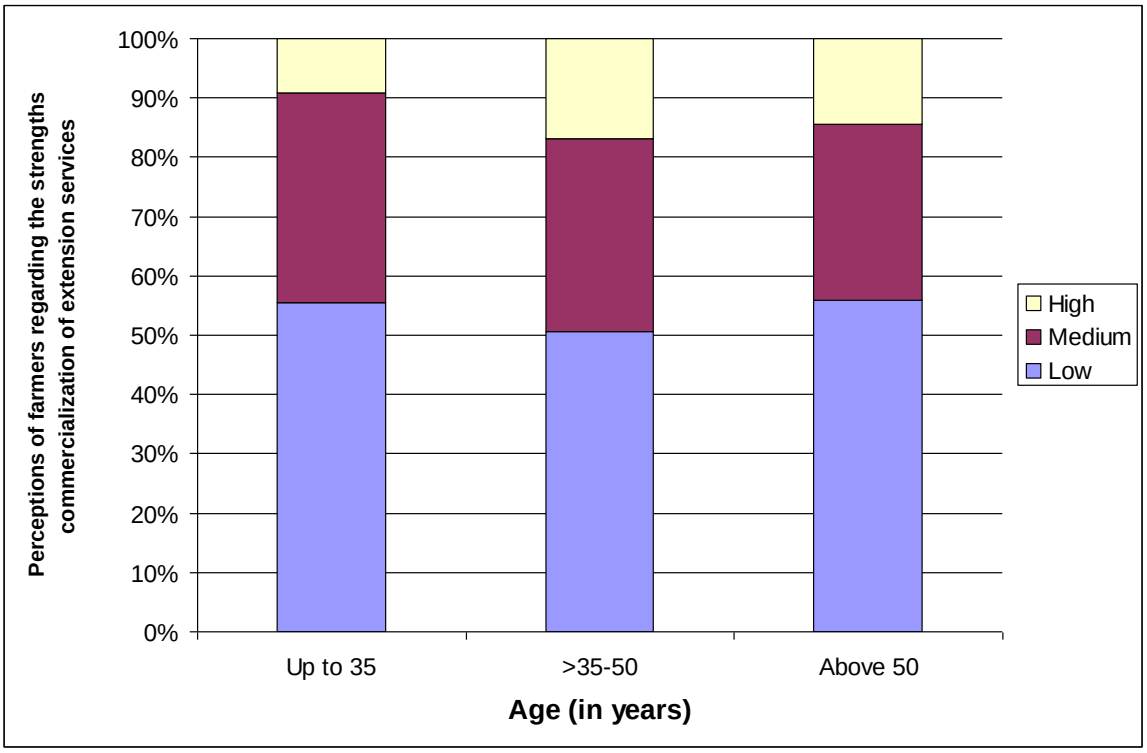

Fig. 1: Relationship between age of the respondents and their perceptions regarding the strengths of commercialization of extension services

Hypothesis 2: Higher the education of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services

Table 4.22: Relationship between education of the respondents and their perceptions regarding the strengths of commercialization of extension services

Education of the respondents	Perceptions of farmers regarding the strengths of commercialization of extension services			Total
	Low	Medium	High	
Illiterate	7	5	5	17
	41.2%	29.4%	29.4%	100.0%
Up to Primary	11	5	5	21
	52.4%	23.8%	23.8%	100.0%
Primary to Middle	76	5	7	88
	86.4%	5.7%	8.0%	100.0%
Middle to Matric	108	69	19	196
	55.1%	35.2%	9.7%	100.0%
Above Matric	11	44	23	78
	14.1%	56.4%	29.5%	100.0%
Total	213	128	59	400
	53.3%	32.0%	14.8%	100.0%

Chi-square = 97.12 d.f. = 8 P-value = 0.000** Gamma = .415**
** = Highly significant

The table 4.22 represents the association between education of the respondents and their perceptions regarding the strengths of commercialization of extension services. Chi-square value (97.12) shows a highly-significant association between education of the respondents and their perceptions regarding the strengths of commercialization of extension services. Gamma value also shows a strong positive relationship between the variables. It means that the educated citrus growers had more positive perceptions regarding the strengths of commercialization of extension services as compared to the illiterate citrus growers. So the hypothesis "Higher the education of the citrus growers, higher will be their perception regarding the strengths of commercialization of extension services" is accepted.

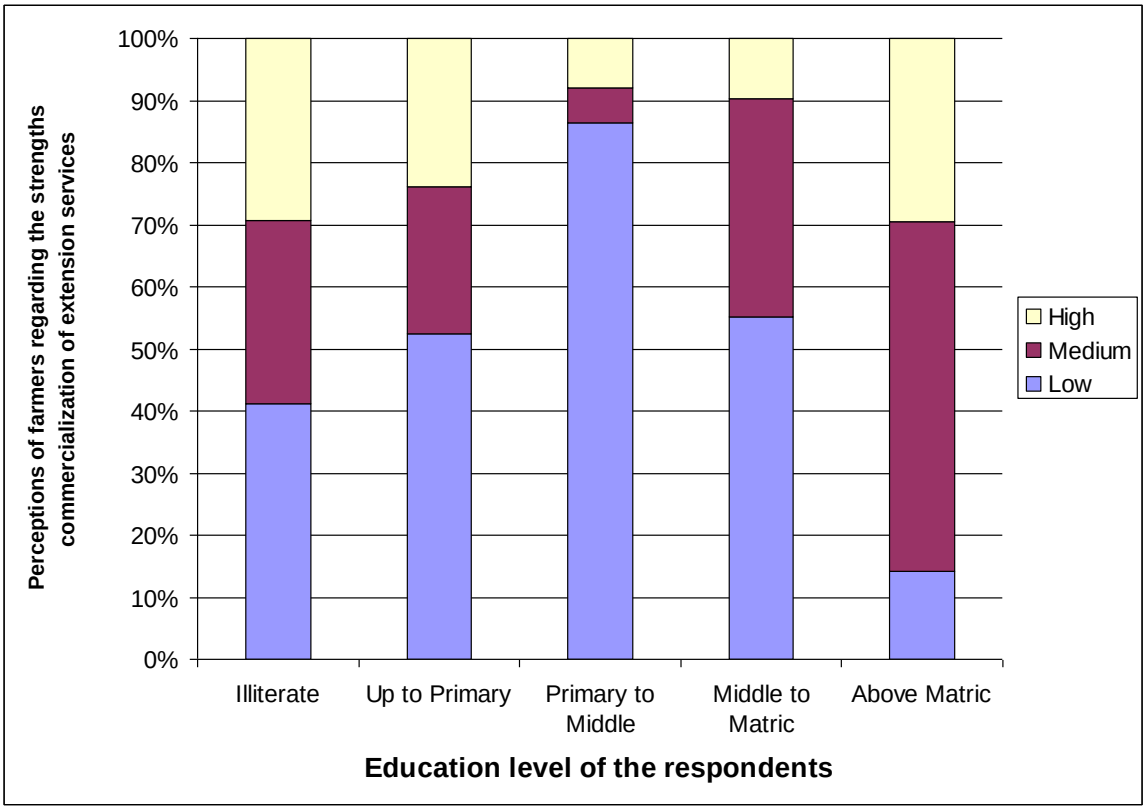

Fig. 2: Relationship between education of the respondents and their perceptions regarding the strengths of commercialization of extension services

Hypothesis 3: Higher the size of land holding of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services

Table 4.23: Relationship between size of land holding of the respondents and their perceptions regarding the strengths of commercialization of extension services

Size of land holding (acres)	Perceptions of farmers regarding the strengths of commercialization of extension services			Total
	Low	Medium	High	
Small (Up to 12.5)	182	80	14	276
	65.9%	29.0%	5.1%	100.0%
Medium (>12.5-25)	22	43	32	97
	22.7%	44.3%	33.0%	100.0%
Large (Above 25)	9	5	13	27
	33.3%	18.5%	48.1%	100.0%
Total	213	128	59	400
	53.3%	32.0%	14.8%	100.0%

Chi-square = 94.13 d.f. = 4 P-value = 0.000** Gamma = .659**

** = Highly significant

The table 4.23 represents the association between size of land holding of the respondents and their perceptions regarding the strengths of commercialization of extension services. Chi-square value (94.13) shows a highly-significant association between size of land holding of the respondents and their perceptions regarding the strengths of commercialization of extension services. Gamma value also shows a strong positive relationship between the variables. It means that medium and large farmers had more positive perceptions regarding the strengths of commercialization of extension services as compared to small farmers. So the hypothesis "higher the size of land holding of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services" is accepted.

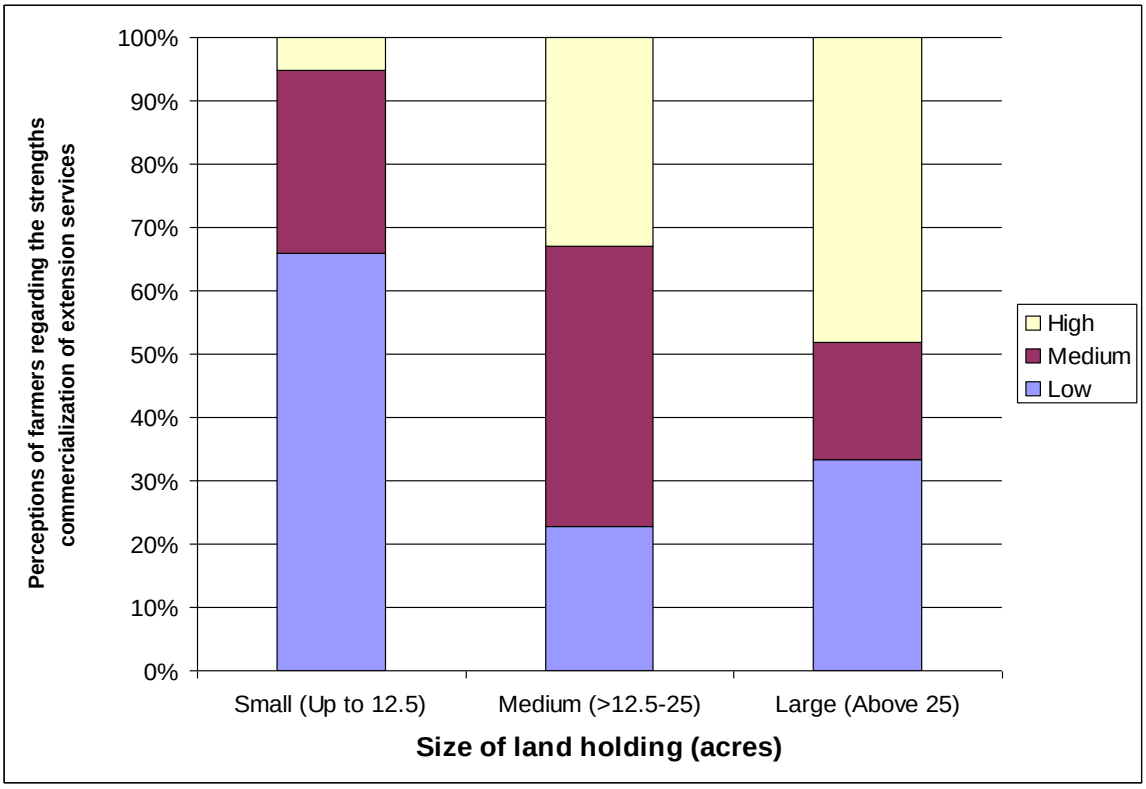

Fig. 3: Relationship between size of land holding of the respondents and their perceptions regarding the strengths of commercialization of extension services

Hypothesis 4: Higher the income of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services

Table 4.24: Relationship between income of the respondents and their perception regarding the strengths of commercialization of extension services

Income of the respondents (Rs.)	Perceptions of farmers regarding the strengths of commercialization of extension services			Total
	Low	Medium	High	
Up to 100000	42	21	6	69
	60.9%	30.4%	8.7%	100.0%
100001-200000	51	28	7	86
	59.3%	32.6%	8.1%	100.0%
200001-300000	58	30	13	101
	57.4%	29.7%	12.9%	100.0%
300001-400000	43	11	13	67
	64.2%	16.4%	19.4%	100.0%
Above 400000	19	38	20	77
	24.7%	49.4%	26.0%	100.0%
Total	213	128	59	400
	53.3%	32.0%	14.8%	100.0%

Chi-square = 39.60 d.f. = 8 P-value = 0.000** Gamma = .254**

** = Highly significant

The table 4.24 represents the association between annual income of the respondents and their perceptions regarding the strengths of commercialization of extension services. Chi-square value (39.60) shows a highly-significant association between income of the respondents and their perceptions regarding the strengths of commercialization of extension services. Gamma value shows a strong positive relationship between the variables. It means high income respondents had more positive perceptions regarding the strengths of commercialization of extension services as compared to low income respondents. So the hypothesis "higher the income of the citrus growers, higher will be perception regarding the strengths of commercialization of extension services" is accepted.

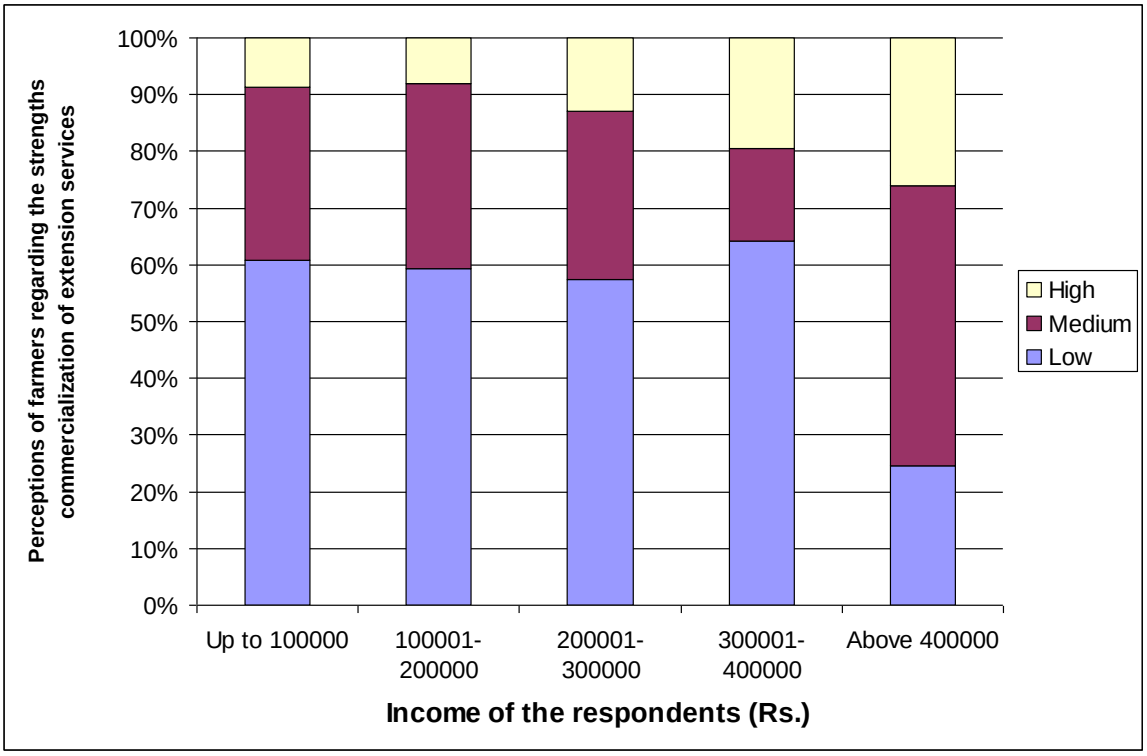

Fig. 4: Relationship between income of the respondents and their perception regarding the strengths of commercialization of extension services

Hypothesis 5: Age of the citrus growers will be influencing on their willingness to pay for advisory services

Table 4.25: Relationship between age of the respondents and their willingness to pay for advisory services

Age (in years)	Willingness to pay for advisory services		Total
	No	Yes	
Up to 35	24	41	65
	36.9%	63.1%	100.0%
>35-50	134	56	190
	70.5%	29.5%	100.0%
Above 50	93	52	145
	64.1%	35.9%	100.0%
Total	251	149	400
	62.8%	37.3%	100.0%

Chi-square = 23.58 d.f. = 2 P-value = 0.000** Gamma = -.206*

* = Significant

** = Highly-Significant

Table 4.25 represents the relationship between age of the respondents and their willingness to pay for advisory services. Chi-square value (23.58) shows a highly-significant association between age of the respondents and their willingness to pay for advisory services. Gamma value also shows a significant and negative relationship between the variables. It means young age citrus growers had more positive willingness to pay for advisory services as compared to old age citrus growers. So the hypothesis "age of the citrus growers will be influencing on their willingness to pay for advisory services" is accepted.

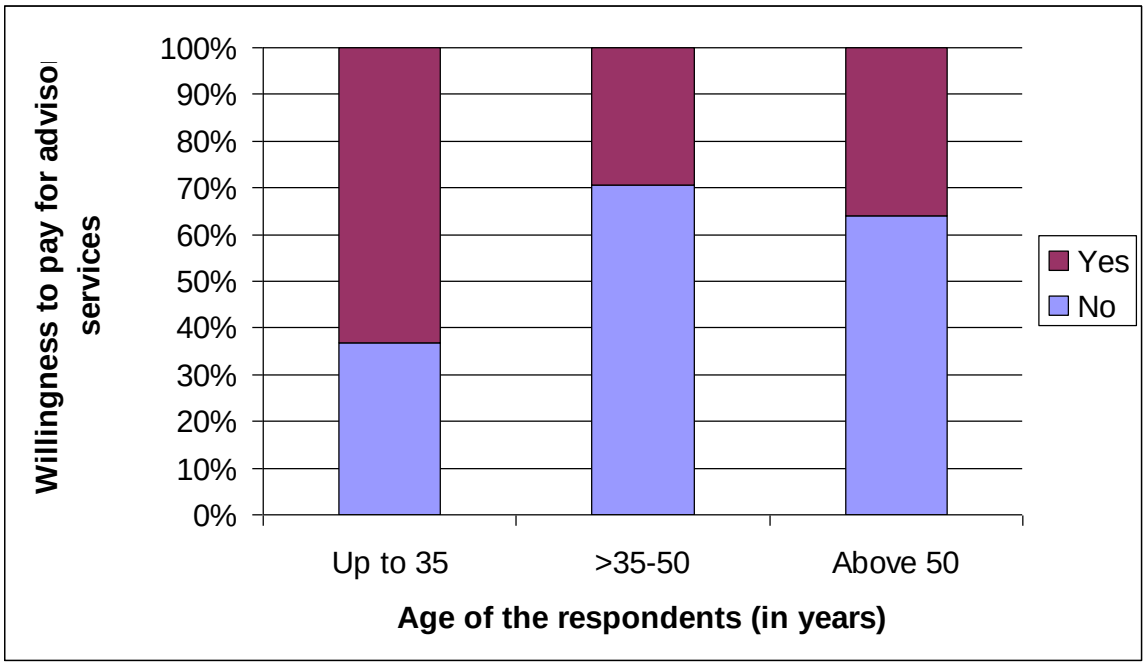

Fig. 5: Relationship between age of the respondents and their willingness to pay for advisory services

Hypothesis 6: Education of the citrus growers will be influencing on their willingness to pay for advisory services

Table 4.26: Relationship between education of the respondents and their willingness to pay for advisory services

Education of the respondents	Willingness to pay for advisory services		Total
	No	Yes	
Illiterate	12	5	17
	70.6%	29.4%	100.0%
Up to Primary	14	7	21
	66.7%	33.3%	100.0%
Primary to Middle	65	23	88
	73.9%	26.1%	100.0%
Middle to Matric	134	62	196
	68.4%	31.6%	100.0%
Above Matric	26	52	78
	33.3%	66.7%	100.0%
Total	251	149	400
	62.8%	37.3%	100.0%

Chi-square = 36.75 d.f. = 4 P-value = 0.000** Gamma = .382**

** = Highly-Significant

Table 4.26 represents the relationship between education of the respondents and their willingness to pay for advisory services. Chi-square value (36.75) shows a highly-significant association between education of the respondents and their willingness to pay for advisory services. Gamma value also shows a highly significant and positive relationship between the variables. It means highly qualified (above Matric) citrus growers had more positive willingness to pay for advisory services as compared to illiterate or low level educated citrus growers. So the hypothesis "education of the citrus growers will be influencing on their willingness to pay for advisory services" is accepted.

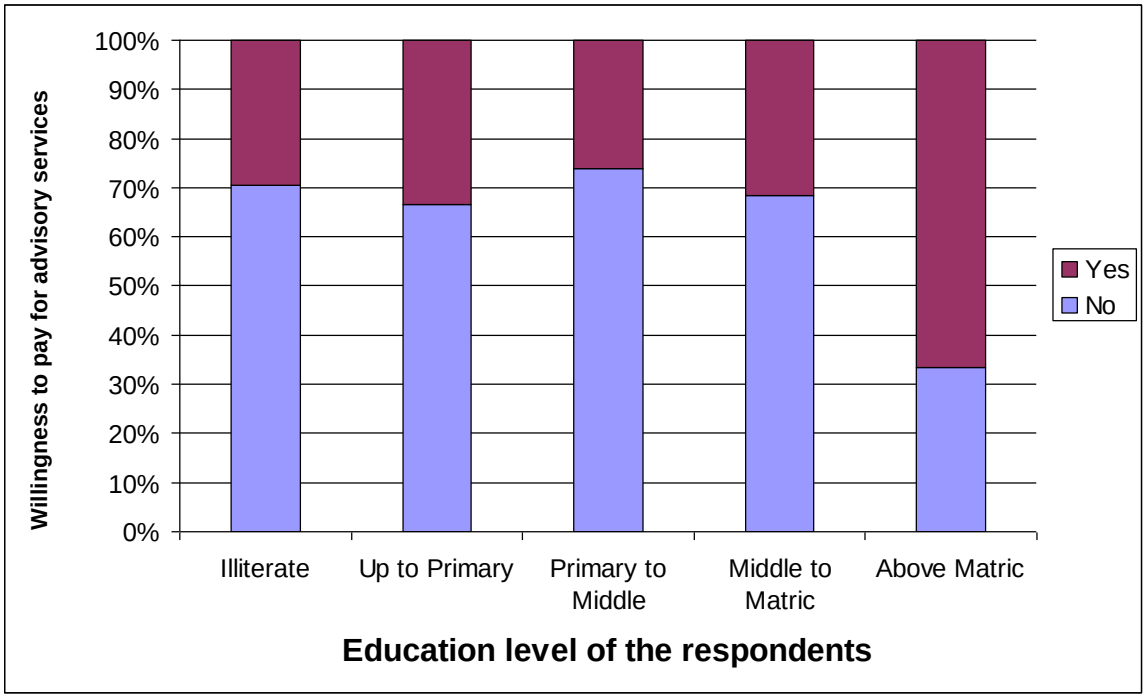

Fig. 6: Relationship between education of the respondents and their willingness to pay for advisory services

Hypothesis 6: Size of land holding of the citrus growers will be influencing on their willingness to pay for advisory services

Table 4.27: Relationship between size of land holding of the respondents and their willingness to pay for advisory services

Size of land holding (Acres)	Willingness to pay for advisory services		Total
	No	Yes	
Small (Up to 12.5)	188	88	276
	68.1%	31.9%	100.0%
Medium (>12.5-25)	54	43	97
	55.7%	44.3%	100.0%
Large (Above 25)	9	18	27
	33.3%	66.7%	100.0%
Total	251	149	400
	62.8%	37.3%	100.0%

Chi-square = 15.47 d.f. = 2 P-value = 0.000** Gamma = .354**

** = Highly-Significant

Table 4.27 represents the association between size of land holding of the respondents and their willingness to pay for advisory services. Chi-square value (15.47) shows a highly-significant association between size of land holding of the respondents and their willingness to pay for advisory services. Gamma value also shows a highly significant and positive relationship between the variables. It means large farmers had more positive willingness to pay for advisory services as compared to small farmers. So the hypothesis "size of land holding of the citrus growers will be influencing on their willingness to pay for advisory services" is accepted.

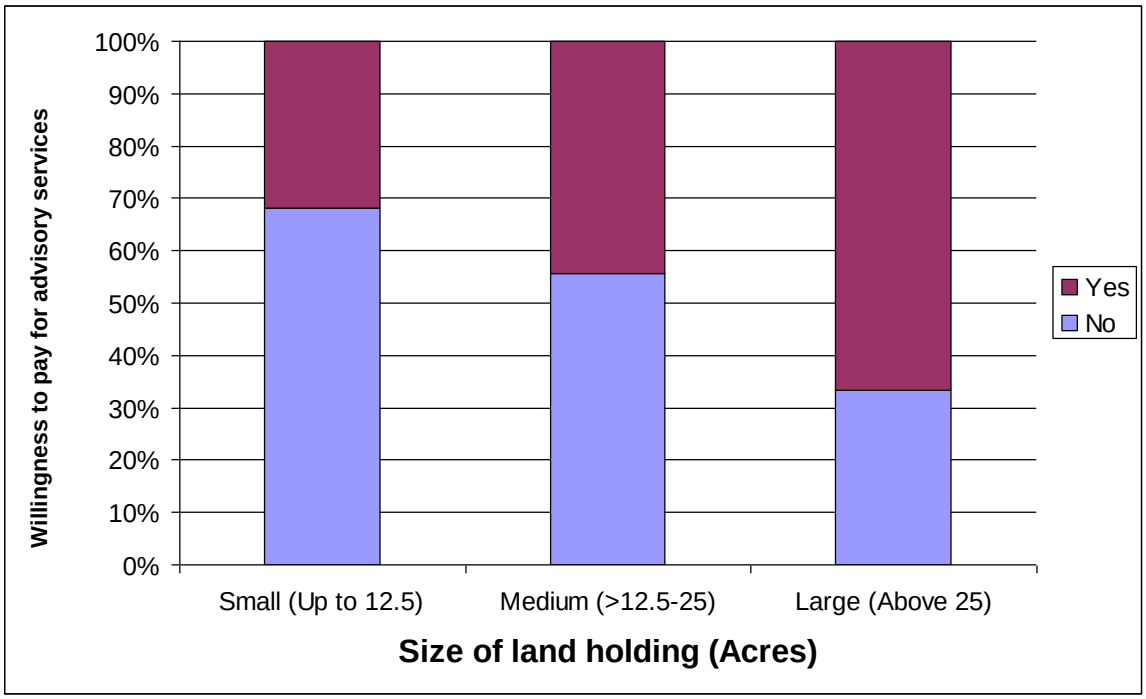

Fig. 7: **Relationship between size of land holding of the respondents and their willingness to pay for advisory services**

4.4: Multivariate Analysis

Factors affecting access to advisory services

Logit model was used to analyze the impact of variables on full access of advisory services in the study area. According to findings, the value of Cox and Snell R Square was 0.530. The value of Cox and Snell R Square states that 53 percent variation in the model was explained by the given variables whereas the rests of all variations were explained by other variables. The value of Nagelkerke R Square was 0.811 percent. This value states that 81 percent variations in the given model are explained due to given variables whereas the rest of all variation in the model is explained by other variables. These measures are also known as pseudo R^2 and the results cannot be tested in an inferential framework (Menard 2000); hence are not a good measure of goodness of fit (Hosmer and Lemeshow, 2000). On the other hand, the result of Hosmer and Lemeshow (H-L) test is non-significant at $p>0.05$, suggesting the acceptance of the null hypothesis that the model fits to the data well.

The value of - 2 LL was 121.85. The value of -2 LL is low, so we can say that the set of independent variables in the proposed model is significant in improving model estimation fit.

Table No. 4.28: Model Summary

-2 Log likelihood	10.585
Cox and Snell R Square	.530
Nagelkerke R Square	.811

Source: Author's own calculations

In our research, Hosmer and Lemeshow test yielded a χ^2 of 302.191 (P=.000) which was highly significant. The value of this test suggests that the model was well fit to the data because the value of this model is highly significant. In other words, the hypothesis of a good model fit to data was justified (Peng *et al.,* 2002).

Table No. 4.29: Hosmer and Lemeshow Test

Chi-square	302.191
Df	7
Significance	0.000

Source: Author's own calculations

Given the base rates of the two decision options (311/400 = 77.7% had no access to advisory services, 22.3% had access to advisory services).

Table No. 4.30: Classification Table

Observed		Predicted		
		Full access to advisory Services		
		0	1	Correct Percentage
Full access to advisory Services	0	311	0	100.0
	1	89	0	.0
Overall Percentage				77.8

Source: Author's own calculations

Table No. 4.31: Summary of Logistic Model

	B	Wald	Sig.	Exp(B)
Age	.021	.972	.324^{NS}	1.021
Education	.869	4.609	.032*	2.384
Land holding	-.075	2.383	.123^{NS}	.928
Income	.000	6.818	.009**	1.000
Perceptions regarding the strengths of commercialization of extension services,	.216	32.821	.000**	1.241
Acceptability of the commercialization of agricultural extension services	.061	4.181	.041*	1.063
Potential constraints in the way of commercialization	-.029	1.809	.179^{NS}	.972
Constant	-17.789	31.255	.000**	.000

** significant at < 1 %; * significant at < 5 % (Data source: Field survey 2015-16)

Age of the respondents: An increase in age contributes to access of advisory services of the selected respondents in the study area. The odd ratio of education (1.021) is explained as for every one-unit increases in the age, there are 1.021 times chances that access of advisory services was improved. The positive sign shows that if age increases, the access of advisory services will also increase in the study area. While P-value shows that age had non-significant impact on access of advisory services in the study area. So the hypothesis "age of the citrus growers will be associated with the access of advisory services" is rejected.

Education of the respondents: Increase in education contributes to access of advisory services of the selected citrus growers. Odds ratio of education (2.384) is explained as for every one-unit increase in the education; there are 2.384 times chances that access of advisory services was improved. The positive sign shows that if education improves, the

access of advisory services will also improve in the study area. So the hypothesis "education of the citrus growers will be associated with the access of advisory services" is accepted.

Size of land holding: Size of land holding had no impact on access of advisory services in the study area. So the hypothesis "size of land holding of the citrus growers will be associated with the access of advisory services" is rejected.

Income of the respondents: Annual income is the total income of the respondents from all sources. The coefficient of this variable is positive and significant implying a positive relationship between access of advisory services and annual income of the respondents. Odds ratio of income (1.000) is explained as for every one-unit increase in the income, there are 1.00 times chances that access of advisory services was improved. The positive sign shows that if income improves then the access of advisory services will also improve in the study area. So the hypothesis "economic status of the citrus growers will be associated with the access of advisory services" is accepted.

Perceptions regarding the strengths of commercialization of extension services: The coefficient of this variable is positive and significant implying a positive relationship between access of advisory services and perceptions of citrus growers regarding the strengths of commercialization of extension services. Odds ratio of this variable (1.241) is explained as for every one-unit increase in the perceptions of citrus growers regarding the strengths of commercialization of extension services, there are 1.241 times chances that access of advisory services was improved. So the hypothesis "perceptions of citrus growers regarding the strengths of commercialization of extension services will be associated with the access of advisory services" is accepted.

Acceptability of the commercialization of agricultural extension services: The coefficient of this variable is positive and significant implying a positive relationship between access of advisory services and respondents' thinking about acceptability of the commercialization of agricultural extension services. Odds ratio of variables (1.063) is explained as for every one-unit increase in the respondents' thinking about acceptability of the commercialization of agricultural extension services, there are 1.063 times chances that access of advisory services was improved. So the hypothesis "acceptability of commercialization of extension services will be associated with the access of advisory services" is accepted.

Potential constraints in the way of commercialization: The coefficient of this variable is negative and insignificant. Odds ratio of variables (0.972) is explained as for every one-unit increase in the constraints in the way of commercialization, there are 0.972 times chances that access of advisory services was decreased. So the hypothesis "constraints in the way of commercialization will be associated with the access of advisory services" is rejected.

Structural Equation Model (SEM)

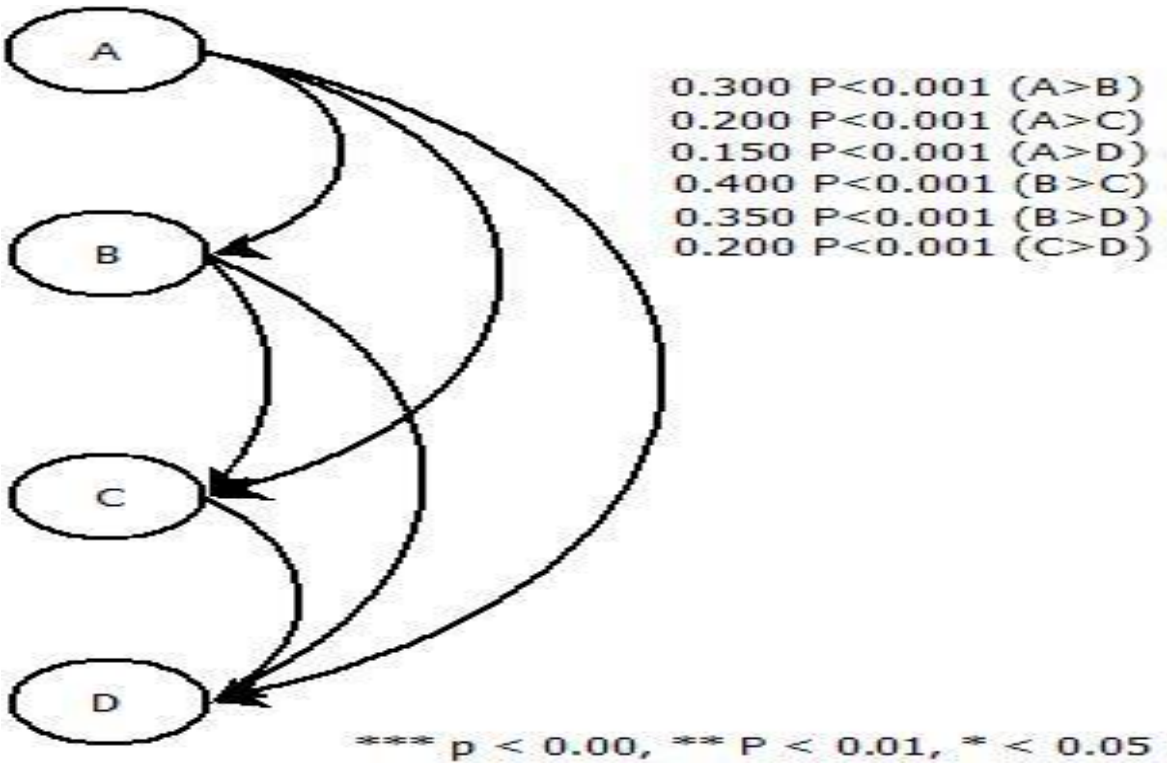

Fig. 8: Factors affecting farmers access to advisory services
A= Potential Constraints
B= Satisfaction
C= Acceptability
D= Perception

The above Fig. shows Structural Equation Model (SEM) regarding factors affecting farmers access to advisory services that there is a strong correlation exist between satisfaction (B) and acceptability (C), whereas the correlation also exist between satisfaction (B) and perception (D), potential constraints (A) and satisfaction (B), potential constraints (A) and acceptability (C), acceptability (C) and perception (D) and potential constraints (A) and perception (D) respectively.

CHAPTER-5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Since its inception, agricultural extension as a service has been aimed at providing farmers with the latest advisory services and helping them to achieve desired level of food production by transferring new innovation or practice from research stations to resource poor farmers at their doorstep. This service helps farming community via educational standard procedures, advanced farm practices and procedures, boosting up level of output and earnings, making their level of life better and raise the societal and learning standards of farmers. In global context, agricultural services are facing new challenges regarding the increasing demand for food, declining cultivated area and fiscal constraints in the public sector. International organizations and donor agencies have suggested governments of developing countries to reform and modify their existing public sector structures with purpose-specific and need-specific approach (Rivera, 2001). Agricultural and advisory services in Pakistan are under the umbrella of provincial ministries of agriculture of the concerned provinces. Since 1947, a number of extension models and approaches have been implemented so far which include different programs related to rural and agricultural development. Unfortunately, these programs could not meet the desired outcomes and were discarded one after the other.

Globally, public sector agriculture extension is under discussion due to its weak structure and low performance. Many experts have expressed their strong reservations about the capability and low coverage of this system that has raised many questions about the future of public extension. For example, Rogers (1987) stated that in developing countries, the efficiency of public sector extension is not up to the mark and it has failed to meet the desired level of performance in disseminating the agricultural technologies among the farming community. There may be a number of reasons behind this inefficiency of public extension like inadequate operational funds, poorly trained extension staff, provision of non-extension duties and absence of general accountability framework.

It is believed that non-profit organizations can perform much better for development if they are commercialized. In addition, commercialization process will make such organizations more innovative. Howell (1985) commented that due to

financial problems, various countries have made structural reforms in their agricultural advisory system by reducing expenses of public sector extension, by making changes in tax payments, charges on government extension system and most importantly privatization and commercialization. After the failure of public extension system, privatization and commercialization was proposed as an alternative solution of the problem. It is considered an important approach for increasing income of the farming community.

The commercialization of agricultural extension services is certainly more proficient and effective than public extension system. It is demand-driven instead of supply-driven. Moreover, it improves the quality of the service due to healthy competition among commercial agencies. Flexible decision-making and program implementation by commercial firms enhance the effectiveness. Commercial agency especially provides services in line with particular needs of the farmers. In privatization, ownership of the extension services changes from public to private sector. For decades, extension services have been supported financially and delivered by departments of the governments free of cost. This is how the idea of commercialization appeared on the scene in present times. Commercialization is not just privatization. In commercialization, the ownership does not change and is retained with government or semi-government organization and service is supplied on commercial foundations. In privatization, the ownership is given into the hands of private agencies.

It was found that majority of the farmers was ready to pay fee for horticultural crops (fruits, vegetables) due to high commercial value of these crops and economic advantage of export market. The primary reason for this willingness was that their profits were speedy and clearly evident. Furthermore, the majority of respondents was ready to pay fee of farm management and marketing because they were receiving proper and exact information about their farm operations and investments. On the other hand some famers were reluctant to pay for these commercialized advisory services as they were not financially strong enough to pay for this. Thus, affordable credit and enhancing access to quality of extension services would help in promoting the process of commercialization and privatization of agricultural extension activities.

It was found that less than half of the respondents had knowledge about commercialization of agricultural extension services. The results showed that more than one-third of the respondents were willing to pay for advisory services. It was concluded

that among all the strengths of commercialization it would lead higher farm output was ranked on top of the list. Commercialization would lead to enhance financial burden on farmers was ranked at 1st position among all the weaknesses in the way of commercialization according to the response of farmers. It was resulted that commercialization would only be acceptable when these services would be cost effective. It was found that inadequate government guarantees, regulations and control over extension service providers for overcharging and abuses were one of the major potential constraints identified by the respondents. Among different strategies for reforming agricultural extension services, structural issue was found major potential constraint among all other obstacles that might hinder the way of commercialization. Policy, governance and legal constraints were found other potential threats in the way of commercialization respectively.

The focus of the present study was on the commercialization of agricultural extension services in the Punjab, Pakistan. Multistage sampling technique was used for data collection. At the first stage one district (district Sargodha) was selected purposively, at the second stage four tehsils (Silanwali, Kotmomin, Sargodha and Bhalwal) were selected randomly. As it was extremely expensive to interview all the units of the population, so keeping in view the limitations of time and financial resources, a sample of 400 (100 from each tehsil) was drawn from the entire population. The data were collected with the help of a well-designed interview schedule. Descriptive statistical techniques were used for data analysis. Following findings were found:

5.1: Conclusions

The main findings of the study were:

5.1.1 Socio-economic characteristics of respondents

- About 16 percent of the respondents belonged to young age group (up to 35), whereas, near than half (47.5%) of the respondents belonged to middle aged (>35-50 years) category followed by 36.3 percent respondents who belonged to old aged (above 50 years) category.
- It was found that only 4.3 percent respondents were illiterate and 5.3 percent had up to primary level education, whereas 22.0 percent of the respondents had primary to middle level education and about half (49.0%) of the respondents had middle to matric level education. About one-fifth (19.5%) of the respondents had above matriculation level education.

- The results showed that only 4.5 percent respondents were single and a large majority (95.5%) of the respondents was married.
- A great majority (75.8%) of the respondents was ordinary farmers, while 7.0 percent of them were government employee, 6.0 percent of them were numberdar, 4.8 percent of them were extension agent and 6.5 percent of them were livestock farmers.
- A large majority (63.3%) of the respondents was depending on crop farming, while other (36.7%) respondents were not dependent on crop farming only; they were also having some secondary income sources like vegetable farming (6.3%), job (7.8%), private business (2.0%), agriculture & job (9.2%) and livestock (11.5%).
- A high percentage (69.0%) of the respondents was commanding up to 12.5 acres land, followed by 24.3 percent of the respondents had >12.5-25 acres land and remaining 6.8 percent of them had above 25 acres land.
- Majority (71.5%) of the respondents had up to 12.5 acres cultivated land. About 24.0 percent of the respondents had 13-25 acres cultivated land and remaining 4.5 percent of them had above 25 acres cultivated land.
- A fair majority (91.7%) of the respondents was owner cultivator. However, only 7.0 percent of the respondents belonged to owner-cum-tenant category and remaining 1.3 percent of the respondents was tenant.
- About 17% of the respondents had annual income of up to Rs. 100000, while, 21.5 percent of them had annual income of Rs.100,001 - 200,000, about one-fourth (25.3%) of them had Rs. 200001-300000, 16.8 percent of them had Rs. 300001-400000 and 19.3 percent of the respondents had annual income of more than Rs.400,000.

5.1.2 Satisfaction level of farmers regarding performance of advisory services

- About 56.0% respondents had got advisory services from private sector and 19.5% of the farmers mentioned public sector as their source of advisory services while remaining 24.5% farmers had used other others information sources.
- It was found that 75.6% (out of 78 respondents) of the respondents were satisfied with the performance of public sector extension services and 24.4% selected citrus farmers were not-satisfied with the public sector.

- A little more than one-fifth (22.5%) of the respondents had full access to advisory services, while a majority (77.75%) of selected citrus farmers was not having full access to these services.
- Only 18.5% of the respondents showed their satisfaction with the availability of these advisory services.

5.1.3 Perceptions of citrus growers regarding commercialization of advisory services

- It was found that less than a half (43.75%) of the respondents had knowledge about commercialization of agricultural extension services.
- The results showed that more than one-third (37.25%) of the respondents were willing to pay for advisory services.
- Commercialization would lead to higher farm output was ranked at 1st position according to the response obtained from respondents among all the strengths of commercialization.
- It was found through Chi-square test that education, size of land holding and income of the respondents were positively associated with their perceptions regarding the strengths of commercialization of extension services.
- Chi-square test also shows that a significant and negative relation was found between age of respondents and their willingness to pay for advisory services.
- Chi-square test also shows a highly-significant and positive association between education and size of land holding of the respondents with their willingness to pay for advisory services.
- Multivariate analysis shows that education, income, perceptions regarding the strengths of commercialization of extension services and acceptability of the commercialization of agricultural extension services had positive and significant impact on access of advisory services.

5.1.4 Major constraints in the way of commercialization of advisory services

- Commercialization would enhance financial burden on farmers was ranked at 1st position among all the weaknesses in the way of commercialization according to the response of farmers.
- Commercialization would only be acceptable when these services will be need oriented was given 1st position among all the statements regarding acceptability of the commercialization.

- It was found that inadequate government guarantees, regulations and control over commercialized extension service providers for overcharging and abuses were one of the major potential constraints identified by the respondents.
- According to the response regarding strategy for reforming of agricultural extension services, structural issue was found major potential constraint among all other obstacles that may found in the way of commercialization. Policy, governance and legal constraints were found other potential threats in the way of commercialization respectively.

5.2 Recommendations

- It was found that about half of the respondents were not engaged by private extension system so it is recommended that commercialisation of extension system should ensure the participation of ignored respondents.
- According to the perception of farmers commercialized extension system will not focus on IPM control of insect pests, they only motivate farmers for pesticide use that will pollute the environment, so it is recommended that commercialized advisory services should take into consideration sustainable plant protection measures to ensure friendly ecosystem.
- Conclusion drawn from the data suggested that commercialized extension services would be more income generating less serving, so it is recommended that commercialized advisory staff must focus to increase the knowledge level of farmers.
- According to the perception of farmers commercialized extension services will not be cost effective that would create financial disharmony in farming community so it is recommended that these services must be affordable to small and marginalized farmers.
- Commercialized extension system negatively affect the capacity building of farmers due to problem specific solution. It is recommended that government should enforce strict legislation to discourage the monopoly of private sector.
- Results depicted that most of the respondents complained about the marketing issues of produce so it is recommended that government should announce the support price of agriculture commodities.

- Commercialized extension system would create job insecurity in extension personnel that will affect their working efficiency so it is recommended that this system should be directly monitored by district government.
- Women farmers should also be provided advisory services as there are no women experts in public sector. For this purpose commercialized extension system should also engage women experts to disseminate the technology among women farmers.
- For policy making about commercialized extension system, research activities should be expanded at province level.
- The government is requested to consider the results and conclusions of this study as a policy guideline.

LITERATURE CITED

Aarikka-Stenroos, L., B. Sandberg and T. Lehtimäki. 2014. Networks for the commercialization of innovations: A review of how divergent network actors contribute. Industrial Marketing Management. 43(3):365-381.

Abuzar, M. 2003. An investigation into the recommended horticultural practices by pomegranate growers of tehsil Ali Pur, district Muzzafargarh. M.Sc. (Hons.) Thesis, Dept. of Agri. Ext., Univ. of Agri., Faisalabad, Pakistan.

Adebayo, K.I., A. Idowu., A.M. Omotayo, B.A. Oluniga and S.O. Akpantaku. 1999. An appraisal of the prospects and constraints to sustainable funding of Osun State Agricultural Development Programme. J. Agric. Extension. 3:28-32.

Adeniji, O.B. and L.A. Ega. 2008. Impact of mass media on adoption of agricultural innovations in Kaduna State. J. Agri. for. Soc. Sci. 4(1):89-98.

Adil, M. 2008. A study into the working of extension field staff under public sector extension approach as perceived by the farmers of Faisalabad district. M.Sc. (Hons.) Thesis, Dept. of Agri. Ext., Univ. of Agri., Faisalabad.

AFRODAD (African Forum and Network on Debt and Development). 2007. Tanzania's experience with privatization policies. Atkinson Drive, Hillside, PO Box CY1517, Causeway, Harare, Zimbabwe. Website: www.afrodad.org.African Forum and Network on Debt and Development (AFRODAD).

Aftab, R. 2014. Adoption gap of weed management practices among potato growers of tehsil Chiniot, district Chiniot. M.Sc. (Hons.) Agricultural Extension Thesis, Univ. of Agri., Faisalabad.

Afzal, M. 2008. Overview of agricultural research and extension in Pakistan. Pakistan Agricultural Research Council, Islamabad.

Agwu, A.E. and N.A. Chukwuone. 2005. Funding of agricultural extension in a democratic and deregulated economy: The cost sharing approach. J. Agric. Extension. 8:90-98.

Ahmad, M. 1999. A comparative analysis of the effectiveness of agricultural extension work by public and private sectors in Punjab, Pakistan. Ph.D. Thesis. University of New England, Armadale N.S.W.

Ahmad, M., T. Ali, T.E. Lodhi, F. Ahmad and M. Arshad. 2003. Privatization of agricultural extension in Pakistan: Pepping up or poring. Journal of Anim. Plant Sci. 13(1): 4-6.

Ahmad, S. 2003. Effectiveness of different extension methods adopted by AKRSP for dissemination of new agricultural technologies in district Chitral. M.Sc. (H) Thesis, Dept. of Agric. Ext. and Communication. NWFP. Agric. Univ. Peshawar.

Ahmed, A. and G.W. Morse. 2010. Opportunities and threats created by extension field staff specialization. Journal of Extension. 48(1):42-51.

Ajieh, P.C., A.E. Agwu and A.C. Anyanwu. 2008. Constraints to privatization and commercialization of agricultural extension services as perceived by extension professionals and farmers. African J. Agric. Res. 3(5):343-347.

Akele, S.A. and G.O. Chukwu. 2004. Poverty alleviation through sustainable root and tuber crop production. Proceeding of 8th Triemual symposium-International society for tropical root crops, African branch (ISTRC AB) Ibadan. Nigeria.

Albert, H. 2000. Agricultural service systems. A framework for orientation. Services for rural development. www.gtz.de/dokumente/bib/04-5313.pdf.

Ali, M.M. and K.M. Dogar. 2010. Standard Who is Who & What is What: World & Pakistan. Dogar Brothers, 17-Urdu Bazar, Lahore, Pakistan.

Ali, S., M. Ahmad and T. Ali. 2011. An assessment of farmers' demands for crop advisory services: The case of Punjab, Pakistan. J. Agric. Res. 49(3):429-436.

Ali, S., M. Ahmad, T. Ali and M. Shahzad. 2011. An assessment of professional competencies possessed by extension field staff of private agri. extension system in Punjab, Pakistan. Pak. J. Agri. Sci. 48(3):217-220.

Ali, S., M. Ahmad, T. Ali, and Z. Iqbal. 2009. Analysis of competencies possessed by field staff of private agricultural extension system in Punjab. Pak. J. Agric. Res. 47(1):101-106.

Ali, S., M. Ahmad, T. Ali, I. Din, and M.Z. Iqbal. 2008. Farmers' willingness to pay for advisory services by private sector extension: The case of the Punjab. Pak. J. Agric. Sci. 45(3):107-111.

Ali, S., M. Ahmad, T. Ali, S.W. Hassan and M. Luqman. 2011. Role of private extension system in agricultural development through advisory services in the Punjab, Pakistan: Pak. J. Sci. 63(2):70-73.

Alston, J.M. and P.G. Pardey. 1996. Making science pay: The economics of agricultural research and development policy. AEI studies on agricultural policy. American Enterprise Institute for public policy research (AEI) press, Washington, D.C.

Amir, J. 2003. An investigation into the adoption of broiler production/management practices by the poultry farmers in tehsil Samundri. M.Sc. (Hons.) Thesis, Dept. of Agri. Ext., Univ. of Agri., Faisalabad, Pakistan.

Anandajayasekeram, P., J. Dijkman, D. Hoekstra and S. Workneh. 2005. Past, present and future of extension services. Paper presented at extension training workshop organized by the Improving Productivity and Market Success (IPMS) of Ethiopian farmers' project, May 23-25, 2005. ILRI (International Livestock Research Institute), Addis Ababa, Ethiopia.

Anderson, R.J. and G. Feder. 2003. Rural extension services: Agriculture and rural development department World Bank, Washington, DC. World Bank policy research: Working Paper 2976.

Anon., 1988. Report of the national commission on agriculture. Ministry of food, agriculture and cooperatives, Government of Pakistan, Islamabad.

Antholt, C. 1994. Getting ready for the twenty-first century: Technical change and institutional modernization in agriculture. World Bank: Technical paper No. 339, Asia Technical Department Series. Washington DC: The World Bank.

Arshad, A.W. 2009. Adoption of weed management practices among sugarcane growers of tehsil Samundri, district Faisalabad. M.Sc. (Hons.) Agri. Ext. Thesis. Univ. of Agri., Faisalabad.

Ashraf, S. 2012. Assessment of communication gap regarding citrus production technology among the farmers of tehsil Kot Momin, district Sargodha. M.Sc. (Hons.) Agri. Ext. Thesis. Univ. of Agri., Faisalabad.

Axinn, G.H. 1988. Guide on alternative extension approaches. FAO (Food and Agriculture Organization of the United Nations), Rome, Italy.

Babu, S.C., P.K. Joshi, J. Claire, K. Asenso Okyere and R. Suleiman. 2013. The state of agricultural extension reforms in India: Strategic priorities and policy options. Agri. Eco. Res. Review. 26(2):159-172

Babu, S.C., S.N. Gajanan and P. Sanyal. 2014. Effect of commercialization of agriculture (shift from traditional crop to cash crop) on food consumption and nutrition—application of chi-square statistic. Food security, poverty and nutrition policy analysis (second edition). 63-91.

Baig, M.B. and F. Aldosari. 2013. Agricultural extension in Asia: Constraints and options for improvement. The Journal of Animal & Plant Sciences. 23(2): 619-632.

Bajwa, R. 2003. Agricultural extension and the role of the private sector in Pakistan: National rural support program, Islamabad, Pakistan

Bashir, M. and J. Albarbarawi. 2011. Factors influencing the adoption of self-services technology. Department of informatics: Master's program in human-computer interaction; Master degree report.

Best, J.W. and J.V. Kahn. 2006. Research in Education (9th ed.). Prentice-Hall of India Private Limited, New Delhi, India.

Borg, W.R. and M. D. Gall. 1989. Educational research, New York: Longman, 540-587.

Bowe, S., R. Smith, J. Massey and E. Hansen. 1999. A methodology for determining extension constituent needs: a case analysis in the forest products industry. J. Ext. 37(4).

Broom, G.M. 1977. Community consensus building: A communication experiment in two rural Wisconsin communities. Unpublished doctoral dissertation, University of Wisconsin, Madison.

Buchili, V. and B. Pearce. 1974. Listening behavior in co-orientation states. Journal of Communication. 24(3):62-70.

Butt, S.A. 2002. Role of television in the dissemination of agricultural technology among the farmers of tehsil Faisalabad. M.Sc. (Hons.) Agri. Ext. Thesis, U.A., Faisalabad.

Carney, D. 1998. Changing public and private roles in agricultural service provision. Overseas Development Institute (ODI), London, U.K.

Chambers, R. 1993. Challenging the profession: Frontier for rural development. I.T Publication: London.

Chapman, R. and R. Tripp. 2003. Changing incentives for agricultural extension – A review of privatized extension in practice. Agric. research and extension network. Network Paper No. 132.

Chaudary, K.M. 2006. Analysis of alternative extension approaches to technology dissemination and its utilization for sustainable agricultural development in the Punjab, Pakistan. Ph.D. Thesis, Department of Agricultural Extension, Univ. of Agri., Faisalabad.

Chuks, A. 2015. Congruency of extension professionals' and farmers' perceptions of privatization and commercialization of agricultural extension services. Tropical Agricultural Research and Extension. 16(1).

Chuks, A. P. 2006. Farmer's perception of extension services of the delta state agricultural development program (DSADP). Journal of Agriculture and Social Research. 6:59-65

Coffey, S.G. and R.A. Clark .1996. Re-engineering an extension service. Paper presented at a workshop on alternative mechanisms for funding and delivering extension, June 1996, Washington D.C. The World Bank.

Connelly, N.A. and B.A. Knuth. 2002. Using the co-orientation model to compare community leaders' and local residents' views about Hudson River ecosystem restoration. Society and Natural Resources. 15(10):933- 948.

Contado, T.E. 1997. Formulating extension policy in improving agricultural extension. A reference manual Rome: Food Agriculture Organization.108-110.

Davidson, A.P. and M. Ahmad. 2002. Effectiveness of public and private sector agricultural extension: Implications for privatization in Pakistan. J. Agric. Edu. Ext. 8(3): 117-126.

Davidson, A.P., M. Ahmad and T. Ali. 2001. Dilemmas of agricultural extension in Pakistan: Food for thought. Agric. Res. Ext. Network. 116:1-14.

Demiryurek, K., H. Erdem, V. Ceyhan, S. Atasever, and O.U.O. Mayıs. 2008. Agricultural information systems and communication networks: The case

of dairy farmers in the Samsun province of Turkey. Information Research. 13(2):4

Dimelu, M.U. and M.C. Madukwe. 2001. Extension workers' perception of privatization and commercialization of extension services in Enugu State, Nigeria. In Proceedings of the 7th Annual National Conference of Agricultural Extension. Society of Nigeria (AESON) Ilorin. 34-41.

Dinar, A. 1996. Extension commercialization: how much to charge for extension services. American Journal of Agricultural Economics. 78(1):1-12.

Dinar, A. and G. Keynan. 2001. Economic of paid extension: Lessons from experience in Nicaragua. American Journal of Agricultural Economics. 83:769-776.

Eicher, C.K., 2004. Rebuilding Africa's scientific capacity in food and agriculture (No. 11543). Michigan State University, Department of Agricultural, Food, and Resource Economics.

FARA, 2006. FAAP: Framework for African agricultural productivity. FARA, June 2006.

Farhad, L. and S.M. Hosseini. 2011. Influencing factors on privatization of agricultural extension in Iran perceived by extension experts. Middle-East Journal of Scientific Research. 9(2):195-199.

Farooq, R.A. 2001. Understanding research in education. Institute of education and research, University of Arid Agriculture, Rawalpindi, Pakistan.

FFC (Fuji Fertilizer Company). 2011. Farm advisory services. Fuji Fertilizer Company, Farm Advisory Centre, Sukkur.

Findlay, C. and A. Watson. 1992. Surrounding the cities from the countryside. Economic reform and Internationalization: China and the Pacific Region, St Leonard's, NSW: Allen and Unwin.

Fitz-Gibbon, C.T. and L.L. Morris. 1987. How to design a program evaluation. Vol. 3. Sage.

Fleshman, E.A. 1967. Performance, assessment based on empirically derived task taxonomy.

Fliegel, F.C. 1984. Extension communication and adoption process. In: Swanson B.E. (Ed.).

Food and agriculture organization. 2002. Strengthening the pluralistic agricultural extension system: A Zimbabwean case. Food and Agriculture Organization of the United Nations (FAO).

Food and agriculture organization. 2005. FAO Production Year Book, FAO, Rome, Italy.

Food and agriculture organization. 2011. Training manual for (healthy and productive mandarin tree) combating citrus decline problem in Nepal.

Frischmann, B. 2000. Privatization and commercialization of the internet infrastructure: rethinking market intervention into government and government intervention into the market. Colum. Sci. & Tech. L. Rev. 2:1.

Gantz, W., L.A. Wenner, C. Carrico and M. Kroon. 1995. Assessing the football window hypothesis; Aco-orientation study of the role of televised sports in long-standing relationships. Journal of Sport and Social Issues. 19(4):352-376.

Garforth, C. 2002. ADAS and the privatization of advisory services in England and Wales. IFPRI. Extension and rural development: a convergence of views on institutional approaches. 12-14.

Gebremedhin, B. and D. Hoekstra. 2006. Commercialization of Ethiopian agriculture: Extension service from input supplier to knowledge broker and facilitator. In scaling up and scaling out agricultural technologies in Ethiopia: An International conference, Addis Abeba (Ethiopia), 9-11 May 2006. Ethiopian Institute of Agricultural Research.

Government of Pakistan. 1988. Report of national commission of agriculture. Islamabad, Pakistan.

Government of Pakistan. 2006. Economic Survey. Government of Pakistan, Finance Division, Economic Advisor's Wing, Islamabad.

Government of Pakistan. 2007. Agricultural Statistics of Pakistan 2006-2007. Govt. of Pakistan, Ministry of Food, Agriculture and Livestock (Economic Trade and Investment Wing) Islamabad.

Government of Pakistan. 2010. Economic Survey of Pakistan. Finance Division, Economic Advisor's Wing, Islamabad, Pakistan.

Government of Punjab. 2006. Punjab. Available at: http://www.pak.gov.pk/punjab.aspx

Government of Punjab. 2009. Punjab gateway. Available at: http://pportal.punjab.gov.pk/portal/portal/mediatype/html.

Gowda, M.C. 2001. Micro level opportunities and challenges for privatization of agricultural extension. Private extension in India: Myths, Realities, Apprehensions and Approaches. National Institute of Agricultural Extension and Management, Hyderabad, India. 18-25.

Groot, H.C. 1970. Co-orientation and technological change: Communication variables in perceptions of "miracle rice" in the Philippines. Doctoral dissertation, University of Wisconsin, Madison.

GTZ, 2006. Services for Rural Development. Reader: Funding of Services. Available at: https://www.giz.de/en/html/index.html

Guo, B. 2006. Charity for profit? Exploring factors associated with the commercialization of human service nonprofits. Nonprofit and Voluntary Sector Quarterly. 35(1):123-138.

Hanchinal, S.N., B. Sundaraswamy and M.R. Ansari. 2001. Attitudes and preferences of extension personnel towards privatization of extension services. Available on: http://www.manage. gov.in/pvtext/pvext/htm.

Hanif, M., S.A. Khan and F. Nauman. 2004. Agricultural perspective and policy. Ministry of Food, Agriculture and Livestock, Islamabad.

Haq, I.U. 2009. An analysis of paradigm shift from public extension to public private partnership extension system in NWFP, Pakistan. Ph.D. Thesis, Agric. Ext. Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).

Haq, Q. 2008. Analysis of gender specific health hazards in cotton growing environment: A case study of rural community in Multan, Pakistan. Ph.D. Thesis, Department of Agricultural Extension, Univ. of Agri., Faisalabad.

Hassan, M.Z.Y. 1991. A study into the adoption of plant protection measures among mango growers of Tehsil Muzaffargarh. M.Sc. (Hons.) Agri. Ext. Thesis, Univ. of Agric., Faisalabad.

Haug. R. 1999. Some leading issues in international agriculture: A literature review. The Journal of Agricultural Education and Extension. 5:263-274.

Horna, J.D. and M.V. Oppen. 2006. Supporting Agricultural Extension: Could farmers contribute? Contributed paper for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia.

Hosmer, D.W. and S. Lemeshow. 2000. Applied logistic regression. John Wiley and Sons, New York, USA

Howell, J. 1985. Recurrent costs and agricultural development. Overseas Development Institute, London.

Hu, R., Z. Yang, P. Kelly and J. Huang. 2009. Agricultural extension system reform and agent time allocation in China. China Economic Review. 20(2):303-315.

IFAD. 2002. Assessment of rural poverty, Asia and the Pacific. International Fund for Agricultural Development. Division-Program Management Department.

Isife, B.I., H.J. Ikiba, F.N. Ibekwe. 2009. Issues and challenges in commercialization of agricultural extension service in Rivers State, Southern Nigeria. Global Approaches to Extension Practice: A Journal of Agricultural Extension. 5(1).

ITC forum. 2006. Financial empowerment-financing a sustainable linkage. A paper contributed by the Belize National Strategy Team, Geneva.

JICA. 2008. Local level service delivery, decentralization and governance. A comparative study of Uganda, Kenya and Tanzania Education, Health and Agriculture Sectors for JICA Synthesis Report. Final Report.

Johnson, C. 2003. Decentralisation in India: Poverty, politics and panchayati raj. Overseas Development Institute 111, Westminster Bridge Road, London SE1 7JD UK.

Johnson, R.W.M., W.R. Schroder and N.W. Taylor. 1989. Deregulation and the New Zealand agricultural sector: Review of marketing and agricultural economics. 57.

Joppe, M. 2000. The research process. Available at: http://www.ryerson.ca/~mjoppe/rp.htm

Kaimowitz, D. 1990. Making the link: Agricultural research and technology transfer in developing countries. Westview press Inc., U.S

Kashif, Z.A. 2006. A study into the adoption of wheat management practices among wheat growers of tehsil Faisalabad. M. Sc. (Hons.) Agricultural Extension Thesis. Univ. of Agri., Faisalabad.

Khan, G.A. 2010. Present and prospective role of electronic media in the dissemination of agricultural technologies among farmers of the Punjab, Pakistan. Ph.D. Thesis, Department of Agricultural Extension, Univ. of Agri., Faisalabad.

Khan, I.R. 2008. Analysis of the farmers' current socio economic status, problems faced and training needs in institute of applied research and technology transfer

(IARTT) area Faisalabad. M. Sc. (Hons.) Agricultural Extension Thesis. Univ. of Agri., Faisalabad.

Khatoonabadi, A. 2005. Survey research on some aspects of agricultural extension privatization in Isfahan province from the viewpoint of extension officers. J. Sci. & Tec. Agri. & Nat. Res. 9(1):41-60.

Khooharo, A.A. 2008. A study of public and private sector pesticide extension and marketing services for cotton crop. Ph.D. Thesis, Agric. Ext., Sindh Agric. Univ., Tandojam Sindh, Pakistan (Unpublished dissertation).

Khooharo, A.A., R.A. Memon, and M.H. Lakho. 2008. An assessment of farmers' level of knowledge about proper usage of pesticides in Sindh Province of Pakistan: Sar. J. of. Agri. 24(3): 531-539.

Kidd, A.D., J.P.A. Lamers, P.P. Ficarelli and V. Hoffman. 2000. Privatizing agricultural extension: Caveat emptor. J. Rural Stud. 16(1): 95-102.

Kunstadter, P. 1987. Swiddeners in transition: Lua' farmers in northern Thailand. BL Turner, II and S. Brush, editors. Comparative farming systems. Guilford Press, New York, New York, USA. 130-155.

Labarthe, P. and C. Laurent. 2013. Privatization of agricultural extension services in the EU: Towards a lack of adequate knowledge for small-scale farms. Food policy. 38(1): 240 -252.

Ladele. A. A., S. T. Ogunride and N.E. Mundi. 2008. Agricultural extension education course guide. National Open University of Nigeria. Available at: www.nou.edu.ng.

Le Gouis, M. 1991. Alternative financing of agricultural extension: Recent trends and implications for the future. Agricultural extension: Worldwide institutional evolution and forces of change. Amsterdam, London, New York, Tokyo, Elsevier: 31-42.

Lewis, J. 2014. Stationary fuel cells – Insights into commercialization. International Journal of Hydrogen Energy. 39(36):21896-21901

Lodhi, T.E., M. Luqman and G.A. Khan. 2006. Perceived effectiveness of public sector extension under decentralized agricultural extension system in the Punjab, Pakistan. JASS. 2(3). 195–200.

Lopokoiyit, M.C., C., Onyango, J.K. Kibett, and B.K. Langat. 2012. Human resource development in agriculture extension and advisory services in Kenya.

Repositioning African agriculture by enhancing productivity, market access, policy dialogue and adapting to climate change. The 8th AFMA Congress.

Lynne, G. D., C. F. Casey, A. Hodges, and M. Rahmani. 1995. Conservation technology: adoption decisions and the theory of planned behavior. J. Econ. Psych., 16(4): 581-598.

Maalouf, W.D., R. Adhikarya, and T. Contado. 1991. Extension coverage and resource problems: the need for public-private co-operation in W.M. Rivera and D.J. Gustafson (eds). Agricultural extension: Worldwide institutional evolution and forces for change. Amsterdam: Elsevier Science.

MAF, 1999. The government's strategic vision for the agricultural sector. Vientiane, Laos PDR, Ministry of Agriculture and Forestry.

Mahaliyanaarachchi, R. P. 2005. Attitudes of agricultural scientists, extension personnel and farmers towards commercialization of the agricultural extension service. Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka. ISBN No. 955-644-019-4.

Mahaliyanaarachchi, R.P. 2004. Commercialization of agriculture in Sri Lanka two studies in selected sectors. Faculty of agricultural sciences Sabaragamuwa, University of Sri Lanka. ISBN 955- 644 - 019 – 4.

Mahaliyanaarachchi, R.P. and R.M.A.S. Bandara. 2006. Commercialization of agriculture and role of agricultural extension. Sabaragamuwa University Journal. 6(1): 13-22.

Maram, A. 2008. Commercialization of the nonprofit sector: a discussion and critical analysis. Online: http://www.uppress.co.uk/socialpolicy_pdf/Maram.pdf: retrieved on 2-1-2015.

Maunder, A.H .1973. Agricultural Extension. A reference manual (Abridged version). Rome: Food and Agriculture Organization of the United Nations. P. 103.

Menard, S. 2000. Coefficients of determination for multiple logistic regression analysis. The American Statistician. 54:17-24.

Mengal, A.A., M.U. Mallah, Z.A. Mirani and B.N. Siddiqui. 2012. An analysis of public and private agricultural extension services in Baluchistan, Pakistan. Pakistan J. Agric. Res. 25(4):301-317.

Moser, S. C., and G. Kalton. 1992. Survey methods in social investigation, Gower Publishing Company Limited, England.

Moskal, B. M. and A. L. Jon. 2000. Scoring rubric development: validity and reliability. Practical assessment, research & evaluation Online Available at: http://PAREonline.net/getvn.asp?v=7&n=10

Mulhall, A. E. and C.J. Garforth. 2000. Equity implications for reforms in the financing and delivery of agricultural extension services. Final Technical Report on research project R6470 to the Department for International Development. Agricultural Extension and Rural Development Department. The University of Reading, England.

Mulyanto and H. Magsi. 2014. Approaches to measure quality of human resource development index in the village context: case of Central Java, Indonesia. The Macro theme Review. 3(6):1-17.

Muriithi, B.W. and J.A. Matz. 2015. Welfare effects of vegetable commercialization: Evidence from smallholder producers in Kenya. Food Policy. 50(2015):80-91.

Nachmias, C. F. and D. Nachmias. 1992. Research methods in the social sciences. St. Martin Press Inc. Kent, UK. 4th ed. 576.

Nambir, E., J. Omiti and L. Mugunieri. 2005. Decentralization and Access to Agricultural Extension Services in Kenya. SAGA Working Paper.

Nazarpour, M. and A. Emami. 2011. Assessing private extension models. Nature and Science. 9(7): 169-172.

NCP. 2000. Privatization handbook. (2nd Edition). Abuja NCP Secretariat: 1-2.

NEPAD. 2002. Comprehensive Africa agriculture development programme. New partnership for Africa's development.

Neuchatel Group. 2002. Common Framework on Financing Agricultural and Rural Development. Lindau, Switzerland, Swiss Centre for Agricultural Extension and Rural Development (LBL).

Ngwu, G.C. 2004. Reaction of farmers to privatization and commercialization of agricultural extension services in Ebonyi State, Nigeria. M.Sc. Thesis: Department of Agricultural Extension, University of Nigeria, Nuskka.

Niazi, A.Q.K. 1993. To determine the extent of adoption of recommended horticultural practices by mango growers of tehsil Muzaffargarh. M.Sc. (Hons.) Agri. Ext. Thesis, Univ. of Agric., Faisalabad.

Odii, M.A.C.A. 2001. Problems and prospects of privatization of public enterprises in Nigeria. In: Olowu, T.A. (ed.), Proceedings of the 7th annual national conferences of agricultural extension society of Nigeria, AESON, Ilorin:12-18.

Odurukwe, S.N., C.C. Asiabaka, and N.E. Okereke. 2003. Intra-Household impacts of small farm commercialization of maize enterprise in Abia State, Nigeria. IJAERDS. 4(1): 59-67.

Ofuoku, A. U., G. N. Emah, and B. E. Itedjere. 2008. Information utilization among rural fish farmers in Central Agricultural Zone of Delta state, Nigeria. World J. Agric. Sci., 4(5): 558-564.

Ogunbameru, B.O. 2005. Funding agricultural extension services in Nigeria. S.F. Adedoyin (Ed). Agric. Extension in Nigerian. 177 -188.

Omobolanle, O. L. 2008. Analysis of extension activities on farmers' productivity in Southwest, Nigeria. Afr. J. Agric. Res., 3(6): 469-476.

Omotayo, A. M. (2005). ICT and agricultural extension: emerging issues in transferring agricultural\ technologies in developing countries. In edl Adedoyin, S. F. (Ed.), agricultural extension in Nigeria. Agricultural extension society of Nigeria.

Omotayo, A.M. 2004. Institutional arrangement for effective participation of the private sector on in extension delivery in Nigeria. Proceedings of the 1st South-west Agricultural Extension Society of Nigeria (AESON) workshop held on the 1st December, 2004 in Ibadan, Nigeria. 16

Omotesho, O.A., R.S. Asida, S.B. Fakayode, G,B. Adesiji and F.O. Oladipo. 2011. Perception of commercialization of agricultural extension service among farming household heads in Kwara State, Nigeria. J. Agri. Res. Dev. 21(1): 46-57.

Ozor, N. 2010. A comparative analysis of the alternative approaches in the provision of agricultural extension service. Journal of agricultural extension. 149(1):31-47.

Ozor, N. and M.C. Madukwe. 2001. Extension professionals perception of privatization and commercialization of agricultural extension services in Enugu State Agricultural Development Program. Journal of Agricultural Extension. 5:67-69.

Peng, C.Y.J., T.S.H. So, F.K. Stage and E.P.S. John. 2002. The use and interpretation of logistic regression in higher education journals: 1988-1999. Research in Higher Education. 43:259-293

PHDEB, 2006. Pakistan horticulture development and export board. Available at: http://www.phdeb.org.pk

Phelan, J.F. 1995. Are traditional extension series dead or do they have a role in rural development? European journal of agricultural education and extension. 2(3):7-14.

Picciotto, R., and J. R. Anderson. 1997. Reconsidering agricultural extension: The World Bank research observer; 12 (2): 249-259.

Pingalia, P.L., and M.W. Rosegrant. 1995. Agricultural commercialization and diversification. Food Policy. 20(3): 171-185.

Prasad, R.M. 2014. Reforming governance to improve extension service delivery. AESA Blog. Available at: http://www.aesa.gfras.net/Blogs.aspx . Accessed on 15-02-2015.

Purcell, D.L. and J.R. Anderson. 1997. Agricultural research and extension: Achievements and problems in national systems. World Bank operations evaluation study, World Bank, Washington, DC, USA.

Ramzan, M. 2003. Assessment of knowledge, skill and attitude of small famers of tehsil Jalalpur Pirwala regarding insect/pests control in cotton crop. M. Sc. (Hons.) Agricultural extension thesis. Univ. of Agri., Faisalabad.

Rasheed, S.V., A.J. Hall and N. Suresh. 2005. Effectiveness of private sector agricultural extension in India: lessons for the new extension policy agenda. ODI Agricultural research and extension network (AgREN). 141:1-11.

Rehman, A. 2011. Identification and prioritization of problems faced by rice growers of tehsil Daska, Sialkot. M. Sc. (Hons.) Agricultural Extension Thesis. Univ. of Agri., Faisalabad.

Riaz, M. 2010. The role of the private sector in agricultural extension in Pakistan. Rural Development News. 1/2010.

Rivera, W. and W. Zijp. 2002. Contracting for agricultural extension. International case studies and emerging practices. Wallingford, UK: CABI Publishing

Rivera, W. M. 1996. Agricultural extension in transition worldwide: structural, financial, and managerial strategies for improving agricultural extension. Public administration and development. 16(2):151-161

Rivera, W. M. 2001. Agriculture and rural extension worldwide: Option for institutional reform in the development countries, FAO. Rome. 11-12.

Rivera, W. M. and J. W. Cary. 1997. Privatizing agricultural extension. Improving agricultural extension. A reference manual. FAO Corporate Document Repository.

Rivera, W. M., M. K. Qamar and L. V. Crowder. 2001. Agricultural and rural extension worldwide: options for institutional reform in the developing countries. Food and agriculture organization of the United Nations, Rome.

Rivera, W., E. Elshafie and H.A. Seoud. 1997. The public sector agricultural extension system in Egypt: A pluralistic complex in transition. Journal of international agricultural and extension education. 4:67-74.

Rivera, W.M. 1991. Agricultural extension worldwide: A critical turning point. In: Agricultural extension: Worldwide Institutional Evolution and Forces for Change, W.M. Rivera and D.J. Gustafson (eds.). Elsevier Science, Amsterdam.

Rivera, W.M. 2000. The changing nature of agricultural information and the conflictive global developments shaping extension. The Journal of Agricultural Education and Extension. 7(1):31-42.

Rivera, W.M., and J.W. Cry. 1996. Privatizing agricultural extension. Extension, Education and Communication Service, Research, Extension and Training Division, Sustainable Development Department, Food and Agriculture Organization of the United Nations, Rome.

Rogar, D.N. 2004. Agriculture development policy: Concept and experiences. FAO, Rome.

Rogers, W.L. 1987. The private sector: Its extension systems and public/private co-ordination. In W.M. Rivera and S.G. Schram (eds). Agricultural extension worldwide: Issues, practices and emerging priorities. Croom Helm, London.

SAA, 2005. About Sasakawa Africa Fund for extension education. Sasakawa Africa association. Available at: http://www.saatokyo.org/english/safe/index.html,

Saadatu, B.A., S. Usman and B. Dahiru. 2011. Maize farmer's perception of commercialization and privatization of agricultural extension services in north senatorial district of Gombe State, Nigeria. Journal of agricultural extension. 15(1).

Safder, A. 2004. The participation of females in income generating activities through micro- credit provided by Urban Poverty Alleviation Programme (UPAP) in Faisalabad District. Master's Thesis, Dept. of Rural Sociology, University of Agriculture, Faisalabad.

Sahni, D. 2000. Importance of education. Retrieved from: http://www.boloji.com/teens/articles/00337.htm.

Saravanan, R. 2001. Privatization of agricultural extension: In: C. P. Shekara. (Ed.) Private Extension in India: Myths, Realities, Apprehensions and Approaches. Published by National Institute of Agricultural Extension Management (MANAGE), Hyderabad, India: 60-71.

Shafique, M.S. 2008. Potential options for effective agricultural extension in Pakistan: International Hydro politics. Available at: http://macrotheme.com/yahoo_site_admin/assets/docs/3MR38Ha.26782432.pdf.

Shahid, A., A. Saghir, I. Ashraf and S. Ashraf. 2013. Livestock sector as income source to mitigate energy crisis, with the emphasis on Pakistan. Global Veterinarian. 11(6):701-707.

Shaukat, S. 2013. Need of farmers advisory services in Punjab, Pakistan. Published by Pak Agri. Farming, Monday, March 04, 2013.

Shepard, R. 2001. Questionnaires for evaluating on-farm field days. J. Ext. 39(1). Available at: http://www.joe.org/joe/2001february/tt5.php

Siddiqui, A.A. and Z. Mirani. 2012. Farmer's perception of agricultural extension regarding diffusion of agricultural technology. Pak. J. Agri., Eng., Vet. Sci. 28 (1): 83-96.

Siddiqui, B. N. 2006. Analysis of communication intervention of extension field staff in apple growing areas of Balochistan (Pakistan). Ph.D. Thesis, Dept. of Agri. Ext., Univ. of Agri., Faisalabad, Pakistan.

Singh, K.M., B.E. Swanson and M.S. Meena. 2013. Reforming india's pluralistic extension system: some policy issues, ICAR-RCER, Patna, University of Illinois at Urbana-Champaign. 10-7

Sofranko, A.J., A. Khan and G. Morgan. 1988. Insights into farmer-extension contacts: evidence from Pakistan'. Agricultural administration and extension. 30:293–307.

Spector, P. 1981. Research design. Beverly Hills: Sage.

Swanson, B., M. Samy and P. O'Rourke. 2002. USA Illinois: Contracting for precision agricultural services in Rivera. International case studies and emerging practices. Wallingford, UK: CABI Publishing.

Swanson, B.E. and R. Rajalahti. 2010. Strengthening agricultural extension and advisory systems: Procedures for assessing, transforming, and evaluating extension systems, World Bank, Washington DC.

Swanson, B.E., B.J. Farner and R. Bahal. 1990. The current status of agricultural extension worldwide. In: Swanson BE. (ed.), Report of the global consultation on agricultural extension. FAO (Food and Agriculture Organization of the United Nations), Rome, Italy.

Swanson, B.E.1997. Strengthening research-extension-farmer linkages. In: Swanson B.E., R.P. Bentz and A.J. Sofranko (Eds.). Improving agricultural extension: A reference manual. FAO, Rome.

Swanson. B. E. 2008. Global review of good agricultural extension and advisory service practices. FAO, United Nations, Rome, Italy.

Talib, U. 2012. Role of agricultural extension 'hub programmes in the dissemination of improved agricultural technologies among farmers in tehsil Faisalabad. M. Sc. (Hons.) Thesis. Dept. of Agri. Ext., Univ. of Agri., Faisalabad, Pakistan..

Tarar, U. H. 1983. A study into the extent of adoption of plant protection measures against the rice borer by the farmers in Wazirabad tehsil, district Gujranwala. M.Sc. (Hons.) Thesis. Dept. of Agri. Ext., Univ. of Agri., Faisalabad, Pakistan.

Toudeh-Rusta, M. 2004. Privatization in the country, Problems and Solutions. Journal of Jihad. No. 261. 4(1):41-50.

Trochim, W. M. K. 2006. Reliability. Available at: http://www.socialresearchmethods.net/kb/reliable.php

UNO, 1995. Comparative experiences with privatization-policy insights and lessons learned. United Nations conference on trade and development. New York and Geneva: 241.

Uzokwe, U.N. and A.U. Ofuoku. 2006. Farmer's perception on privatization and commercialization of agricultural extension services in Oshimili north and south local government areas of Delta state. Agricultural journal. 1(4):258-261.

Vanden, B.A.W. and H.S. Hawkins. 1996. Agricultural extension (2nd Edition). Oxford: Blackwell Science Ltd; Publishers.

Wanga, E., 1999. Key note address on new perspectives in rural extension. Regional refresher international course in rural extension (ICRE) on: Challenges and Prospects. Egerton University, 21st November–3rd December.

Wimmer, R. D. and J. R. Dominick. 1994. Mass media research: An introduction (4thed.). Wadsworth publishing company, Belmont, California.

Wise, C.R. 1990. Public service configurations and public organizations: Public organization design in the post-privatization era. Public administrations review. 50(2):141-155.

World Bank. 1977. From vision to action in the rural sector. World Bank, Washington, DC, USA.

World Gazetteer. 2009. Punjab. Available at: http://www.worldgazetteer.com/wg.php

Zayyad, H.R. 1996. Privatization and commercialization in Nigeria, in O. Fadahunsi.

APPENDICES

Appendix 1: Distribution of the respondents according to their response regarding strengths of commercialization of extension services

Commercialization would	Strongly disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	f	%	F	%	*f*	%	*f*	%	*f*	%
Encourage competition among extension service providers	69	17.3	121	30.3	177	44.3	16	4	17	4.3
Make agricultural information delivery to become more effective	117	29.3	69	17.3	61	15.3	140	35	13	3.3
Increase priority areas of extension coverage	81	20.3	214	53.5	31	7.8	60	15	14	3.5
Make easy availability of extension services for every farmer	67	16.8	228	57	42	10.5	34	8.5	29	7.3
Enhance farmers' knowledge base	48	12	206	51.5	61	15.3	72	18	13	3.3
Improve farmers' management skills	47	11.8	209	52.3	84	21	31	7.8	29	7.3
Make extension services to be directed at specific needs of the people	48	12	208	52	82	20.5	30	7.5	32	8
Provide opportunity for neglected areas of agricultural production to be attended to	164	41	50	12.5	103	25.8	69	17.3	14	3.5
Help reduce Govt. financial burden on agriculture	80	20	130	32.5	9	2.3	148	37	33	8.3
Break the monopoly of public extension service	50	12.5	214	53.5	80	20	41	10.3	15	3.8
Make it possible for more farmers to be reached	77	19.3	150	37.5	101	25.3	60	15	12	3
Improve linkage between research and extension	82	20.5	209	52.3	46	11.5	20	5	43	10.8

Commercialization would	Strongly disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	f	%	F	%	*f*	%	*f*	%	*f*	%
Provide job opportunities to a large number of agri. graduates	45	11.3	177	44.3	113	28.3	24	6	41	10.3
Make easy accessibility for each farmer	72	18	215	53.8	66	16.5	11	2.8	36	9
Lead to higher farm output	13	3.3	120	30	126	31.5	118	29.5	23	5.8
Ultimately lead to higher income	52	13	142	35.5	72	18	45	11.3	89	22.3
Increase overall effectiveness of agri. extension services	47	11.8	252	63	80	20	20	5	1	0.3
Increase the quality of services by encouraging competition between service providers	88	22	223	55.8	27	6.8	26	6.5	36	9
Have higher credibility of the information	53	13.3	238	59.5	54	13.5	28	7	27	6.8
Provide an opportunity to the farmers to get information according to their choice	97	24.3	126	31.5	129	32.3	6	1.5	42	10.5
Have highly qualified staff as compared to government extension workers	21	5.3	214	53.5	28	7	120	30	17	4.3

Appendix 2: Distribution of the respondents according to their response regarding weaknesses of commercialization of extension services

Weakness of commercialization	Strongly disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	f	%	F	%	*f*	%	*f*	%	*f*	%
Commercialization would lead to job insecurity among public extension workers	17	4.3	3	0.8	28	7	176	44	176	44
Commercialization would make agricultural extension services unaffordable by farmers	4	1	10	2.5	36	9	279	69.8	71	17.8
Commercialization would promote corruption and nepotism	26	6.5	92	23	154	38.5	82	20.5	46	11.5
Commercialization would encourage exploitation of farmers	48	12	5	1.3	12	3	204	51	131	32.8
Commercialization would encourage income inequality	14	3.5	46	11.5	33	8.3	220	55	87	21.8
Commercialization would lead to poor capacity building	5	1.3	30	7.5	68	17	240	60	57	14.3
Commercialization would encourage foreign domination in the provision of extension services	52	13	15	3.8	18	4.5	241	60.3	74	18.5
Commercialization would increase the regional imbalance	47	11.8	139	34.8	90	22.5	107	26.8	17	4.3
Commercialization would create hindrance to group extension service	14	3.5	75	18.8	126	31.5	101	25.3	84	21
Farmers may have a doubt on sustaining of the commercialization	58	14.5	8	2	21	5.3	221	55.3	92	23
Commercialized extension service will pay attention only to increase the production without considering other	15	3.8	14	3.5	63	15.8	235	58.8	73	18.3

Weakness of commercialization	Strongly disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	f	%	Ƒ	%	*f*	%	*f*	%	*f*	%
factors such as environmental, social etc.										
Farmer may lose their independency of decision marking due to commercialized extension services	20	5	90	22.5	42	10.5	90	22.5	158	39.5
Commercialization would enhance financial burden on farmers	55	13.8	3	0.8	6	1.5	62	15.5	274	68.5
Commercialization would be more business oriented less serving	41	10.3	17	4.3	18	4.5	102	25.5	222	55.5

Appendix 3: Distribution of the respondents according to acceptability of the commercialization of agricultural extension services

Statements regarding acceptability of the commercialization	No acceptability		Level of satisfaction									
			Strongly disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	Ƒ	%	Ƒ	%	*f*	%	Ƒ	%	*f*	%	*f*	%
Commercialization would only be acceptable when these services are cost effective	10	2.5	11	2.8	83	20.8	71	17.8	141	35.3	84	21.0
Commercialization would be more acceptable if these services are timely available	54	13.5	41	10.3	60	15.0	118	29.5	68	17.0	59	14.8
Easy accessibility of information would enhance more acceptability	89	22.3	3	0.8	100	25.0	114	28.5	60	15.0	34	8.5
Need oriented services would be more acceptable to the farmers	20	5.0	1	0.3	33	8.3	125	31.3	145	36.3	76	19.0
Commercialization should be backed by control authorities	56	14.0	34	8.5	84	21.0	92	23.0	62	15.5	72	18.0
Commercialization would be more acceptable if these services are affordable for each farmer	53	13.3	0	0.0	80	20.0	91	22.8	141	35.3	35	8.8
Commercialization would be more acceptable if these services are compatible to the farmers	14	3.5	18	4.5	95	23.8	84	21.0	153	38.3	36	9.0
Focus on small and medium farmers	12	3.0	61	15.3	32	8.0	141	35.3	51	12.8	103	25.8
Authenticity of commercialized extension services would encourage more acceptability	3	0.8	6	1.5	97	24.3	91	22.8	118	29.5	85	21.3
Commercialization would provide an opportunity to neglected areas of agri. production to be addressed	67	16.8	18	4.5	63	15.8	123	30.8	41	10.3	88	22.0
Commercialization would develop professionalism among extension workers	56	14.0	29	7.3	59	14.8	158	39.5	37	9.3	61	15.3

Appendix 4: Distribution of the respondents according to their potential constraints in the way of commercialization of agricultural extension services

Potential constraints	NA		Strongly Disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	Ƒ	%	Ƒ	%	*f*	%	*f*	%	*f*	%	*f*	%
Lack of farmer' interest in extension programs	5	1.3	2	0.5	7	1.8	85	21.3	198	49.5	103	25.8
Tendency to focus more attention towards large-scale farmers thereby neglecting the medium and small farmers	51	12.8	0	0.0	3	0.8	7	1.8	221	55.3	118	29.5
Farmer' poor economic background	4	1.0	0	0.0	12	3.0	50	12.5	245	61.3	89	22.3
Lack of better marketing facilities to sell increased farm outputs resulting from improved extension services	7	1.8	1	0.3	63	15.8	76	19.0	179	44.8	74	18.5
Huge reluctance on the part of farmers to pay for extension services	11	2.8	3	0.8	5	1.3	58	14.5	184	46.0	139	34.8
Administrative and bureaucratic issues in policy implementation	43	10.8	0	0.0	7	1.8	45	11.3	239	59.8	66	16.5
Political instability	38	9.5	47	11.8	56	14.0	32	8.0	86	21.5	141	35.3
Difficulty in attaching monetary value to extension services	64	16.0	0	0.0	5	1.3	6	1.5	158	39.5	167	41.8
High level of subsistence farming	49	12.3	0	0.0	18	4.5	103	25.8	162	40.5	68	17.0
Unequal access to resources	5	1.3	1	0.3	13	3.3	44	11.0	254	63.5	83	20.8
Unfavourable Govt. policies towards commercialization of extension services	46	11.5	0	0.0	12	3.0	112	28.0	132	33.0	98	24.5
Irresponsiveness of extension services provider to clients' needs	3	0.8	3	0.8	9	2.3	107	26.8	154	38.5	124	31.0
Poor linkages between research and extension	7	1.8	8	2.0	46	11.5	42	10.5	221	55.3	76	19.0
Inadequate Govt. legislation to backup	3	0.8	0	0.0	84	21.0	19	4.8	164	41.0	130	32.5

Potential constraints	NA		Strongly Disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	Ƒ	%	Ƒ	%	*f*	%	*f*	%	*f*	%	*f*	%
commercialization program												
Inadequate Govt. guarantees, regulations and control over extension service providers for overcharging and abuses	7	1.8	0	0.0	14	3.5	25	6.3	210	52.5	144	36.0
Corruption and nepotism among extension staff	65	16.3	0	0.0	43	10.8	53	13.3	207	51.8	32	8.0
Fear of exploitation by extension service providers	42	10.5	8	2.0	6	1.5	21	5.3	95	23.8	228	57.0
Poor capacity building of extension staff	48	12.0	0	0.0	66	16.5	92	23.0	142	35.5	52	13.0
High risk and uncertainty about extension personnel	34	8.5	42	10.5	86	21.5	19	4.8	194	48.5	25	6.3
Fear of job insecurity among extension staff	2	0.5	3	0.8	37	9.3	81	20.3	113	28.3	164	41.0
Insufficiently trained extension personnel	7	1.8	44	11.0	22	5.5	65	16.3	192	48.0	70	17.5

Appendix 5: Distribution of the respondents according to strategy for reforming of agricultural extension services

Potential constraints	NA		Strongly Disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	f	%	F	%	*f*	%	*f*	%	*f*	%	*f*	%
Structure	1	0.3	0	0.0	4	1.0	79	19.8	136	34.0	180	45.0
Policy	0	0.0	6	1.5	33	8.3	83	20.8	71	17.8	207	51.8
Governance	0	0.0	0	0.0	11	2.8	149	37.3	94	23.5	146	36.5
Legal	80	20.0	0	0.0	56	14.0	43	10.8	121	30.3	100	25.0

Interview Schedule

A Critical Analysis of Commercialization of Agricultural Extension Services in the Punjab, Pakistan

Socioeconomic characteristics of the respondents

1. Name ----------
2. Village ----------
3. Tehsil & district ----------
4. Age (In years) ----------
5. Educational level
   a) Illiterate ----------
   b) Up to Primary ----------
   c) Primary to Middle ----------
   d) Middle to Matric ----------
   e) Above Matric ----------
6. Marital status
   a) Single ----------
   b) Married ----------
7. Social status
   a) Ordinary Farmer ----------
   b) Govt. employee ----------
   c) Numberdar ----------
   d) Extension agent ----------
   e) Any other (please specify) ----------
8. Sources of income
   a) Crop farming ----------
   b) Vegetable farming ----------
   c) Both crop and vegetable farming ----------
   d) Agriculture + Job ----------
   e) Private business ----------
   f) Livestock ----------
   g) Any other (please specify) ----------
9. Size of land (in acres) ----------
10. Area under crop cultivation ----------
11. Type of tenure:
    a) Owner ----------
    b) Owner-cum-Tenant ----------
    c) Tenants ----------
12. Annual income (PKR) ----------

	Yes	**No**
13. From whom you get more advisory services?		
a) Public sector	----------	----------
b) Private sector	----------	----------
14. Are you satisfied with the performance of public sector extension services?	----------	----------
15. Did you have any support from extension workers?	----------	----------
16. Are you satisfied with the Govt. policies towards extension services?	----------	----------

17. Do you have full access to these advisory services? ---------- ----------
18. Are you satisfied with the availability of these services?
    ---------- ----------
19. Did all your needs fully addressed by these services?
    ---------- ----------
20. Do you know about commercialization of agricultural extension services?
    ---------- ----------
21. Are you willing to pay for advisory services? ---------- ----------
22. Please indicate your response regarding strengths of commercialization of extension services using following scale.

Scale: 1=Strongly disagree, 2=Disagree, 3=Somewhat agree, 4=Agree, 5=Strongly agree

Commercialization would	**1**	**2**	**3**	**4**	**5**
encourage competition among extension service providers					
make agricultural information delivery to become more effective					
increase priority areas of extension coverage					
make easy availability of extension services for every farmer					
enhance farmers' knowledge base					
improve farmers' management skills					
make extension services to be directed at specific needs of the people					
provide opportunity for neglected areas of agricultural production to be attended to					
help reduce Govt. financial burden on agriculture					
break the monopoly of public extension service					
make it possible for more farmers to be reached					
improve linkage between research and extension					
provide job opportunities to a large number of agri. Graduates					
make easy accessibility for each farmer					
lead to higher farm output					
ultimately lead to higher income					
increase overall effectiveness of agri. extension services					
increase the quality of services by encouraging competition between service providers					
have higher credibility of the information					
provide an opportunity to the farmers to get information according to their choice					
have highly qualified staff as compared to government extension workers					

23. Please indicate your response regarding weaknesses of commercialization of extension services using following scale.

Scale: 1=Strongly disagree, 2=Disagree, 3=Somewhat agree, 4=Agree, 5=Strongly agree

Weaknesses of commercialization	**1**	**2**	**3**	**4**	**5**
Commercialization would lead to job insecurity among public extension workers					
Commercialization would make agricultural extension services unaffordable by farmers					
Commercialization would promote corruption and nepotism					
Commercialization would encourage exploitation of farmers					
Commercialization would encourage income inequality					
Commercialization would lead to poor capacity building					
Commercialization would encourage foreign domination in the provision of extension services					
Commercialization would increase the regional imbalance					
Commercialization would create hindrance to group extension service					
Farmers may have a doubt on sustaining of the commercialization					
Commercialized extension service will pay attention only to increase the production without considering other factors such as environmental, social etc.					
Farmer may lose their independency of decision marking due to commercialized extension services					
Commercialization would enhance financial burden on farmers					
Commercialization would be more business oriented less serving					
Any other (please specify)					

24. How do you perceive the following statements regarding acceptability of the commercialization of agricultural extension services? Please indicate your level of satisfaction against each statement.

Scale: 1=Strongly disagree, 2=Disagree, 3=Somewhat agree, 4=Agree, 5=Strongly agree

Statements regarding acceptability of the commercialization	**Yes**	**No**	**Level of satisfaction**				
			1	**2**	**3**	**4**	**5**
Commercialization would only be acceptable when these services are cost effective							
Commercialization would be more acceptable if these services are timely available							
Easy accessibility of information would enhance more acceptability							
Need oriented services would be more acceptable to the farmers							
Commercialization should be backed by control authorities							
Commercialization would be more acceptable if these services are affordable for each farmer							
Commercialization would be more acceptable if these services are compatible to the farmers							
Focus on small and medium farmers							
Authenticity of commercialized extension services would encourage more acceptability							
Commercialization would provide an opportunity to neglected areas of agri. production to be addressed							
Commercialization would develop professionalism among extension workers							
Any other (please specify)							

25. How would you rate the following constraints that might be occurred in the way of commercialization of agricultural extension services using scale given below?

Scale: 1=Strongly disagree, 2=Disagree, 3=Somewhat agree, 4=Agree, 5=Strongly agree X=Not applicable

Potential constraints	**1**	**2**	**3**	**4**	**5**	**X**
Lack of farmer' interest in extension programs						
Tendency to focus more attention towards large-scale farmers thereby neglecting the medium and small farmers						
Farmer' poor economic background						
Lack of better marketing facilities to sell increased farm outputs resulting from improved extension services						
Huge reluctance on the part of farmers to pay for extension services						
Administrative and bureaucratic issues in policy implementation						
Political instability						
Difficulty in attaching monetary value to extension services						

High level of subsistence farming						
Unequal access to resources						
Unfavourable Govt. policies towards commercialization of extension services						
Irresponsiveness of extension services provider to clients' needs						
Poor linkages between research and extension						
Inadequate Govt. legislation to backup commercialization program						
Inadequate Govt. guarantees, regulations and control over extension service providers for overcharging and abuses						
Corruption and nepotism among extension staff						
Fear of exploitation by extension service providers						
Poor capacity building of extension staff						
High risk and uncertainty about extension personnel						
Fear of job insecurity among extension staff						
Insufficiently trained extension personnel						
Any other (please specify)						

26. How do you perceive the following statements regarding non-acceptability of the commercialization of agricultural extension services? Please indicate your level of satisfaction against each statement.

Scale: 1=Strongly disagree, 2=Disagree, 3=Somewhat agree, 4=Agree, 5=Strongly agree X=Not applicable

Potential constraints	**1**	**2**	**3**	**4**	**5**	**X**
1. Structure						
2. Policy						
3. Governance						
4. Legal						