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THE DETERMINANTS OF PRIVATE SECTOR'S ROLE IN PROMOTING AGRICULTURAL KNOWLEDGE AND INFORMATION SYSTEM IN DAKHLIA GOVERNORATE, EGYPT

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ABSTRACT

The growing complexity of the private sector in agricultural extension services provision has stimulated the debate on which determinants hamper its role in promotion of agricultural knowledge and information system. The aim of this paper was to analyze the coordination and cooperation relationships between the private sector and other actors in Dakhlia governorate along with the constraints faced by the private sector. Data were collected from fifty three board members of different agricultural companies who had attained the workshop at Mansoura University. The results showed no strong relationship between the private sector and the other actors. Moreover, financial and technical issues are the main constraints faced by the private sector. This study recommends a legal framework to realize cooperation and coordination in order to ensure synergy and integration among the actors.

Key words: Private sector, Determinants, Agricultural extension, Knowledge, System, Egypt.

INTRODUCTION

Agricultural extension is an essential pillar for agricultural development (Qamar, 2005). Agricultural extension services aim at increasing the productivity of farming business as a whole by assisting, guiding and directing farmers to identify both farming and non-farming activities which can increase their net income. (Mahaliyanaarachchi and Bandara, 2006).

The current trends towards commercialization of public services, demand-driven processes, the search for locally adapted solutions, and the changing nature of agricultural information have resulted to the emergence led to the new global ideology which significantly shapes the present developments in extension nowadays. Both the public sector's extension institutions and the private sector's technology transfer activities are affected (Rivera *et al*., 2005).

A recurrent feature of agricultural extension policy debates in recent years has been the proposition that private extension services could and should play a greater role in service provision (Sulaiman *et al*. 2005). Driving these debates has been the recognition that public extension services in many developing countries have encountered serious operational and financial problems (Alex *et al.*, 2002; Feder *et al.*, 2011; Rivera *et al.*, 2001). This has led many governments to seek ways for support private extension services to achieve competition and reduction in public funding (efficiency), a choice of service providers (flexibility), and provision of transparent criteria (accountability). (Adebayo,2004)

A large number of private agencies provide advisory and other support service to the farmers engaged in agriculture and allied sectors. These include input agencies, producer cooperatives, agro-processing companies, agri-marketing firms, agribusiness houses and financial institutions. (Sulaiman, 2003)

As pointed out by Alex *et al*. (2002), many analysts have reflected that private extension is clearly not a substitute for public extension and it is likely that there will be a need for significant public funding for extension in the years to come. Institutional pluralism is an advantage to most countries for various reasons (Qamar, 2000). In Egypt, various private input supplying companies, non-governmental organizations, semi-governmental organizations deliver extension services in parallel with the public sector extension services.

A strong private sector can assume responsibilities previously shouldered by government, serve as an alternative source of information and deliver agricultural inputs (UKAID, 2014). Di Bella *et al.* (2013) have attempted to provide greater clarity to the meaning of private sector engagements for development by aggregating and simplifying the different types of activities into six key modalities of engagement as follows: policy dialogue, knowledge sharing, technical cooperation, capacity development, grants/ donations and finance. In this context, public–private partnerships are very important to enhance private sector involvement in the delivery of information services and improve the quality of the services provided. Such governmental coordination can improve the overall efficiency and

effectiveness of pluralistic Agricultural Knowledge and Information System (AKIS) services.

However, the question remains with respect to the kind of opportunities that have been presented to the private sector and the constraints hampering these private enterprises in the agricultural value chain. This study aimed at improving our understanding about the mechanisms needed to have better coordination and integration that could engage the different partners to gain better outcomes. The present study was executed to assess the determinants of the private sector's role in enhancing the agricultural knowledge and information system in Dakhalia governorate of Egypt.

MATERIALS AND METHODS

The current study was carried out in Dakhalia governorate in North-East Egypt. The population of the study consisted of 317 registered agricultural companies at the chamber of commerce of the governorate. The board member of each company was invited to participate in the workshop, organized in December 2014, at Faculty of Agriculture, Mansoura University. Only 53 representatives attained the workshop approximately 16.7% of the universe. To obtain the data on determinants of the private's sector role in promoting AKIS, a questionnaire was developed, with the help of available literature and discussion with scientific committee at my department, keeping in view the objectives of the study. Thirty constraints were identified and determined as indicators to judge their impact on the role of private sector in agricultural sector. Moreover, thirteen principles were suggested to measure the importance of coordination and integration among different actors of AKIS. Likert-type scales were used to measure the response. The reliability coefficient (Cronbach alpha) of research instrument was measured 0.92. Descriptive statistics such as frequency distribution, percentages, mean, standard deviation and coefficient of variability (CV) were calculated and used to describe the data and present the results.

RESULTS AND DISCUSSION

1-Profile of the private sector: Table 1 indicates that the board members of the private sector reported that they provide different agricultural services which include: pesticide production (24.5%), seeds production (18.8%), fertilizers (13.2%), agricultural equipments (11.3%), marketing (9.4%), and input supplies (22.6 %). The type of advisory services provided by the respondents are presented in Table 1. The board members of the private sector mentioned that they made provision for advisory services to the farmers and other stakeholders through pesticide production i.e., identify diseases, sell bio-pesticides, pesticides analysis, weed control, and pests control. In the case of seeds production, the respondents mentioned that they made provision for seeds / tolerant varieties, seedbed preparation, seed treatment, contracting, sowing time and methods, and spacing and seed rate. Similarly, different advisory services were provided by companies dealing in the fertilizers, agricultural machinery, marketing and input suppliers. In general, the findings as presented in Table 1 show the fact that the private sector mainly involved in the business of agricultural services rather than extension services. That is why the board member reported the sale of their products in the majority of the services provided.

The majority of the respondents (66.03%) depended on personal interviews with clients by the representatives from the company to determine their needs, followed by meeting with input suppliers (33.96%), and conducting market research (26.4%).

2. Current relationship between the private sector and other actors: The institutional linkages analysis shows that development cooperation actors are engaging the private sector across different relationships to varying degrees (Table 2).

More than half of the respondents mentioned that relations between private sector with education, research and civil society were weak; while, they reported medium relations with extension, farmers and credit organizations. Private sector engaged mostly through coordination mechanisms with extension (collaborative and coercive), farmers (collaborative), education (collaborative), research (coercive), civil society (collaborative), and donor organizations (collaborative); whereas, co-operation mechanisms were mostly prevailing with credit, donor organizations and other private sector. Moreover, the different private sector companies were in competition with each other in terms of their relations.

Overall, the findings show that across all development cooperation actors there is a low level of strong engagement with the private sector in knowledge sharing, capacity development, and technical cooperation; while financial resources are the main key to advancing developmental goals and programs, strategic efforts to strengthen the relationship between the credit organizations and private sector.

Table 1. Field of service and type of advisory services delivered to clients as reported by the private sector's representatives

No.	Main field	No.	%	Type of advisory services	Frequency	%
1	Pesticides production	13	24.5	Identify disease problems	9	69.2
				Sell Bio-pesticides	4	30.7
				Pesticides analysis	3	23.1
				Weed control	4	30.7
				Pests control	11	84.6
2	Seeds production	10	18.8	Sell seeds / tolerant varieties	9	100
				Seedbed preparation	4	44.4
				Seed treatment	4	44.4
				Contracting	5	55.5
				Sowing time and methods	3	33.3
				Spacing and seed rate	3	33.3
3	Fertilizers	7	13.2	Sell chemical fertilizers	5	71.4
				Sell foliar fertilizers	3	42.8
				Utilization of agricultural residues and wastes	2	28.5
				Analysis of soil and water	3	42.8
4	Agricultural equipments	6	11.3	Sell agric. machinery	5	83.3
				Sell irrigation equipments	2	33.3
				Sell light and pheromone traps	4	66.6
				Sell seeds packaging equipments	1	16.6
5	Marketing	5	9.4	Post-harvest handling assistance	3	50
				Maintenance	3	50
				Marketing information	3	60
				Facilitating exporting	2	40
6	Input supplies	12	22.6	Sell seeds	4	33.3
				Sell pesticides	7	58.3
				Sell fertilizers	8	66.6
				Sell manures	3	25
	Total	53	100			

Table (2). Strength and types of relationships between the private sectors and other actors as reported by the private sector's representatives

Actors	Strength of relationship (%)				Type of relationship/ Indicators
	Non	W	M	S	
Private sector- Extension and other governmental organizations	-	45.28	54.72	-	**Coordination (Collaborative)** - Sharing information. - Joint meetings, newsletters. -Networking. **Coordination (Coercive)** - Enforced zoning of activities. -Control on functioning.
Private sector- Farmers	-	-	100	-	**Coordination (Collaborative)** - Sharing information. -Problem diagnosis - Tech diffusion/demonstration. - Training
Private sector- Credit	-	16.98	54.72	28.3	**Co-operation** - Partnerships. - Joint planning and action.
Private sector- Education	11.33	66.03	22.64	-	**Coordination (Collaborative)** - Sharing information. - Joint meetings, newsletters.
Private sector- Research	18.87	62.26	18.87	-	**Coordination (Coercive)**

					- Quality control and regulation.
Private sector- Civil society (NGOs- farmers' co-operatives, …etc.	9.43	56.6	33.97	-	**Coordination (Collaborative)** - Sharing information. -Joint meetings, newsletters. - Networking. - Agreed zoning of activities.
Private sector- Donor organizations	64.15	26.42	9.43	-	**Co-operation** - Partnerships. **Coordination (Collaborative)** - Sharing information.
Private sector- Other private sector (Agricultural companies)	-	49.05	39.63	11.32	**Competition** -Same resources, users. -Parallel systems and replication of activities. -Conflict interest between different stakeholders. -Little references to other service providers. **Co-operation** - Joint planning and action. - Sharing resources (finances, vehicles.. etc.)

W (weak), M (medium), S (Strong)

3. Constraints faced by the private sector in playing its role in agricultural development and investment: The price fluctuation of agricultural products had a coefficient of variability (CV) of 21.07 that was ranked first among the financial and investment constraints. (Table 3).

Instability of agricultural policies and pricing gained CV= 17.37 and placed at first priority setting of the legislative constraints; while competitiveness with governmental agencies in provision agricultural services gained CV=44.45 as the last priority setting (Table 4).

The findings as presented in Table 5 indicated that private sector's representatives reflect that their companies face organizational and managerial constraints with other actors of agricultural knowledge system. The weakness of coordination and integration among the actors involved in agricultural knowledge system gained CV=20.12 and was set as the first priority in the settings. Governmental intervention in allocating products and management input supplies market gained the last priority (CV= 49.61)

The average level of technical and knowledge constraints ranged from a maximum of 3.46 for weak demand on agricultural knowledge and innovations and minimum of 2.85 for limited highly qualified experts to modernize the role of the agricultural private sector (Table 6).

The ethical, occupational and social constraints were at medium level. Commercial fraud from some brokers and input suppliers set as the first priority (CV=19.94). Moreover, high percentage of unlicensed and non-experienced companies gained the last priority with CV= 34.3 (Table 7).

Different levels of constraints facing private sector were classified according to priority setting by the board members of the companies are presented in Table 8 as follows: Financial and investment constraints, technical and knowledge constraints, ethical, occupational and social constraints, organizational and managerial constraints, legislative and legality constraints. In addition, the average rank of the all constraints faced by the respondents on different levels was above medium (3.05 out of 5) which shows multiple problems in achieving synergy and integration among actors of AKIS.

4. Coordination and integration principles among actors of AKIS: The results revealed that all the 13 principles of coordination and co-operation among the actors of AKIS examined in this study were perceived important by the respondents (Table 9). The ranking order was calculated on the basis of CV to find out the priority for each principle. The coordination ensures farmers' offloading in practicing agricultural production activities (CV=6.97), the coordination creates a high demand on the products and services of the private sector (CV= 10.88), and the coordination ensures scientific agriculture and utilization of research capabilities (CV= 12.75) were ranked 1st, 2nd, and 3rdrespectively; whereas weakness points in each actor could be covered by strength points of other actors (CV=35.46), formulating a legal framework for AKIS suitable under local circumstances (CV=36.55), and the agricultural credit sector should have expertise in financing for input supplies (CV=38.74), were ranked 11th, 12th and 13th respectively.

Table (3). Financial and investment constraints facing the private sector in achieving its role in investment and agricultural development

Financial and investment constraints	Mean*	S.D	C.V	Priority
Lack of financial capital of farmers/producers.	3.28	0.83	25.43	4
Price fluctuation of agricultural products.	3.35	0.71	21.07	1
Tax burden and operating / management loads.	3.33	0.85	25.38	3
Rising prices of logistic services (transportation- storage…etc.)	3.15	0.7	22.16	2
Economic recession and the resultant losses.	2.83	0.85	30.07	6
Sectors of fertilizers, pesticides and seeds require huge investments.	3.13	0.83	26.61	5

* 1= very Low to 5=very high

Table (4). Legislative and legality constraints facing the private sector in achieving its role in investment and agricultural development

Legislative and legality constraints	Mean*	S.D	C.V	Priority
Inflexible application of agricultural law from some governmental agencies.	3.02	0.75	24.67	2
Problems with inspection agencies in application of quality standards.	2.83	0.83	29.15	3
Traditional procedures and practices of importing and exporting.	3.11	0.92	29.71	4
Instability of agricultural policies and pricing.	3.57	0.62	17.37	1
Competitiveness with governmental agencies in provision agricultural services.	2.65	1.18	44.45	6
Prevailing of informal contracts with farmers.	2.65	1.02	38.34	5

* 1= very Low to 5=very high

Table (5). Organizational and managerial constraints facing the private sector in achieving its role in investment and agricultural development

Organizational and managerial constraints	Mean*	S.D	C.V	Priority
Weakness of coordination and integration among the actors involved in agricultural knowledge system.	3.41	0.69	20.12	1
Instability of the private sector regulations and traditions helping in economic liberalization.	3.13	0.86	27.44	3
Governmental intervention in allocating products and management input supplies market.	2.54	1.26	49.61	6
Working with farmers as individuals rather than groups/unions/associations.	2.67	1.03	38.73	5
Unclear role of the private sector in sustainable agricultural development 2030.	3.02	0.65	21.49	2
Absence of private sector unions to provide lobbying and advocacy services to promote and defend the rights of members.	3.11	0.99	31.96	4

* 1= very Low to 5=very high

Table (6). Technical and knowledge constraints facing the private sector in achieving its role in investment and agricultural development

Technical and knowledge constraints	Mean*	S.D	C.V	Priority
Limited high qualified experts to modernize the role of the agricultural private sector.	2.85	1.05	36.95	6
Lack of farmers' awareness on quality standards.	3.28	0.66	19.97	2
Weak demand on agricultural knowledge and innovations.	3.46	0.66	18.99	1
Inadequate knowledge and skills of extension workers.	2.96	0.73	24.63	3
Extension services don't play as a broker with farmers.	3.26	0.86	26.23	4
Farmers' rejection to adoption of innovations.	3.13	1.07	34.09	5

* 1= very Low to 5=very high

Table (7). Ethical, occupational and social constraints facing the private sector in achieving its role in investment and agricultural development

Ethical, occupational and social constraints	Mean*	S.D	C.V	Priority
Commercial fraud from some brokers and input suppliers.	3.46	0.69	19.94	1
High percentage of unlicensed and non- experiencing companies.	2.98	1.02	34.3	6
Neglecting environment resource management issues.	3.04	0.92	30.2	4
Companies are interesting in gaining profit regardless of trust, reputation and quality.	3.07	0.74	24.17	2
Non commitment of some farmers with contracts and agreements.	2.65	0.88	33.02	5
Neglecting needs of the women in the agricultural production.	2.85	0.82	28.63	3

* 1= very Low to 5=very high

Table (8): Priority of the different constraints on the private sector's role

Constraints	Mean	Priority
Financial and investment constraints	3.18	1
Technical and knowledge constraints	3.16	2
Ethical, occupational and social constraints	3.00	3
Organizational and managerial constraints	2.98	4
Legislative and legality constraints	2.97	5
Overall Average	3.05	

Table (9): Agreement level on the principles of coordination and co-operation among actors of AKIS as reported by the representatives of the private sector

Principles	Mean *	S.D	C.V	Priority
Upgrading agricultural knowledge system ensuring the benefits of all actors.	2.83	0.38	13.56	4
Tasks specificity ensuring efficiency and effectiveness.	2.76	0.43	15.62	5
Weakness points in each actor could be covered by strength points of other actors.	2.22	0.79	35.46	11
The coordination ensuring scientific agriculture and utilization of research capabilities.	2.85	0.36	12.75	3
The coordination ensuring farmers' offloading in practicing agricultural production activities.	2.96	0.21	6.97	1
The coordination creates a high demand on the products and services of the private sector.	2.89	0.31	10.88	2
The coordination ensuring sustainable finance for agricultural investment.	2.7	0.55	20.55	7
The private sector should be focusing on provision input supplies and marketing.	2.17	0.57	26.21	10
The research sector should be focusing on scientific supervision, training staff and diffusion of innovations.	2.37	0.53	22.43	8
The agricultural credit sector should be specializes on financing input supplies.	2.07	0.8	38.74	13
The farmers should be focusing on agricultural production practices.	2.78	0.47	16.79	6
Formulating a legal framework for AKIS suitable under local circumstances and summarizing lessons learned after testing it in a specified geographic area (short-term).	2.28	0.83	36.55	12
Building agricultural knowledge system ensuring synergy and integration among the actors.	2.72	0.69	25.33	9

* 1=Agree to 3=Disagree

Conclusion: Agricultural advisory services in Egypt are diversified and decentralized with various public, private and non-governmental organizations (NGOs) involved in delivering knowledge to farmers. The findings of the study explore the different services provided by the private sector and different types of relationships between

the private sector and other actors. On the whole, the results show no strong coordinating mechanisms among them. In this context, context-specific obstacles were studied for private sector engagement in agricultural development. Both financial and knowledge constraints are the main constraints shortcomings faced by the private sector. Price fluctuation of agricultural products at first priority arrived as a financial constraint. More work needs to be done to develop public–private partnerships for service delivery, sharing information and coordinating activities with private service providers, and establishing financing mechanisms to co-finance some instances of private service delivery, especially to poor farmers. The private sector's representatives refer to their highly agreement for the principles suggested for cooperation and coordination among actors of AKIS. Clearly articulate policies are needed to guide and improve engagement of the private sector with other actors.

Further research is needed to measure the outcomes of different types of collaborative efforts. This study has only considered the types of relationships between the private sectors and other actors of agricultural development. Also, more research is required to generate a better understanding of the relationship dynamics among actors to judge the value creation. Moreover, there is a need to assess, which private sector actors are benefiting from the engagement with other actors.

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