

## Improvement Mechanisms of Wheat Consultant Engineers (WCEs) Project in Iran

Ali Asadi, Morteza Akbari, Hossain Shabanali Fami, and Amir Alambaigi

<sup>1</sup>Department of Agricultural Extension and Education,  
College of Agricultural Economics and Development, the University of Tehran, Karaj, Iran

---

**Abstract:** This article describes improvement mechanisms of Wheat Consultant Engineers (WCEs) project or Wheat Advisory Services (WAS) In Iran. A survey study was applied as a methodology of research work. Data were collected using structured questionnaires that addressed to evaluating extension expert and WCEs responses regarding to WCEs project improvement mechanisms. The result shown that the project was faced with many challenges such as land structure, logistic, coordination, strategic and etc. that policymakers and extension providers should be solving them until wheat consultant engineers can more better providing farmer information needs. The improvement mechanisms that would have been solved these challenges involved; Logistic, Communication, Performance, Project development and Communication mechanism improvements from view point wheat consultant engineers, also mechanism improvements such as Motivation, Selection, Participation, Logistic and Performance from view point extension experts has been selected.

**Key words:** Advisory services, wheat consultant engineers (WCEs) project, improvement mechanisms

---

### INTRODUCTION

It is generally accepted that agricultural advisory (extension) services have long been recognized as an important factor in promoting agricultural development [1, 2, and 3]. And until recently, provision of these services has largely tended to be in the public sector domain. In many developing countries, commodity-oriented technical advice was provided during colonial times to farmers producing commercial crops, but national agricultural advisory services were not formally established until the 1950s and 60s. As originally conceived, these services were designed to bring new knowledge and techniques from public research organizations to a broader spectrum of farmers [12]. This focus on technology transfer from research organizations to farmers was later criticized. This approach was replaced by a more systemic perspective [5].

Apparently there have been some generic, possibly universal, difficulties in the operation of public extension systems and in the typical bureaucratic-political environment within which they are budgeted and managed. The reduction of public funding for agricultural advisory services under structural adjustment programs aimed at limiting the inefficient use of public resources for extension, but it also further reduced the capacity to provide such extension services.

However, a shift towards more private sector participation in the provision of extension services is being experienced [13, 20]. This shift is attributed to the perceived ineffectiveness, irrelevancy and irresponsiveness of public extension services in addition to budgetary constraints especially in developing countries [13, 16].

A review [15], at the beginning of the 2000s found that extension systems had become failing and moribund, being in a state of disarray or barely functioning at all. Or as Davidson and Ahmad, anguished: the cycle of despair will continue [4]. Others had made similar observations a decade earlier [10]. After the structural adjustment period, agricultural advisory services are now backing on the agenda [11].

The majority of the extension personnel in developing countries is funded and employed by the public sector. However, reform efforts in the public sector, which included decentralization, cost-recovery and outsourcing and an increasing involvement of the private sector and the third sector (non-governmental organizations, farmers' organizations) have led to the emergence of pluralistic forms of agricultural advisory services [14, 17]. The services provided by extension have significant public-good attributes. It is, therefore, not surprising that there are at least 800,000 official extension workers worldwide and some 80% of the world's extension services are publicly-funded and

---

**Corresponding Author:** Morteza Akbari, Department of Agricultural Extension and Education, College of Agricultural Economics and Development, University of Tehran, Karaj, Iran

delivered by civil servants<sup>[6]</sup>. Universities, autonomous public organizations and NGOs deliver about 12% of extension services and the private sector delivers another 5%. There is a corresponding large volume of public budget allocated to extension activities (in 1988, for example, over six billion US dollars worldwide).

From a development policy perspective, the investment in extension services or the facilitation of non government extension, are potentially important tools for improving agricultural productivity and increasing farmers' incomes. More than 90% of the world's extension personnel are located in developing countries<sup>[19]</sup>, where indeed the majority of the world's farmers are located.

In Iran, over 100,000 extension personnel's involve in Advisory services work that these high number of extension personnel interned high costs to the Ministry of Jihad-e agriculture, also the consultation process shows how farmers recognize the lack of skills, information and knowledge as some of the constraints to increase productivity (a key goal of the WCEs) and attribute these deficiencies to poor quality extension services, mainly due to low coverage and pertinence of services provided and lack of motivation and qualification of extension officers. To overcome these limitations, government proposed increased involvement of the private sector, an effective extension system delivering appropriate information, formation of groups to pool resources to improve farming collectively, the reemployment of retrenched extension officers, deployment of more, better-trained, adequately remunerated and facilitated officers and empowerment of rural communities to demand driven services. Hence with this scenario advisory services moved toward private advisory services until the number of clients who need to be covered increased and at least more minimum costs of services and more efficient the services. The Wheat Consultant Engineers (WCEs) project is one of the cases that provided information needs to wheat cultivated farmers. The WCEs project was initiated in 2001 through to extended the converge of level number of farmers. But this project has been faced with different challenges, such as structural (land structure), strategic, supportive and economical challenges and not to richen to the goals. As a result of, the purpose of this research was analyzing improvement mechanism of Wheat Consultant Engineers (WCEs) to cope with challenges in achieving better agricultural advisory services in Iran.

The adoption of technology by farmers is inevitably affected by many factors<sup>[7]</sup>. Adoption can be influenced by educating farmers about such things as improved varieties, cropping techniques, optimal input

use, prices and market conditions, more efficient methods of production management, etc. To do so, extension agents must be capable of more than just communicating information to farmers. They must be able to comprehend an often complex situation, have the technical ability to spot and possibly diagnose problems and possess insightful economic-management skills in order to advise on more efficient use of resources.

A review<sup>[15]</sup>, have identified a set of interrelated frequently encountered factors affecting the performance of agricultural extension systems, the scale, scope and complexity of advisory activities caused by the nature of agricultural production; the associated problems of monitoring, evaluation and impact assessment; the complexity of interactions between advisory services and national and international agricultural research systems; a key task to promote learning processes and establish feedback linkages. While these factors affect public, private and third-sector extension provides alike, public-sector extension is confronted with additional challenges: the need to address public issues, such as environmental concerns, which go beyond production-oriented agricultural knowledge and information transfer; the problem to ensure political commitment and fiscal accountability; and the influence of the wider policy environment and political economy. Citing reviews<sup>[8, 14]</sup>, noted that commercialization and decentralization in New Zealand, besides reducing the public fiscal burden, improved accountability and ability to trace cause and effect by involving extension staff in the entire production-processing-transporting-marketing hain<sup>[8,14]</sup>.

It also shifted toward a stronger client orientation and a concern to identify and produce results rather than simply to engage in activities. Some researchers noted the limited scope for funding public extension services by user fees in developing countries<sup>[9, 14]</sup>. Obvious difficulties might be in collecting user fees, establishing cost accounting procedures and reorienting and retraining extension staff. Another research<sup>[21]</sup> described how cost reduction in Mexico is achieved partly by stratifying the client market by income level and either progressively graduating higher-income producers to private extension services or requiring greater cost-sharing<sup>[21]</sup>. Stratifying for cost recovery reduces both generic fiscal and liability problems, releasing public resources for an 'extension safety net' targeted at low to middle-income producers in priority areas<sup>[18]</sup>.

The present study is the first study in WCEs project improvement mechanisms in Iran, has been planned based on the following goals:

- Evaluation of WCEs improvement mechanisms in Iran
- Identification of determinants of WCEs improvement mechanisms in WCEs project in Iran

**MATERIALS AND METHODS**

A survey study was applied as a methodology of research work. Data were collected by using of structured questionnaires that addressed wheat consultant engineers and extension experts' responses to the questions. The statistical population of the study consisted of 78 extension experts and 164 wheat consultant engineers' in Esfahan province in Iran (Table 1). Fifty five extension experts and 105 WCEs randomly selected based on Cochran's sampling methodology. Earlier, a pilot study was conducted in Ardebil and Zanjan, provinces using 30 extension experts and WCEs. The aim was to test and improve the questionnaires; Revisions were made based on the pilot study. Responses from the pilot test were not included in the final samples. Research instrument consisted of 2 parts in Likert scale. First 33 WCEs improvement mechanisms to be rank and second questions about the individual and land related factors (level of education, land area, number of plots, number of farmers etc.).

The several experts closely examined their rationality, format, translation and statements.

**Research procedure:** A package that was mailed to each member of The WCEs and extension experts of Agricultural Extension contains two items: a covering letter explaining the importance of the study, a Four-page questionnaire with stamped return address on the back. The covering letter requested the respondent to return the completed questionnaire within five weeks. The respondents were assured of the confidentiality of their responses. Follow-up phone calls were made to the WCEs and extension experts that had not responded three weeks after sending out the questionnaire.

Table 1: Reliability Coefficients for the Major scales examined in a Study of improvement mechanisms to WCEs, Esfahan Province, Iran, 2007

Different scales of the Questionnaires	Cranach's alpha ( $\alpha$ ) coefficient	
	WCEs (N = 163)	Extension experts (N = 78)
Improvement mechanisms	0.83	0.75

**RESULTES AND DISCUSSIONS**

In order to identify improvement mechanisms For Removing of WCEs project challenges (WAS project) needs to be identified. At the first step we analyzed challenges Related to WCEs. The primary results of factor analysis showed that the challenges Shorten to four factors, namely, structural (land structure), strategic, supportive and economical challenges in view point of extension experts. Also The result of Factor analysis related to WCEs viewpoint showed that these variables can be shorten to five factors, namely, justice, supportive, coordination, strategic and farmers' characteristics (Fig. 1).

At the second step in order to Finding solutions for challenges and problems faced by wheat consultant engineers project we utilized of factor analysis.

**Factor analysis:** The factor analysis was employed to summarize the variables of the research to a smaller quantity and to determine the effect of each one of the factors to confine the WCEs improvement mechanisms. The implemented computations revealed that the internal coherence of the data is appropriate (KMO = 0.787 for WCEs and KMO = 0.627) and Bartlett's statistical data was at 0.01 level significant. According to Kaiser Criteria there were 5 factors from view point of extension experts and 5 factors from view point of WCEs that their Eigen values were extracted more than1 (Table 2). The research variables were categorized into 3 factors by using Varimax Rotation Method (Table 2).

As viewed by the 78 extension experts, the result of factor analysis showed that improvement mechanisms set in five factors, namely, Motivation, Selection, Participation, Logistic and performance. Also as viewed by WCEs, improvement mechanisms were set in five factors, namely, Logistic, Communication, Performance, Project development and Selection (Fig. 1). As can be seen some of the improvement

Table 2: The extracted determinants along with the Eigen values, variance percentage and the cumulative variance percentage

Variables	Population	Eigen value	The variance percentage of the Eigen values	Cumulative variance percentage
1	Wheat	3.69	21.715	21.715
2	consultant	2.17	12.788	34.50
3	engineers	2.05	12.105	46.60
4		1.94	11.431	58.038
5		1.75	10.30	68.338
1	Extension	3.08	18.16	18.16
2	experts	2.77	16.29	34.47
3		2.63	15.47	49.93
4		2.08	12.26	62.19
5		1.83	10.81	73.009

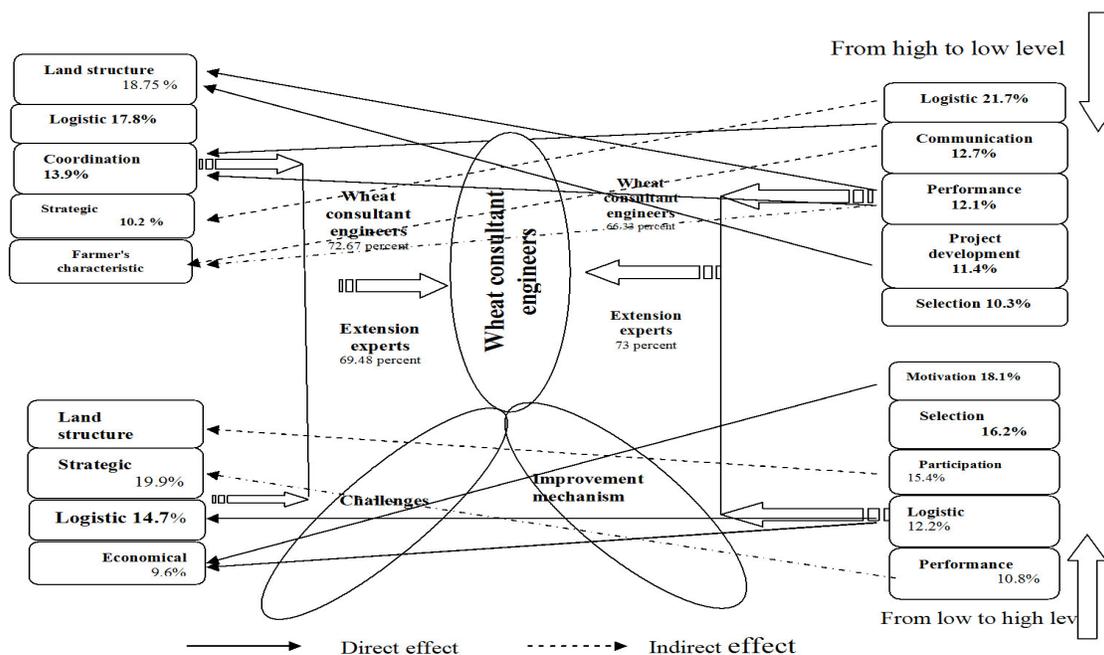


Fig. 1: Wheat consultant engineers challenges and improvement mechanisms In Iran. Akbari, 2007

Mechanisms directly affect and other challenges indirectly in challenges delete (Fig. 1) that showed in above and explained at the follow.

The first mechanisms that argued by WCEs and extension experts for project development and its sustainability is supportive and motivational mechanisms. One of the consultant engineer's problems was lack of car and insurance service and extension experts must provide for them these requirements, particularly in initial years. The result of field observation showed that most of WCEs have leaved project because of bad condition and lack of motivation. It is necessary for extension experts that provide rewards (perfectly monetary) for WCEs particularly for industrious and diligent advisors as well as WCEs that work in hard condition.

The second mechanism is related to process of choosing personnel. Project's Regulations have not been determined clearly and there are not appropriate indicators for choosing personnel. Whole of graduated in agriculture Branch can be arrived to project. There is only one test for this purpose which this test can not measure WCEs skills and knowledge precisely. Only this test is able to measure their theory capabilities. Therefore in this case extension experts must formulate arrive indicators for WCEs clearly and operationally. By the way advisors that have a rural root or agriculture activities must be in first priority. In other hand WCEs communication and extension skills must be measured

because of their capabilities in this case is very important.

The third matter is related to how implementation of project. For better implementation of project according to what mentioned above, caused by lack of coordination among extension experts and sub segments we can see some problems. For better implementation of project, in order to one institute or organization must be accept project responsibility and other arrangements accept its monitoring. Also caused by the lack of providing adequate information for farmers that were not informed about project's goals, we can see farmers avoid of payment for WCEs, therefore in this case farmers must be informed by extension experts at the beginning stages.

The last matter is related to pay attention to farmers and their capabilities differences. For this purpose is better than that consider farmers separately. Private services are suitable for large farmers and government services are suitable for poor and small farmers. Qualitative and quantitative results of research showed which most of WCEs believes that over that 70% farmers are not able for paying to WCEs. As a whole, among farmers that were satisfied for payment, accept only 10% of total. Therefore it seems that development of project to places that have a readiness for privatization and some of crops is logical and rational. The results of research showed that project have had positive effects on crops development and productivity.

However executive problems of project are serious challenge for it which be removed as soon as. In this condition we can be hopeful for independent in whole of crops.

### CONCLUSIONS

This research studied Iran's WCEs project Improvement mechanisms. Several conclusions which drawn from the present study are:

- Factors were extracted from viewpoint of WCEs for WCEs project improvement mechanisms including the first factor were called logistic and explained 21.75% of the total variance and therefore it is most effective factor. Hence recommended that it is necessary for policymakers to reform current program for improvement and development of Effectiveness programs. Also this factor mentioned by extension expert
- Also factors were extracted from viewpoint of extension experts have employed for WCEs project the first factor of improvement mechanisms were called motivation which explained 18.7% of the total variance therefore it is most effective factor. Hence recommended that extension experts implement programs for enhancement of staff's motivation
- The result and observation at the field showed that between capacity of WCEs in consulting farmers and current condition is very different in quantity of land area and farmers under supervisor. Hence, extension experts must have balanced in distribution of farmers and land area among WCEs
- The result of authors observations in the field showed that the WCEs project were very effects in wheat production but were faced with some challenges which be delete in time and also for better improvement WCEs project, must be develop to another products
- The present study is the first study in WCEs improvement mechanisms in Iran and very research and studies can be designed in continuing

### ACKNOWLEDGMENTS

The Authors gratefully acknowledge the Department of Agricultural Extension Education, University of Tehran, Iran for equipment support. The authors also thank of Agricultural Extension Organization management of Esfahan province in Iran for cooperation with authors.

### REFERENCES

1. 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, February 2003.
2. Anderson, J. R. and G. Feder, 2007. Agricultural Extension. In: Handbook of Agricultural Economics, Evenson, R.E. and P. Pingali (Eds.). Chapter 44, Volume 3 Agricultural Development: Farmers, Farm Production and Farm Markets, Elsevier, Amsterdam, 2343-78 (In press).
3. Birkhaeuser, D., R.E. Evenson and G. Feder, 1991. The economic impact of agricultural extension: A review. *Econ. Dev. Cult. Change*, 39: 607-50.
4. Davidson, A.P. and M. Ahmad, 2003. Privatization and the Crisis of Agricultural Extension: The Case of Pakistan, Ashgate and Aldershot.
5. FAO/ Word Bank, 2000. Agricultural Knowledge and Information System for Rural Development (AKIS/RD): Strategic Vision and Guiding Principles, Food and Agriculture Organization of the United Nations and the AKIS Thematic Group of the World Bank, Rome.
6. Feder, G., A. Willett and W. Zijp, 2001. Agricultural Extension: Generic Challenges and the Ingredients for Solutions. In: Knowledge Generation and Technical Change: Institutional Innovation in Agriculture, S. Wolf and D. Zilberman (Eds.). Kluwer, Boston, pp: 313-56.
7. Feder, G., R.E. Just and D. Zilberman, 1986. Adoption of agricultural innovations in developing countries: A Survey. *Economic. Dev. Cult. Change*, 35 (1): 255-298.
8. Hercus, J., 1991. The Commercialization of Government Agricultural Extension Services in New Zealand. In: Agricultural Extension: Worldwide Institutional Iva A W.M Rivera and D.J. Gustafson. Amsterdam: Elsevier.
9. Howell, J., 1986. Accountability in Extension Work. In: Investing in Rural Extension: Strategies and Goals, Gwyn E. Jones (Ed.). Elsevier. London and New York.
10. Kaimowitz, D., 1991. The Evolution of Links Between Research and Extension in Developing Countries. In: Agricultural Extension: Worldwide Institutional Innovation and Forces for Change, W.M. Rivera and D.J. Gustafson (Eds.). Elsevier, Amsterdam, 101-112.

11. Nagel, U.J., 2003. Back on the Agenda: Extension and its Institutional Linkages-Some Personal Observations on the Re-discovery of a Key Player. Paper Presented at the Trope tag in Gottingen, Germany, Mimeo.
12. Purcell, D.L. and Anderson, J.R, 1997. Agricultural Extension and Research: Achievements and Problems in National Systems, A World Bank Operations Evaluation Study, World Bank, Washington, DC, pp. xxi + 264, a summary <http://wbln1023.worldbank.org/oed/oeddoelib.nsf/DocUNIDViewForJavaSearch/4CC2B2C8CC4DB10A852567F5005D5A14?opendocument>.
13. Rivera, W.M., 1991. Agricultural Extension Worldwide: A Critical Turning Point in Agricultural Extension. In: World wide institutional Evolution and Forces for Change, Rivera, W.M. and D.J. Gustafson (Eds.). Published by Elsevier Amsterdam.
14. Rivera, M. William and W.J. Cary, 1997. Privatizing Agricultural Extension. In: Improving Agricultural Extension: A Reference Manual. FAO: Rome.
15. Rivera, W.M., M.K. Qamar and L.V. Crowder, 2001. Agricultural and Rural Extension Worldwide: Options for Institutional Reform in Developing Countries, FAO, Rome.
16. Rivera, M.W., W. Zijp and G. Alex, 2000. Contracting For Extension: Review of Emerging Practices. AKIS Good Practice Note, Agricultural Knowledge information System (AKIS) Therapic Group. The World Bank.
17. Suleiman, V.R. And A.J. Hall, 2006. Extension Policy Analysis in Asian Nations. In: Van den Ban, A.W. and R.K. Samanta (Eds.), Changing Roles of Agricultural Extension in Asian Nations, B.R. Publishing Corporation, New Delhi, 23-54.
18. Umali-Deininger, D., 1997. Public and Private Agricultural Extension: Partners or Rivals? The World Bank Research Observer, 12 (2): 203-224.
19. Umali, D.L. and L. Schwartz, 1994. Public and Private Agricultural Extension: Beyond Traditional Frontiers, World Bank Discussion Paper 236, World Bank and Washington, DC.
20. Van den Ban, A., 2000. Different Ways of Financing Agricultural Extension. ODI-Agricultural Research Network (Ag REN). Paper number, 106 b.
21. Wilson, M., 1991. Reducing the Costs of Public Extension Services; Initiatives in Latin America. In: Agricultural Extension: Worldwide Institutional Innovation and Forces for Change, Rivera, W.M. and D.J. Gustafson (Eds.). Amsterdam: Elsevier.