Public –Private policy Change and its Influence on the Linkage of Agricultural Research, Extension and Farmers in Iran

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Keywords: Agricultural Research, Extension, Participation, privatization, Farmers, Iran

Abstract:

The collaboration of agricultural research, extension and farmers is essential for an effective agricultural innovation system. This paper is to show the linkage of Iranian agricultural research centres with extension and farmers using three case studies in 1999, 2005 and 2010. The data were collected through a document analysis, structured and unstructured interviews and observations. The 1999 and 2005's cases was conducted in the context of public extension system. In this period, both extension services and research centres were public and were under one organization or separate organizations managed by the Ministry of Agriculture. Some mechanisms were defined for linking extension to research, for example providing incentives to researchers to define their research based on farmers' needs, joint publications, joint on-farm research and joint meetings. Despite these regulations, due to poor management, most researchers had a disciplinary orientation and had a poor relationship with farmers and extensionists. They tended to have a negative attitude towards farmer-oriented participatory research approaches. In the mid 2000s, government ratified a legislation to privatize extension system, especially based on a contractual agricultural extension service delivery. The 2010's case revealed that agricultural researchers had little connection with private agricultural service companies, who were in charge of agricultural innovation delivery. No mechanism has been defined for linking research centres to the private sector. The researchers have been encouraged to focus on the research problems which were mostly based on academic incentives such as international and national academic journal publications rather than farmers' needs. The privatization has led to a poorer linkage of research with extension systems and farmers.

1. Introduction

The collaboration of agricultural research, extension and farmers is essential for an effective agricultural innovation system. However, a crucial issue is that how to establish linkages and participations. This paper is to show the linkage of Iranian agricultural research centres with extension and farmers using three case studies, conducted in 1999, 2005 and 2010. These three case studies reflect this linkage in the context of three main intervention policies in agricultural innovation systems.

1.1 Agricultural innovation and knowledge systems

The dominant approach in agricultural research and extension by the 1960s was the Transfer of Technology (TOT) model derived from the Research, Development and Deliver (RD&D) mode, which was based on the innovation diffusion theory emerged through a reductionist-objectivist

paradigm in the 1940s-1960s (Everett M. Rogers, 1962, 1983; E.M. Rogers & Shoemaker, 1971; Stephenson, 2003).The RD&D was started from developed countries with this assumption that traditional knowledge is not enough and for the on-going provision of updated information, it is necessary to organize special systems to develop and diffuse the research results. The RD&D model or system includes four essential elements (Lionberger & Gwin, 1991): 1) Sequences from theory to action, 2) Operations, 3) Subsystems, and 4) System philosophy. The subsystems include pure and applied scientists that they research and develop innovations; extensionists for dissemination and diffusion of innovations; and farmers that besides the use of information they participate in local adaptation and have control in selecting extension agents and programmes. Although the RD&D system could make an effective relationship among research, extension and farmers, it was mostly close to hard systems thinking and was effective to certain situations.

The thought of RD&D mostly through separate institutions was introduced to most of the developing countries after the Second World War by international organizations and the United State to establish extension organizations and national research institutions (B.E. Swanson, 1986). In some European colonies, European countries introduced research or extension. However, the structure and function of the new agricultural knowledge and information environment could not be the same as the RD&D or other approaches in Europe. This new model called TOT was seen in different level of development as Chambers (1997) names it the traditional and domain paradigm of development in developing countries.

These models have tried to find principles and rules to explain innovation diffusion and its obstacles. Moreover, innovation have been assumed as the reality imported from outside and social change is seen as the result of the adoption of external innovation through a linear path of innovation from more educated outsiders to less educated insiders (farmers as users of technologies).

At the level of rural area and agriculture, the assumption was on a linear path of innovations from researchers as inventors or re-inventors to extensionists as transfer agents and finally to the end of the chain, farmers as the users of technology. Evidence shows that in some cases, this linear linkage between research and extension and between farmers and extension has been very weak in practice. So many recommendations have been suggested about how to improve this linkage as systematically or not systematically (Arnon, 1989; Betru, 1996; Jurlano & Brien, 1996; KaramiDehkordi, 1999, 2001; Rivera & Rasheed Sulaiman, 2008; Röling, 1988; B. E. Swanson, 1997). The structure of research in these countries has followed a disciplinary or commodity research that their results could not be appropriate for the needs of small farmers (Farrington, 2000).

The TOT and RD&D models have been criticized in terms of their assumptions, methodologies, and results (Azkia, 1994; Robert Chambers, 1983). Furthermore, farmers' indigenous knowledge as a rich source of innovation has been neglected. The Farming Systems Research and Extension studies and participatory research have also verified the non-linear path of innovation, the contribution of farmers in technology development, and their roles in constructing knowledge (Stephen Biggs, 1989; Stephen Biggs & Farrington, 1991; Farrington, 1997; Sutherland, Martin, & Salmon, 1998). Moreover, the studies have shown that farmers may behave variously in terms of many factors when they face different technologies. Therefore, we cannot easily classify farmers in terms of a reductionist paradigm and only some psychological characteristics of technology adoption fit in an invariable classification and curve.

Studies with holistic-objectivist view were developed during the 1970s and 1980s. In these studies knowledge is assumed as a commodity and knowledge flow bridges interfaces between professional communities and/or organizations. These studies still assumed that innovation is an outside commodity, so local knowledge or the role of local stakeholders in construction of knowledge is overlooked. Some of the studies on linkage or participation of extension, research and farmers have been based on this hard systems perspective (Arnon, 1989; Contado, 1985; Kaimowitz, 1990; Mclaren & Jones, 1993; Widjono, 1995; Zinna, 1995). Some of the studies use econometrics for measuring the effectiveness of research and extension activities (Evenson, 1997).

In the late 1980s and in the 1990s, an orientation toward using soft systems thinking in knowledge systems methodologies emerged. Using different methodologies, these studies have mostly focused on the local level. The main question is how to manage innovation and change in complex and multi-actor environments with the assumption that innovation or knowledge is constructed socially and among different stakeholders (Engel, 1997; Engel & Salomon, 2002; Röling & Wagemakers, 1998).

I have classified the studies with soft systems orientation into two main categories, even though they overlap in some aspects. They are based on two subjects: 1) understanding existing systems or innovation organization, and 2) the attempts for transforming current situation. The first type is related to diagnostic studies of knowledge systems in agriculture and NRM; the organization among actors; knowledge exchange; and the kind of knowledge. The second category involves studies on improving knowledge systems through an action-oriented inquiry.

1.2 Privatization and knowledge systems

The 1990s is viewed as the neo-liberal decade in development (Elliott, 2006). This new thought also affected rural development and agricultural innovation and knowledge systems as well. The economic adjustment and the shortage of international funds to public institutions had a significant influence on agricultural research and extension institutions. The privatization of agricultural extension services was the consequence of this policy supported by international and national organizations. It was assumed that the privatization can improve the function and structure of agricultural innovation systems, especially the research-extension linkage and providing information to rural communities.

The idea and design of agricultural extension systems mostly concentrated on the transfer of non-proprietary innovations to farmers. It has been privatized in some developed countries such as the UK, New Zealand and the Netherlands. There is a also a clear tendency in other industrialized countries to withdraw from extension services and to move toward a pluralistic and demand-driven services market, in which an increasing number of private extension agencies act. This model has been introduced to developing countries as well, facing obstacles at every turn (Davidson & Ahmad, 2002; Hoffmann, Gerster-Bentaya, Christinck, & Lemma, 2009; Rivera & Cary, 1997; Rivera & Rasheed Sulaiman, 2008).

Public agricultural extension systems in developing countries are also changing due to innovative reforms such as structural changes to move toward the privatization and decentralization of extension services; changes in the mode of funding (cost recovery); and organizational and management changes, particularly improving linkages with research and use of information technology. In the privatization process, there is a trend toward the withdrawal of funds and delivery by government. Moreover, different types of privatization have occurred in different countries. The authority is decentralized to lover levels of government, and delegated to private

companies, NGOs, Farmer organizations, municipalities and other grass-roots control (Rivera & Cary, 1997; Rivera & Rasheed Sulaiman, 2008). In addition, instituting cost recovery for extension services has also been another factor affecting governments to involve private sector in extension systems. This knowledge commodification can mostly help states reduce their public funds, though it has been assumed that accountability of services provided by private extension to farmers is increased when they pay for services partially or totally (Davidson & Ahmad, 2002; Kidd, Lamers, Ficarelli, & Hoffmann, 2000; Knickel, Brunori, Rand, & Proost, 2009).

The privatization has also led to the appearance of demand-driven pluralistic agricultural extension systems with different types of private advisors in the context of a knowledge market (Klerkx & Jansen, 2010; Leeuwis, 2000). Privatized and private extension-type service companies have mostly focused on agricultural production. A number of studies or arguments have emphasized the issue of privatization of agricultural extension and advisory services, which has had different impacts on agricultural innovation effectiveness. For example, in the context of the Dutch agricultural knowledge network, Leeuwis (2000) argues that market-oriented knowledge policies in agriculture, such as privatisation of research and extension institutions poses a number of threats to the joint learning processes of constructing new innovations. Klerkx & Jansen (2010) also raised the concern of neglegence of environmental and food security issues by these privatised systems. Some studies have also urged the marginalization of poor resource farmers in this approach, in which information delivary is baised toward the rich resource farmers. According to Rivera & Rasheed Sulaiman (2008), efforts to privatize extension have not been very successful in developing countries, such as Uganda, Bolivia and Peru. Feder, Birner, & Anderson (2011) argue that the private-sector involvement has overcome some of the deficiencies of public extension systems; however, it has faced challenges such as misuse of public funds, insufficient accountability to farmers, inequitable provision of service, inadequate quality, and limited coverage of the wide range of farmers' needs. They suggest that multivariate extension providers, including both public and private sector, are required rather than a uniform extension system. For responding the information needs of a wide range of farmers, especially smaller-scale and less commercial farmers, public providers and funding are crucial. In European countries, the trend of comercialization and privatization of advisory services has also had shortages in some aspects. Labarthe (2009) has historically analysed the advisory services in France and the Netherlands since 1945 and concluded that the privatisation of extension services cannot meet the requirements of support for farm innovations in the multifunctionality of agriculture context, in which new knowledge is produced to integrate different functions at farm level such as primary production, environmental protection, and food safety. Charatsari, Papadaki-Klavdianou, & Michailidis (2011) also showed that half of the farmers in northern Greece are reluctant to pay for agricultural education programs, which is related to their expected benefits from attending these programs.

Few studies have focused on the impact of the privatization on agricultural innovation systems in terms of research-extension- farmers linkages. Gerpacio (2003) has reviewed this issue in Asia concentrating on maize breeding research and extension . Yield gains increase in Asia has been reported because of the shift in maize cultivation from mostly open-pollinated varieties (OPVs) to mostly hybrids. This is related to the shift of modern maize breeding research from public research organizations to private national and multinational seed companies. The private seed companies were in charge of developing, commercializing, selling and promoting their own proprietary hybrids. However, these companies were willingless to address the needs of marginal maize farmers. This study also suggested the continuation of public sector role and policy support in maize innovation development including the R&D, seed production, and extension. We still

need to know much about the impact of privatization in agricultural innovation systems. This study focuses on Iran's experience based on three case studies conducted by author in this concern. 2.

2. Case studies

2.1 Case one

Methods

The first case study was conducted in four agricultural research centres of Iran including the agricultural research centers of Charmahal and Bakhtiari, Isfahan, Safiabad and Khuzestan with a randomly selected sample of 110 agricultural researchers in 1998-99. The purpose was to measure the researchers' participation with extension workers and farmers. The data were collected through a document analysis and a structured interview using a self-completion questionnaire survey with a sample of 125 out of 180 researchers.

Discussion

In this period, both extension services and research centres were public and were under one organization managed by the Agricultural Research, Education and Extension Organization (AREEO) in the Ministry of Agriculture. The AREEO was established at central and provincial levels in 1992 to help the relationship of research and extension. The Agricultural Research Council at the provincial level was changed to the AREEO Council and a representative from extension participated in these Councils. In certain instances, committees, colloquiums and joint meetings between researchers and extension workers were organized (KaramiDehkordi, 1999). The AREEO recommended that agricultural researchers collaborate with extension workers in problem identification groups, research-extension and regional projects, preparation of extension publications, and offering educational activities to extension workers.

The results showed that almost %50 of the respondents had participated in activities consisting of research-extension on-farm projects; agricultural research committees; teaching in training courses and extension activities in neighbouring provinces; and joint workshops between research and extension. Moreover, approximately one half of the respondents had participated in visits to farmers' lands, and the AREEO Research Council meetings and their projects in research stations had been visited by extension workers. Less than half of the respondents had also participated in activities related to regional projects, preparation of extension publications and training extension workers. Investigating the degree of linkage and cooperation shows that the respondents had to a very small extent participated in on-farm projects. The views of extension workers in preparing/designing and implementing on-farm research-extension projects had been taken into consideration to a small extent. The respondents also expressed the view that extension workers had visited the research centres very occasionally, as had the researchers visited farmer's fields very infrequently. There were few opportunities for the training of extension workers by the respondents; joint preparation of technical and extension publications; joint committees and meetings with extension workers; and participation in the AREEO meetings. The respondents reported that extension workers had a very small influence on the respondents' research ideas and priorities. In total, the degree of cooperation and collaboration (experience) of respondents with extension workers was at a low level.

Therefore, despite the AREEO efforts for linking research and extension, communication between researchers and extension workers remained weak. The results showed that the researchers' attitudes towards collaboration with the extension workers and farmers were generally positive. However, actual collaboration between researchers and the extension workers and farmers was

at a low level. The gap between their attitude and their participatory behaviour/ actions was recognized to be not only because of normal professionalism, but poor knowledge management. This study supported the relevant studies in Iran (Karami & Najafi, 1996; Monitoring and Evaluation Office, 1997; Yaghobinejad, 1990) and other developing countries which emphasized that the linkage between agricultural research and extension institutions and different categories of farmers is so week.

This was distinguished as one of the most important institutional constraints of agricultural information systems with which the Ministry of Agriculture of most of the so-called developing countries are faced (Kaimowitz, 1990; B. E. Swanson, 1997). Researchers such as Kaimowitz (1990), Asopa and Beye (1997), Arnon (1989), Contado (1998), McLaren and Jons (1993) reported many cases of communication obstacles between research and extension. Examples include poor generation of the necessary information, institutional and organizational restrictions, human and cultural barriers (such as attitudes, education, social values); mismanagement, inappropriate reward system, lack of systems approach to program planning, and inappropriate allocation of resources (human and non-human).

2.2 Case two

Method

The second case study was conducted in 2005 in the Chaharmahal and Bakhtiari Province focusing the interaction or linkage of several social actors important to agricultural knowledge and information systems. The study utilized a document analysis, focus groups and semi-structured interviews. A self- completion questionnaire survey was also employed with a sample of 100 researchers and specialists in that province.

Discussion

A common strategy for creating a linkage between the research and extension system is integration which is the functional or structural linkage of research and extension organizations, institutions or departments. While integration of organizations and institutions is essential, it cannot by itself resolve all issues that affect linkage between research and extension (Arnon, 1989). In this regard, researchers such as Asopa and Beye (1997), Swanson (1997), Arnon (1989), have proposed the following practical solutions in addition to the integration of organizations and institutions: A) Joint planning and management of research and extension; B) Joint units; C) Contact and coordinating personnel; D) Joint projects, such as meetings, visits, field days, preparation and production of joint materials and publications, training of extension staff by researchers and vice versa, on-farm research programs and Farming Systems Research and Extension.

The result of the first case study had some implications on the policies related to research-extension linkage. In 1999, the AREEO ratified or reformed some strategies for improving public extension and research linkages as follows:

The attendance of extension representatives in the AREEO Council and joint meetings at national and provincial levels;

Participation of extension workers as co-researchers in disciplinary or on-farm research projects called the Research-Extension Plans; and

Collaboration of agricultural researchers with extension workers in diagnosing problems at farm level, preparing extension publications and providing training courses and presenting research findings (known as the Finding Transfer Week) to extension workers.

In 2002, the Ministry of Jihad-e-Agriculture1 (MOJA) emerged from merging the Ministry of Agriculture and the Ministry of Jahad Sazandeghi (MOJS). Following the establishment of the MOJA, the Extension Organisation of the two ministries merged to the Extension and Farming Systems Deputy (EFSD) out of the AREEO. Moreover, the national and provincial research institutes and centres of the two ministries were also merged to the Agricultural Research and Education Organization (Karamidehkordi, 2007).

Extension could get a better position at national and provincial levels. Mass media programmes were also improved and some input delivery activities were given to the rural cooperatives or private sector. However, the linkage of extension and research was questionable. Both research and extension staff in former MOJS had limited experience about the linkage mechanisms before merging with research and extension in the AREEO. Since 2000, researchers in the divisions of Horticulture, Agronomy, Plant Pathology and Pest Protection and Soil and Water, along with some EFSD staff, were the only actors who had designed and implemented on-farm research. However, their projects were rarely conducted in agricultural areas with diversified, complex and uncertain conditions. For example, no research- extension on-farm project had been implemented in the Kohrang Township.

The linkage strategies had also provided a few opportunities for other actors to exchange information. For example, in addition to some extension workers, some staff from the Natural Research Administration and the Horticulture Directorate had participated in one or two research projects in the past five years. Some other actors had attended in research-extension joint meetings and “Research Finding Transfer Week” as audience or organisers. However, some actors had little or no opportunity to attend these events, especially the public staff worked at township, county or local levels.

Different actors reported participating in a few courses as trainees, especially in social subjects related to development and extension. A few researchers or extension workers had taught in courses designed for extension staff or researchers respectively, though in-service training courses had created an information exchange environment for some specialists from the extension service and other public agricultural organizations.

Producing extension publications for farmers was one of the duties of the extension (some of its staff had also acted as the authors of some publications). Some other actors of agricultural research centres and other public agricultural organizations had also produced some few printed materials, but a small percentage of them had joint publications with the extension staff. The Researchers reported no joint publications with extension staff. Although these relations had led to information exchange to some extent, their frequency was low. Moreover, researchers and specialists outside the extension organization had more technical roles, while the extension staff acted mostly as organizers.

According to researchers and extension workers’ focus groups, they had still weak functional relations, especially in their programmes. Researchers accused extension workers of being less

[1] Other translations are the Ministry of Jihad-e- Keshavarzi, or Ministry of Jihad-e- Agriculture, or Ministry of Agricultural Jihad

professional, while extension workers believed researchers felt superior and their projects were less suitable for real on-farm situations. The incentive system for non-researchers, especially extension workers, was weaker than that for researchers, which had caused decreased job satisfaction. Poor management was a main reason for weak relations. This means effective linkage mechanisms, functions and incentives have not defined for inter and intra-organizational relationships. Farmers had also very weak relationship with agricultural researchers.

2.3 Case three

Method

The third case study was conducted in 2010 in the Zanjan Province focusing the linkage of agricultural researchers with public and private extension workers. The study utilized four focus groups and 20 semi-structured interviews with both agricultural researchers and extension workers.

Discussion

In the mid 2000s, government ratified a legislation to privatize extension system, especially based on a contractual agricultural extension service delivery. In addition to almost 4000 public extension workers at different levels, about 2300 Agricultural Technical and Engineering Private Service Companies with 20100 members worked in 31 provinces located at the Dehestan level. One of the main jobs of these private companies was related to extension services. They were supported by the Ministry of Jihad-e-Agriculture through a contractual approach.

According to the researchers, this linkage with private extension is too weak and with public extension workers is different in terms of the subject of research. The natural resources researchers maintained that there are weak connections due to lack of trust and mutual understanding; and the nature of natural resource management. They believed that the extension organization is less serious and active in the subject of natural resources than in production. Other reason of this weakness was related to the time-consuming process of the natural resources research projects. Lack of sustainability of some mechanisms of research-extension linkage was viewed as important factor, for example in 2003 a project called “livestock-rangelands balance” was started in Iran, which provided a platform of negotiations among different agricultural social actors, but it was stopped in 2006. They also mentioned that the organizational position of extension system in the ministry has been weakened and its personnel are not adequate and enough qualified.

The researchers of research department mentioned the findings transfer weeks, farm days, and the research-extension on-farm projects, in which both researchers and extensionists must co-work. The researchers also reported that they produced some posters and publications for farmers based on their research results. However, they believed that the extension organization has a shortage of professionals. This may cause that the researchers make connections with the specialists outside the extension organization, for example the livestock affairs department, horticulture department or the plant protection department. Moreover, the extension system is overlooked by the ministry; this has led to lack of demand from the extension organization to the research centres. The researchers also believed that they have little incentives for their promotion to do extension related activities or participate in linkage mechanisms.

On the other hands, although the extensionists confirmed their shortage of professionals in public extension and the negligence of extension system by the ministry, they maintained that there is no practical linkage between extension and research. One the extension workers said “this lack of

linkage is so weak that we have got used to it and the researchers' activities is not seen as important to us." Moreover, the research subjects are viewed not much relevant to the farmers' needs and priorities. The research-extension on farm projects are limited only to paper work rather than in practice. Only has been the name of the researchers in this projects and they have not seen these projects so serious. In optimistic situations, every one has worked separately rather than as a mutual work. This led to unclear results and implication to farming communities. The extensionists maintained that the researchers mostly sought a one-way communication: demand from extension to research and response from research to extension. This is because of mismanagement, inappropriate evaluative criteria for promoting researchers and their sense of superiority, viewing themselves at a higher position than others; consequently leading to weak relations and lack of accountability to local level extension workers and farmers' needs.

The case study with the staff of three private companies revealed that agricultural researchers had little connection with private agricultural service companies. No mechanism has also been defined for linking research centres to the private sector; therefore, any linkages is only based on informal relations or based on occasional training courses.

3. Conclusion

The 1999 and 2005's cases showed that both extension services and research centres were public and were managed under one organization or separate organizations managed by the Ministry of Agriculture. Some mechanisms were defined for linking extension to research, for example providing incentives to researchers to define their research based on farmers' needs, joint publications, joint on-farm research and joint meetings. Despite these regulations, due to poor management, most researchers had a disciplinary orientation and had a poor relationship with farmers and extensionists. They tended to have a negative attitude towards farmer-oriented participatory research approaches. However, there was the intention or concern in the state to link extension and research. In the mid 2000s, government ratified a legislation to privatize extension system, especially based on a contractual agricultural extension service delivery. It seems privatization has mostly focused on cost recovery rather than decentralization of activities. this is similar to the cost recovery type of "policy-supported private extension", explained by (Hanson & Just, 2001), in which extension provided by private firms is made viable by government requirements and supports through subsidies or tax reductions on specific production practices.

The 2010's case revealed that agricultural researchers had little connection with private agricultural service companies, who were in charge of agricultural innovation delivery at grass root level. There was no private sector research centre to support technically these private agents. Moreover, no specific mechanism has been defined for linking public research centres to the private sector. The public sector researchers have been encouraged to focus on the research problems which were mostly based on academic incentives such as international and national academic journal publications rather than extension and farmers' needs. Therefore, the privatization has led to a poorer linkage of research with extension systems and farmers. The shift from public to private extension services has not paid enough attention to their linkage to research. There is a need to define new mechanisms to link the research not only to farmers and the public extension, but to the private extension service providers or rural advisors. Some of the mechanisms experienced before may still help rehabilitating the linkages of extension, research and farmers, for example systemic activities through joint participatory platforms, trainings, workshops, on-farm research and diagnostic activities. As discussed in the literature by many scholars and researchers, a pluralistic approach can work much more successfully than

privatized approach in order to cover a wide range of agricultural activities and different farmers in a sustainable perspective.

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