Information and Communication Technology (ICT) as a catalyst

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Abstract: - The primary purpose of this article is surveying the role of Information and Communication Technology (ICT) as a catalyst in the development of rural communities and also the barriers and problems of ICT in the agriculture Extension of the less-developed countries. Generally the purpose of ICT is hastening the process of transferring information and communication among various communities. Nowadays which is the era of information and communication, the existence of a catalyst is necessary and even vital. The rural community needs information to be in the same direction with development. This information is working in the form of a big and systematic network connecting the specialists, researchers, policy makers, farmers and students together and to update information. But in the less developed countries because of the deep gap existing in accessing the gifts of development in the society, the farmers have been isolated and their participation has been decreased. The used method of research is documentary and analyzing the document that is the analysis of the effective factors in highering the level of ICT and their relationships with each other on the basis of library studies. The results of the present article is providing applicable strategies for enabling, strengthening and even replacing the systems of Extension-Rural Informing and the existing knowledge networks. Studies in this field show that Agricultural Extension and Education has improved public participations in protecting nature resources, moving toward sustainable agriculture and finally accelerating the arrival toward sustainable development in rural communities.

Key-Words: Agricultural Extension and Education, Information and Communication Technology (ICT), Rural development.

1 Introduction
Growth and development of agricultural knowledge on one hand and the need of the rural community to up-to-date information for being in the direction with the development process on the other hand has made it more necessary to consider the rural informing system more and more than before (Movahedi, 2006). Today a new paradigm of agricultural development is fast emerging: in both developing and developed countries. The overall development of rural areas is expanding in new directions; old ways of delivering important services to citizens are being challenged; and traditional societies are being transformed into knowledge societies all over the world (Shaik and others, 2004). The role of ICTs in agricultural development can be viewed in terms of role of information provision and its use for decision-making at the farmer level. (Sukhpal, 2007). Information and Communication Technology is the technology of the new millennium which has reduced the time for doing calculation processing the data more exactly, easier exchange of information and decreasing the costs of trade. The results of ICT are more influential on the human life when they can penetrate in all of the fields and among all of the layers of the society both the urban and rural ones. The world analysts believe that in globalization expanding the rural ICT has a crucial role in the development of the countries. (Jalali, 2003).

2 The role of ICT in Agricultural Extension
In the 21st century which is called the "Information Age" an organization is successful that has a sufficient understanding of the information in its field and knows the new techniques for applying this information and by making use of these techniques and applying the latest known scientific events in its field represents a higher effectiveness and productivity. (Saqeb Tehrani, 2005). An Agricultural Extension organization is not an exception. Nowadays Agricultural Extension is facing a large quantity of innovations, discoveries and information in different fields of science, skills and agricultural technology and has got the latest findings from the resources of producing information and make it
accessible for the users and for being successful in this important matters, it is necessary to have a powerful and effective informing system and the fast development of the information network on the internet is one of these means. (Talaii referring to Sharma, 2000).

Considering the role of Extension in the Agricultural Information system as a connector between the farmers and the research centers, this organization must play its role in using the up to date information and transferring it to the farmers and on the others hand by reporting the needs of the farmers to the centers. In such a candidate the Information and Communication Technology accelerate. This process as a catalyst and by reducing the costs and facilitating communication by removing the physical distances among the villages and the farmers and facility the information transition helps the Agricultural Extension in playing its role. ICT has an important role in connecting research, extension and the market toward expanding the professional and entrepreneurship abilities, capacities among the experts and the agricultural communities. (Arkhi and others, 2008).

Using the Information and Communication Technologies (ICTs) reduces the costs of the information transitions. These technologies besides improving the accessibility of the information for the farmers makes it possible for the providers of the extensional services to compete in a better and healthier environment. In addition the appearance of a modern agricultural sample like the exact agriculture needs the extension to use the suitable information and communication and the new strategies to respond to the knowledge and information inquiries of its agents and beneficiaries. In such conditions the role of extension and its agents is facilitating the acceptance of these technologies, considering the software dimensions and not just the hardware ones, choosing and assessing the suitable technologies, recognizing the changes and the progressive processes, the potentials and the applicants of these technologies, providing consulting, educational and expertise services in the related fields. Therefore extension should modify itself with the information age for fulfilling these missions and has a good recognition of the technological events in its environment such as the Information and Communication Technologies and chooses the best of them. (Hosseini and Niknami, 2006).

3 The role of ICTs in Rural Development

Agricultural development just like any other concept is not obtained with a separate method and needs concentrated attempts and a higher tactics including different but related aspects such as technology, adequate supervision, natural sources and effective use of them, and participation of all the beneficiaries. According to the above mentioned factors, it is wise not to consider the importance of information and communication in the progress of any attempts based on development. It is obvious that several changes do not end to development by themselves and automatically. The advantages, benefits or potentials existed in ICT give it an added value to be considered in the future programming for development. Everybody knows that related, exact, up to date information is necessary condition for programming execution, supervision and assessment which are key elements in the process of development.

One of the fundamental priorities in process of planning the rural development in every country is considering the ICT. This technology can help the villages from not being isolated by making a leap in the transition of information and technology and by removing the traditional borders plays an important role in rural development. The benefits of using ICTs have been proved in many developed and developing countries. This technology has an important role in reducing the distance between the urban and rural life, balancing and unifying cities and villages (Maqsudi, 2009).

The basic for rural development at the beginning of the 3rd millennium is due to the information society. Information and being connected to the communication technology for acquiring knowledge in different field is a focal point introduced as in the sustainable development generally and rural sustainable development particularly which causes the rural areas to be developed. (Morid, 2010). Considering the higher potential of this technology is providing the needed services and information technology can be active in the following arenas in the villages:

1- In social developing and educating the villagers for preserving the natural sources.
2- In providing hygienic and remedial services to villagers by the aid of the ICTs.
3- In providing postbanks services in villages.
4- In providing strategies for distance learning in villages.
5- Using information technology in extermination. (Golmohammadi, 2003).

In most of the considered cases in the world, it has been seen that the acquaintance of the talented rural youth with ICT has produce expert human beings to the society and the different professional opportunities in different networks for the villagers. ICT is mentioned as an important means for decentralization in the developing communities by UNDP. So, the role of ICT in the economic, social, cultural and political development in villages can be very important in flourishing the community and promoting the circumstances of the villagers. (tarvardi, 2009).
4 Barriers and Challenges of ICT in the arena of Agricultural Extension in Developing Countries

The complexity of the evolutions, the human variables and the unexpectability of environmental factors and world economy influencing the agricultural activities and the strategic importance of food security and conflicting poverty on the other hand, has confronted agricultural development with deep and extended challenges. The process of globalization in trading the agricultural products, the vast competition in this field has changed the frame of the balances in the market. (Talaii and Khooravipour, 2010). Information in the field of agriculture and rural development not only is one of the most fundamental constitutions and capitals but also the most efficient factor in promoting the efficiency and the effectiveness of the other sources of production and development. But the last point of influence of the revolution of Information and Communication Technology is the villages. The amount of this influence and using it in the villages still has along distance with its usage in the cities. (Talaii and Khooravipour, 2010).

Considering the difficulties and problems existing in the villages in the rural development process of the developing countries, it’s obvious that most of these problems have some roots –directory or indirectory- in the lack or weakness of communication and information. The limits of electronic communication expansion in villages and the lack of communication with the outside world of the villages are one of the most important factors in the digital divide and distance of the rural communities with world powers of information and economy. (Morid and others, 2010).

The shortage of the comprehensive general policies in the developing countries for expanding the Information and Communication Technologies for villagers, as a great power of the productive forces in societies, the lack of suitable telecommunicational infrastructures for exchanging information in villages, being non-familiar and unable villagers in using the information technology devices, low population, scattered villages, the low income of villagers and not accepting high costs, are important challenges in expanding the ICTs in villages. Developing ICTs in villages without having roads, electricity and telecommunication faces serious problems. Making use of the experience of the pioneer countries in rural ICTs in removing these challenges can increase the rural of developing this technology in villages. (Golmohammadi, 2007).

5 The indicators of modern and scientific agriculture can be influenced by Information and Communication Technology and finally fulfill its goal including:

- Modern and advanced meteorology
- Exact information of the fluctuation of costs of the products
- Assessment of the needs and possibilities of national and international consumption markets
- Export and import information through private and governmental departments
- Suitable and advanced education and extension
- General goals and policies of government (Moinzade, 2005).

6 10 applied strategies for enforcing and enabling rural extension and informing systems and knowledge networks

Since the lack of connection among extension research and education has been always one of the problems for rural and agricultural development, one can say for sure that by enforcing the relationship among the mentioned three parts can help to enable the rural extensional and informing systems. Because of the connection of extension and research, the research centers are informed of the information and communication needs of the farmers and villagers and try to find solutions for their problems soon. About the relationship between research and education, the latest findings of the research centers are given to educational institutions and the needed instructions are given to the future extension agents and agricultural engineering.

1- Establishing educational courses for getting familiar with Information and Communication Technologies

2- Placing suitable ICTs in extension organization, making use of specialists of ICT and getting help from executed organizations in this field. (Alambeigi and others, 2009).

3- Relationships among extension, research and education.

4- Attempts to increase the awareness of the farmers and villagers of their information and communication needs.

5- Furnishing and expanding the facilities of information technology in villages for transmitting the findings to farmers and villagers.

6- Presenting the compatible technologies based on the facilities if the villages and the needs of their people.

7- Expanding the education of information and communication both among the villagers and the agricultural engineers.
8- Constructing and establishing extension and research station in rural centers.
9- Collecting a comprehensive agricultural information communication system.
10- Passing on in-service classes regularly and updating the agricultural educators, engineers and extension agents. (Morid, 2010).

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