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Priority Setting of affecting Factors on Application of Strategic Management in Agricultural Knowledge and Information System in Iran

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ABSTRACT: The purpose of this research was to identify internal factors affecting on strategic management in agricultural knowledge and information system. This study used quantitative research method. The research method was quantitative in its nature and applied from the research objective and cross sectional from the viewpoint of data collection. A questionnaire was developed based on these interviews and relevant literature. The research population included field and official experts of Agriculture Jihad Organization of Alborz and Tehran province(N=161).The results showed that the most important internal factors affecting on strategic management in agricultural knowledge and information system consist of: planning, structural, management and leadership, workforce that the most important factors mentioned by respondents.

Keywords: Priority setting, Affecting factors, Application, Strategic Management, Knowledge and Information system, Iran.

I. INTRODUCTION

The fundamental role that agriculture plays in development has long been recognized. In the seminal work on the subject, agriculture was seen as a source of contributions that helped induce industrial growth and a structural transformation of the economy. However, globalization, integrated value chains, rapid technological and institutional innovations, and environmental constraints have rapidly changed the context for agriculture's role (Byerlee *et al.,* 2009). So, governments are facing new extension challenges: meeting the need to provide food for all, raising rural incomes and reducing poverty, and sustainably managing natural resources. These critical challenges exist in a rapidly changing world. Globalization, new technologies, the new relationships developing between the public and private sectors, the multi-disciplinary nature of agriculture, heterogeneity between and within countries, the geographic dispersion of rural people - all these realities are putting new pressure on the developing countries in their efforts to develop (Rivera, 2001). Also, some of these challenges and shortcomings in agricultural knowledge and information system (AKIS) including:

- Lack of a stable place for these systems
- Definitions and misunderstandings of the role of systems and their services
- Problems in formulating goals and tasks
- Problems in the selection of extension's approaches and practices
- Beast idea of technology transfer activities
- Weaknesses in organizational structure
- Pour relationship between the regulated the rules, culture of multilateral cooperation and partnership subdivision of agricultural development
- Lack of necessary skills in the field of science and research into new discoveries and scientific advice and effective promotional messages
- Lack of adequate coverage for an audience with the extensive network extension
- Lack of communication between extension and research institutions with farmers

Weaknesses in evaluation and monitoring- etc(Pezeshki-Raad*et al.,* 2001, Pezeshki Rad, & Agahi,2002;Qamar, 2003,Sa'ban-Ali-Fami, 2003, Terblanche, 2008).

In the era of knowledge management and development of wisdom-orientation, agricultural agents should pay attention to effective changes, constraints facing, the audience's needs, as well as international changes increasing changes in the range of agricultural knowledge, technology and information system (Hosseini and Sharifzadeh, 2008).

Kidd *et al.* (2002) in their general assessment of extension notes that agricultural extension is widely regarded as playing an important role in improving agricultural systems worldwide and its provision has been seen for many years as a principle responsibility of the state.

The general feeling is now that for offering services to farmers and adequately addressing their needs, these administrations are too inflexible and unresponsive, with the high cost brining insufficient benefit. Assefa *et al.* (2007) in their research comparison of frameworks for studying grassroots innovation with considering agricultural innovation systems (AIS) and agricultural knowledge and innovation systems (AKIS). They believe that different factors influencing on these systems such as ecological, economic, and social and policy factors. Ponniah *et al.* (2008) in their research reported that agricultural sector in developing world is changing rapidly and is driven by a number of external and global factors, such as environmental, economic, social, policy, etc. Davis (2008) assert that, agricultural extension or agricultural advisory services, comprises the entire set of organizations that support people engaged in agricultural production, link to markets and other players in the agricultural value chain, and facilitate their efforts to solve problems and finally, obtain information, skills, and technologies to improve their livelihoods. Boyle (1985) points out that the majority of researches which have been done in this field are similar in that they divided the program development process into three phases:1) Program planning, 2) implementation, and 3) evaluation and accountability. In the first step, extension educators work with stakeholders to scan the environment and determine issues and needs to be addressed by Extension (Franz *et al.,* 2008). The planning phase focuses on determining what needs to be done and usually includes using one extension educational approach or model for developing extension program planning, engaging stakeholders, assessing the educational needs of stakeholders, and developing program goal and objectives (Diehl and Galindo-Gonzalez, 2011; Iowa State University, 2008; Franz *et al*., 2008).

The design and implementation phase usually involves the identification of desired outcomes, selecting appropriate learning experiences and activities, mobilizing and deploying resources, and conducting the experiences and activities that are planned. Finally, educators and stakeholders determine the level of success realized in terms of technically feasible, economically feasible, socially acceptable, and environmentally safe and sustainable from these educational efforts through program evaluation and accountability (Franz *et al.*, 2008; Campbell and Barker, 1997). Israel *et al.* (2010) also in his research, using logic models for program development. He defines an extension program as a comprehensive set of activities that are intended to bring about a sequence of outcomes among the clientele groups.

Mukasa, Nite, Hope & Santa (2004) studied the poverty and gender assessment in Uganda. They indicated that economic, environmental, policy, structural, social-culture and technological factors have important roles in agricultural and rural development.

The results of study by Anderson and Feder (2004) show that, agricultural extension can play an important role in development. The goals of agricultural extension includes transferring information from the global knowledge base and from local research to farmers, enabling them to clarify their own goals and possibilities, educating them on how to make better decisions, and stimulating desirable agricultural development.

Tossou & Zinnah (2005) also assert that, in the new decentralized system, agricultural extension needs to be flexible and most of the staff should be in the communes and should be oriented towards enhancing the capacity of farmers and the elected local governments to participate in the process of solving their problems and reach their development objectives, including financing of agricultural extension services. To achieve all this, adequate decision-making power and resources for extension activities should be transferred to commune level. The results of study by Kizilaslan (2007) shows that agricultural extension organizations do not consider the needs of rural women and different research findings show that the rate of extension organizations' services to rural women is 5 percent. Therefore, there is a need to permanent support from rural women and poor farmers with the appropriate and reliable information through agricultural extension services. Qamar (2005) believe some of factors influencing on act of system (agricultural extension) such as social-culture, workforce and planning factors. Bartlet (2010) asserts that, economic, technologies, management and leadership factors influencing on rural development and act of extension system. Swanson (2008) also, believes that most public extension systems are still top down in structure, inadequately funded (especially for field-level programs) and have done little or nothing to keep and upgrade their extension staff. Agbamu (2000) also in his research reported that structural, planning and technological factors are effective had affect on development agricultural sectors in many countries.

The results of a study has done by Vanclay (2004) showed that understanding of social issues, the social nature of farming and the social basis of adoptions needed if agricultural extension is to be effective in addressing natural resources management issues, and in promoting sustainability in its triple bottom line conceptualization. The results of study by Ortiz (2006) about evolution of agricultural extension and information dissemination show multiplicity and continual change characterize the agricultural knowledge and information system (AKIS), reflecting changes in the agricultural sector as a whole. He studies different effective factors on this system such as structural, social, management and economic factors, etc.

Table 1: Conjunction research with affective internal factors on application of strategic management in agricultural knowledge and information system.

Factors	Variable	Researcher
Structural	Appropriate distance of farmers workhouse from extension services centers, Existence of responsible posts and units to communicate between elements of knowledge and agricultural information, Foundation committees and councils comprised of representative research, extension, farmers in different parts of agricultural ministry, Being recognized the definition of agricultural knowledge and information system in the structure of agricultural system, Existing relevance experts in research centers, Appropriate executive program to reinforcement of relation between research unit and extension, Accurate merger of ingredients of agricultural knowledge and information system, Relation between research and extension units of agriculture, Appropriate distance of farmers workhouse from research services centers, Appropriate spatial distance of research centers from extension services centers	Agbamu (2000), FAO (2008), Snapp (2004), Nuray (2006), Pascucci & de-Magistris (2011), Ortiz (2006), Rivera *et al.* (2003), Rivera *et al.* (2005b), Singh (2011), Assefa *et al*. (2007), Mukasa, Nite, Hope & Santa (2004), Qamar (2002), Qamar (2005), Israel (2010), Terblanche (2008)
Management and Leadership	The level of partnership in doing different activities among sub-systems of extension, research and farmers, The level of attitude holistic or oriented system in administrator of extension unit, The level of the manage connecting of extension whit research unit, The level of attitude holistic or oriented system in administrator of research unit, The level of the manage connecting of research whit extension unit, Performance key role of local leaders in connecting research and extension branches, Appropriate competition among extension and research's sub-systems to again credits, The level of competence and qualification of administers to allotment credits for different activities, Appropriate distribution of credits to doing different activities	FAO (2008), Panniah *et al.*(2008), Rivera *et al* (2005b), Bartlet (2010), Koyenikan (2008), Singh (2011), Ortiz (2006), Pascucci & de-Magistris (2011), Swanson (2008a), Tossou & Zinnah (2005), Agbamu (2002), Katz (2005) Demiryurek (2010), Pezeshki-Raad, Terblanche (2008), Nuray (2006)
Workforce	Appropriate researchers number to doing research in research centers, The level of extension's motivation to cooperation with unit research's staff, The level of farmer's education to connecting with extension and research unit, The level of farmer's motivation to cooperation with extension unit, Appropriate extension experts number to doing extension activates in extension services centers, The level of researcher's education to connecting with sub-systems extension and farmers, The level of researcher's motivation to cooperation with unit extension's staff, The level of farmer's motivation to cooperation with unit research's staff	Karbasion & Mulder (2004), Le Ngoc, Maimuneh, Jegak & Khairuddi (2007), Swanson (2008a), Terblanche (2008), Israel (2010), Qamar (2003), Qamar (2005), Pezeshki-Raad, Terblanche (2008), Lowa State University (2008), Mukasa, Nite, Hope & Santa (2004), Ponniah *et al.* (2008), Nuray (2006)
Planning	The level of feedback usage from accomplished evaluations to improve future plans, The level of decentralization in extension's sub-system, Being suitable in presentation information and consulting services according to needs of farmers, The level of farmers' participation in executive activities, Being suitable extension programs with farmers conditions(economic, social, cultural), The level of continence reporting from programs running to improve future plans, Decentralization of the research sub-systems, Appropriate accomplished planning to access to development goals of sustainable agricultural, Being suitable research programs with farmers conditions(economic, social, cultural), The level of technology transmission from research centers to farmers, Appropriate accomplished planning to promotion the level of technical skills of farmers	Israel (2010), Qamar (2003), Agbamu (2000), Bartlet (2010), Swanson (2008a), Diehl & Galindo–Gonzalez (2011), Franz & Townson (2008),Lowa State University (2008), Nuray (2006), Pezeshki-Raad, Terblanche (2008), Vanclay (2004), Diehl & Galindo–Gonzalez (2011), Ponniah *et al.* (2008), World Bank (2000), Qamar *et al.* (2001), Van den Ben & Hawkins (2007), Worth (2006), Yoder & Demiryurek (2010), Kizilaslan (2006), Koyenikan (2008), Speranza *et al.* (2009), Tossou & Zinnah (2005)

'Strongly disagree:1----Strongly agree:5'

Also, Rivera *et al.* (2005) and Snapp (2004) assert that some of factors are effective such as structural, management etc. Pascucci and de-Magistris (2011) in their research reported that both generalist and specialized services could play a major role in farmers' value creation strategies. They also confirm that different strategies for creating value are jointly implemented. Finally, they show that a further improvement in the quality of public provision of extension services within regional AKIS and a greater (systemic) interaction between farmers, rural actors and local networks should be supported.

Agricultural information is an important factor that interacts with other production factors. Demiryurek *et al.* (2010) assert that productivity of other factors, such as land, labor, capital and managerial ability, can arguably be improved by relevant, reliable and useful information. Information supplied by extension, research, education and agricultural organizations helps farmers make better decisions. Therefore, there is a need to understand the functioning of a particular agricultural information system in order to manage and improve it. Singh (2011) in his research about state of agricultural extension reforms in India reports that, agricultural extension has undergone several changes since independence. Still, a large number of smallholder farmers and other vulnerable groups remain unreached by the public extension system. A number of organizational performance issues hinder the effectiveness and efficiency of public extension system. These include inadequate staff numbers, low partnerships, and continued top - down linear focus to extension. He identified policy priorities and strategic options for further refining the on-going reform process and effective implementation of the public agricultural extension system.

Considering the above, it can be stated that agricultural knowledge and information system due to the influence of surrounding structures and internal movement, need of harmony and dynamic development always in need of upgrading, modification planned, purposeful, comprehensive, balanced, and contingency system. So, identify these cases along with the ongoing management and process-oriented with the changes required in agricultural knowledge and information system, as well as participation all of the institutional agents in collaborative and flexible procedures in accordance with competitive world are essential.

In this research, some of the conjunction research with effective factors that related to results of this research can be noted in Table 1.

This study identify of internal structures that influence on strategic management in agricultural knowledge and information system.

MATERIAL AND METHODS

This research is quantitative in its nature and applied from the research objective and cross sectional from the viewpoint of data collection.

A questionnaire was developed from a review of literature on a Likert type scale ranging from strongly inappropriate to strongly appropriate. Based on contingency table of research, the main variables identified that including; strategic management in agricultural knowledge and information considered as the dependent and latent variable (Y) which is under the influence of exogenous variables that considered as the independent variables (X). So, these variables were evaluated with developed questionnaire.

Content and face validity were established by a panel of experts consisting of faculty members at Science and Research Branch, Islamic Azad University, and some specialists in the Ministry of Agriculture. Minor wording and structuring of the instrument were made based on the recommendation of the panel of experts. A pilot study was conducted with some Gazvin's extension experts to determine the reliability of the questionnaire for the study. Computed Cronbach Alpha score was 96%, which indicated that the questionnaire was highly reliable. The research population included field and official experts of Agriculture Jihad Organization of Alborz and Tehran province (N=161).

Responses were classified in codes. Coding and developing category system and creating hierarchical category system were used for data analysis.

RESULTS AND DISCUSSION

The results of this study emphasized on the importance of planning, structural, management and leadership, workforce factors that has a significant positive effect on the application of strategic management in knowledge and agricultural information system.

The perception of respondents about structural factors that affect on application of strategic management in agricultural knowledge and information system was displayed in Table 2. The highest coefficient of variation refers toappropriate distance of farmer's workhouse from extension services centers (0.25) and the lowest coefficient of variation was toappropriate spatial distance of research centers from extension services centers (3.33). The result is in accordance with researches were done by Agbamu (2000), FAO (2008), Snapp (2004), Nuray (2006), Pascucci & de-Magistris (2011),Ortiz (2006), Rivera *et al.* (2003), Singh (2011), Assefa *et al.* (2007), Mukasa, Nite, Hope and & Santa (2004),Qamar (2002), Israel (2010),Terblanche (2008).

Based on the perception of respondents, the level of partnership in doing different activities among sub-systems of extension, research and farmers was the most important factors that affect on application of strategic management in agricultural knowledge and information system (0.27) and the least important was to appropriate distribution of credits to doing different activities (0.38). The result is in accordance with researches were done by FAO (2008), Panniah *et al.* (2008), Rivera *et al* (2005b), Koyenikan (2008), Singh (2011), Ortiz (2006), Pascucci & de-Magistris (2011), Tossou & Zinnah (2005), Agbamu (2002), Katz (2005) Demiryurek (2010), Nuray (2006). The respondents indicated that appropriate researchers number to doing research in research centers was the most important workforce factors that affect on application of strategic management in agricultural knowledge and information system (0.25) and the least important was to the level of farmer's motivation to cooperation with unit research's staff (0.37).

Table 2: Perception of respondents about the structural factors that affect on application of strategic management in agricultural knowledge and information system (1 = Very Little, 5 = Very Much).

Structural Factors	St.D	Mean	Coefficient of Variation	Priority
Appropriate distance of farmer's workhouse from extension services centers	0.89	3.51	0.25	1
Existence of responsible posts and units to communicate between elements of knowledge and agricultural information	0.96	3.37	0.28	2
Foundation committees and councils comprised of representative research, extension, farmers in different parts of agricultural ministry	1.05	3.45	0.30	3
Being recognized the definition of agricultural knowledge and information system in the structure of agricultural system	1.07	3.27	0.32	4
Existing relevance experts in research centers	1.12	3.31	0.33	5
Appropriate executive program to reinforcement of relation between research unit and extension (participatory educational projects, field day, etc.)	1.17	3.34	0.35	6
Accurate merger of ingredients of agricultural knowledge and information system	1.17	3.31	0.35	6
Coherent organizing of farmers as ingredient of agricultural knowledge and information system	1.24	3.41	0.36	7
Relation between research and extension units of agriculture	1.32	3.30	0.44	8
Appropriate distance of farmers workhouse from research services centers	1.08	3.05	2.82	9
Appropriate spatial distance of research centers from extension services centers	0.96	3.20	3.33	10

'Strongly disagree:1----Strongly agree:5'

Table 3: Perception of respondents about the management and leadership factors that affect on application of strategic management in agricultural knowledge and information system (1=Very Little, 5 = Very Much).

Management and Leadership Factors	St.D	Mean	Coefficient of Variation	Priority
The level of partnership in doing different activities among sub-systems of extension, research and farmers	0.99	3.55	0.27	1
The level of attitude holistic or oriented system in administrator of extension unit	1.07	3.54	0.30	2
The level of the manage connecting of extension whit research unit	1.06	3.45	0.30	2
The level of attitude holistic or oriented system in administrator of research unit	1.13	3.37	0.33	3
The level of the manage connecting of research whit extension unit	1.15	3.40	0.33	3
Performance key role of local leaders in connecting research and extension branches	1.20	3.44	0.34	4
Appropriate competition among extension and research's sub-systems to again credits	1.15	3.22	0.35	5
The level of competence and qualification of administers to allotment credits for different activities	1.27	3.55	0.35	5
Appropriate distribution of credits to doing different activities	1.32	3.45	0.38	6

'Strongly disagree:1----Strongly agree:5'

Table 4: Perception of respondents about the workforce factors that affect on application of strategic management in agricultural knowledge and information system (1=Very Little, 5=Very Much).

Workforce Factors	St.D	Mean	Coefficient of Variation	Priority
Appropriate researchers number to doing research in research centers	0.93	3.61	0.25	1
The level of extension's motivation to cooperation with unit research's staff	1.20	3.59	0.33	2
The level of farmer's education to connecting with extension and research unit	1.17	3.46	0.33	2
The level of farmer's motivation to cooperation with extension unit	1.25	3.51	0.35	3
Appropriate extension experts number to doing extension activates in extension services centers	1.20	3.42	0.35	3
The level of researcher's education to connecting with sub-systems extension and farmers	1.20	3.38	0.35	3
The level of researcher's motivation to cooperation with unit extension's staff	1.25	3.42	0.36	4
The level of farmer's motivation to cooperation with unit research's staff	1.22	3.26	0.37	5

Strongly disagree:1----Strongly agree:5

Table 5 shows the perception of respondents about the planning factors that affect the application of strategic management in agricultural knowledge and information system. The highest coefficient of variation refers to the level of feedback usage from accomplished evaluations to improve future plans (0.003) and lowest coefficient of variation refers to appropriate accomplished planning to promotion the level of technical skills of farmers (3.12).

The result is in accordance with researches were done by Israel (2010), Qamar (2003), Agbamu (2000), Bartlet (2010), Swanson (2008a), Diehl & Galindo–Gonzalez (2011), Franz & Townson (2008), Lowa State University (2008), Nuray (2006), Diehl & Galindo–Gonzalez (2011), Ponniah *et al.* (2008), World Bank (2000), Qamar *et al.* (2001), Van den Ben & Hawkins (2007),Worth (2006), Yoder & Demiryurek (2010), Koyenikan (2008), Speranza *et al.* (2009).

As can be seen in Table 6, results from the Perception of respondents about measurement of the components of strategic management in agricultural knowledge and information system. The highest coefficient of variation refers to the level of Formulation of policies or strategies to strengthen the linkages between the actors of agricultural knowledge and information system (0.22) and lowest coefficient of variation refers to How actors interact in agricultural knowledge and information system (farmers, planners, extensions' experts, researchers)(1.08). The main purpose of this paper was to study the impacts of internal factors on application of strategic management in AKIS.

Table 5: Perception of respondents about the planning factors that affect on application of strategic management in agricultural knowledge and information system (1=Very Little, 5=Very Much).

Planning Factors	St.D	Mean	Coefficient of Variation	Priority
The level of feedback usage from accomplished evaluations to improve future plans	1.24	3.50	0.003	1
The level of decentralization in extension's sub-system	0.96	3.38	0.28	2
Being suitable in presentation information and consulting services according to needs of farmers	1.08	3.66	0.29	3
The level of farmers' participation in executive activities	1.00	3.24	0.30	4
Being suitable extension programs with farmers conditions (economic, social, cultural)	1.17	3.63	0.32	5
The level of continence reporting from programs running to improve future plans	1.12	3.45	0.32	5
Decentralization of the research sub-systems	1.13	3.24	0.34	6
Appropriate accomplished planning to access to development goals of sustainable agricultural	1.14	3.52	0.35	7
Being suitable research programs with farmers conditions (economic, social, cultural)	1.27	3.49	0.36	8
The level of technology transmission from research centers to farmers	1.23	3.33	0.36	8
Appropriate accomplished planning to promotion the level of technical skills of farmers	1.13	3.53	3.12	9

Strongly disagree:1----Strongly agree:5

Based on the previous researches regarding to these factors (structural, management and leadership, planning and workforce), two of these were ranked as the most important factors. These findings were confirmed by the other researchers from the different aspects and combinations (Table 1). It must be stated that it will be necessary to take attention to these factors as well as another affecting components in order to realize strategic management. In this line, we must emphasized that providing necessary infrastructures based on the knowledge and information may have an important role in developing rural and agricultural sector of the country. Finally, some of suggestion related to the results is recommended:

-Identify other affective internal factors on application of strategic management in agricultural knowledge and information system,

-Identify barriers and restrictions in application of the strategic management in the agricultural knowledge and information system.

Table 6: Perception of respondents about measurement of the components of strategic management in agricultural knowledge and information system.

Measurement of the components of Strategic Management in Agricultural Knowledge and Information System	St.D	Mean	Coefficient of Variation	Priority
Formulation of policies or strategies to strengthen the linkages between the actors of agricultural knowledge and information system	0.87	3.83	0.22	1
Supply resources and inputs that affecting on the actions and communications of activists in agricultural knowledge and information system	0.88	3.62	0.24	2
The role of agricultural organizations in Influence Farmers	0.96	3.80	0.25	3
Farmers view in relation to joint ventures activists in agricultural knowledge and information system	0.25	3.55	0.90	3
Assess the strengths and weaknesses of each of the actors in agricultural knowledge and information system	0.26	3.65	0.96	4
The role of extension on the interaction management of actors in agricultural information and knowledge system	0.29	3.55	1.05	5
How actors interact in agricultural knowledge and information system(farmers, planners, extensions' experts , researchers)	0.33	3.60	1.08	6

Strongly disagree:1----Strongly agree:5

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