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**NECESSITY OF INFORMATION TECHNOLOGY APPLICATION AND  
ITSEFFICIENCY IN SERVICE MANAGEMENT OF RURAL AREAS  
ORGANIZATIONS OF IRAN (GOLESTAN PROVINCE)**

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**ABSTRACT**

The significance of using Information Technology and its application in villages will only be shown when we get to know that over 40 percent of the world population live in villages. There are 68,200 villages in Iran of which about 50,000 are somehow provided with telecommunications equipment. Golestan province is the start point of the first electronic village with IT service center in Iran. The study is an applied research and its method is survey. it is done as a kind of correlation. Sampling method in this study was a combination of the Multi-Stage Cluster and Simple Random Samplings. Findings show that there is a significant relationship between the application of information technology and the increase in productivity, tourism in region, organizational knowledge, conversion of a traditional society to a modern one, reducing centralization and increasing the villagers' decision making abilities and their public participation. No doubt, with the changing style of people's living in the present era, these changes embrace rural life as well. One of the most important ways to change the villagers' outlook is through Information Technology application.

**Keywords: Telecommunication, Information Technology, Efficiency, Organization, Rural area**

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**INTRODUCTION**

Information and public awareness are the most strategic tools of management used in the proper handling of all economic, social, cultural and political units in the present era. Information Technology is rapidly developing in the world due to the importance of data-based decision making, and it has influenced all daily activities of the mankind. Since traditional style of living is not suited to the needs of today's Information Society, offering a suitable pattern of living with regard to the sociocultural conditions of the society. The significance of using Information Technology and its application in villages will only be shown when we get to know that over 40 percent of the world population lives in villages. The rural population in Asia and Oceania is 60 percent and in Iran 30 percent of the total population of the country. Over a billion people in the world are not yet acquainted with the primary tools of information technology and telecommunications. There are 68,200 villages in Iran of which about 50,000 are somehow provided with telecommunications equipment despite the fact that information technology is not yet implemented in villages. Golestan province is the start point of the first electronic village in Iran (**Shahkooh Village, 2000**), establishment of the first rural centre

for the general telecommunications and information technology of the country (**Qarn Abad Village, 2004**) and the founding of the IT service centers in four villages in the country assisted by the UNDP.

In a study titled "Examining the Role of Mobile Technologies in offering Office Electronic Services to the Villagers" (**Ya`qubi, 2009**) has concluded that the rapid development of information and communications technologies have led to the formation of new forms of communication and learning including e-learning and mobile learning. In another study titled "Examining the impact of electronic banking on reducing costs, and the social welfare of the rural regions of the case study: East Azerbaijan Province", `Ebadpoor, 2010, states that the offer of banking services by the Post Bank in the offices made the collection of extra and wandering liquidity from the villagers possible and provided the ground for granting credits and investment in villages. Online services through the rural ICT offices was a great step forward to improve social welfare of the rural communities and decrease their commuting to the cities to access banking services.

In a study titled "Extensive Growth through the Rural Electronic Telecenters in India",

GopalNaik, 2012, explains that two major changes have been made in the recent years in an attempt to assist the poor in the villages of India. One of them supports the formal acceptance of the rural markets potential and their businesses, and the other calls for the formation of tele-Centers with the villagers. Tele-Centers in all rural regions in India offer IT services to the customers and strengthen the government information network in order to promote the villagers' socio-cultural growth.

The purpose of present research is to assay the effect of information technology application by rural organizations in quality services (management) to rural inhabitants.

The following hypotheses are proposed:

H1: Applications of information technology affects the increase of productivity.

H2: Applications of information technology affects the development of tourism.

H3: Applications of information technology affects the transfer of organizational knowledge.

H4: Applications of information technology affects the change of a traditional society to a modern one.

H5: Applications of information technology affects the increasing power of the villagers' decision making and public participation.

H6: Applications of information technology affects the decrease of centralization.

## **METHOD**

### **Participants**

The sample included 250 participants (40 percent female and 60 percent male). Age ranged from 15 to 62 year. The majority of the participants (71.6 percent) were married, while 28.4 percent were single. Over one-third (40.4 percent) of the participants were classified as holding a college degree, 30.4 percent of the respondents held a high school diploma, and 29.2 percent indicated other. Nearly half of the participants were employed (50.4 percent) and rest were unemployed (49.6 percent). 93.6 percent of the respondents were native and 6.4 percent were not a native. The majority of the respondents (33.2 percent) live in villages more than 4 Km. away from the next village having an ICT Office and the minority of individuals (5.2 percent) lives in villages less than 1 Km. distance. Finally, percentage distribution of the respondents according to their use of the internet is follows: 56.4 percent use sometimes or urgent cases, 23.2 percent always and 20.4 percent never use internet.

### **Measures**

Research tools in this study are designed as a questionnaire. Questions are posed in a manner that everybody is able to answer

them. Demographic Characteristics section of the questionnaire consists of 10 questions about the characteristics of gender, married status, age, working resume in related IT field, education, being a native, respondent's situation, employment status and acquaintance with IT as well as with internet services and the distance to the next village where there is an IT office. And Research Variable Questions Section is designed with regard to the significance of each of the identified effective factors. This part consists of 30 questions and evaluates the variables of productivity, transfer of organizational knowledge, tourism, decentralization, changing a traditional society to a modern one as well as villagers' participation and decision making. Questions are to be answered using the Likert Method (Strongly agree / agree / neutral / disagree / strongly disagree) which are scored 1 to 5 respectively.

### **Data Collection Procedures**

It is done as a kind of correlation. Sampling method in this study was a combination of the Multi-Stage Cluster and Simple Random Samplings. It was done in a manner in which 50 villages from 8 regions of the Golestan province of Iran, including Gonbad, Galikesh, Ali Abad, Bandar Gaz, Minoo Dasht, Gomishan, Kalaleh, and Moraveh Tappeh were selected and then a few individuals were

chosen from among the employees of the centers as well as those who had used the IT services (inhabitants), as the sample size. Sample size of the study was 250 people calculated by Cochran formula. It included 50 employees at IT offices and the 200 inhabitants of the selected villages. Upon the selection of the statistical samples, the questionnaires by a few reliable questioners were distributed among the employees and the villagers who had benefitted from the IT offices services, and were collected after being answered and then grouped for analysis. Meantime, questioners to help and guide the villagers in filling the questionnaires, and questions were explained to them in case they needed it to arrive at the right answer.

### **Data Analysis**

The analysis statistics, in this study, are carried out in the form of descriptive and inferential statistics. First of all, we describe the descriptive statistics of the respondents to the questionnaire in the statistical population (**Table 1**).

In inferential statistic part, prior to examining the relationship between the independent and dependent variables of the study, we examine which one of the variables in the two groups under study, that is the inhabitants of the village and the ICT office employees, is

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prioritized by using the Kolmogorov – Smirnov (KS) Test.

**H0 Zero Assumption:** Variables are not prioritized in groups with respect to each other.

**H1 Contrary Assumption:** Variables are prioritized in groups with respect to each other.

Considering the below (**Table 2**), since Sig is greater than 0.05, Zero Assumption is accepted and variables are not prioritized in either group, that is the village inhabitants and the employees, and both groups show normal distribution.

To examine the effect of IT application on all variables (H1 – H6) Pierson's Correlation Coefficient is used and indicated that there are significant and positive relationship between them with high probability. That is shown two tables in below include Correlation Coefficient test and T test related to variables as an examples.

Correlation Coefficient among the IT applications and the increase of productivity equals 0.783 which is significant at the level of %99 ( $P < 0.01$ ). Therefore, Zero Assumption is not valid and the Contrary Assumption is accepted; that is to say there is a %99 probability of a positive and significant relationship between the applications of the

Information Technology and the increase in productivity.

The findings of the above table indicate that the calculated t 2.89 with the freedom degree 248 at %95 level is significant ( $P < 0.05$ ). It is, therefore, concluded that the Organizational transfer of knowledge between the two groups of employees and the village inhabitants is not the same.

In general, results of the Independent T- test indicate that effect of IT application on development of tourism, change of traditional society to a modern one and decrease of centralization between the two groups of the employees and the village inhabitants is the same while the rest of variables (increase of productivity, transfer of organizational knowledge and increasing power of the villagers' decision making and public participation) is not the same.

Meanwhile, in order to examine the research theories by using simple linear regression analysis we find out, a linear relationship between the application of information technology and an improved level of services offered by the rural organizations exist.

According to the above table, it may be concluded that since in ANOVA section the level of significance is less than 0.05, a linear relationship between the application of information technology and an improved level

of services offered by the rural organizations exist.

## **RESULTS**

Considering the statistical analysis of study, it was concluded that there is a positive and significant relationship between the application of information technology and the all theories of this research (increase in productivity, tourism development, development of organizational knowledge, conversion of a traditional society to a modern one, reducing centralization and increasing the villagers' decision making abilities and their public participation.

Since the views of the villagers and the ICT office employees differ in impact of IT application on increased productivity, it may be said that the economic efficiency in the region is facing decline and the region is perfectly capable of vast implementation of information technology, and by establishing these centers, productivity may also increase in pursuit.

With regard to the results thus obtained, it may be said that tourism is one of the axes of economic development and creates lucrative job opportunities for the villagers. Therefore, information technology plays a major role in developing this approach in the region.

The results also indicate that transfer of organizational knowledge may cause an

increase in the knowledge of the villagers, by using the information technology in the region, and thus create economic productivity. Considering the difference of opinion between the villagers and the office employees, it is clear that the transfer of knowledge does not happen extensively in the region. These results are in accordance with the findings of "Malae", 1391, to the extent that it emphasizes the initial preparation of the infrastructures by different state districts, as well as the development of their services through the information technology and the strengthening of the private sector and the cooperatives in the villages to offer this technology to the users.

The results also indicate that the application of information technology in rural community changes the outlook of the villagers by increasing their knowledge, and thus their traditional style of living changes to a modern one through their increased awareness and access to new information.

These results are in accordance with the results gained by "**Khanjari Alam**" (1386) in which he states that the century passed was known as the industrial age and that was because of the existence of large and small industries which separated mankind from the previous traditional era. This is also in accordance with the findings of Lang, 2002;

in a study titled “Making use of the online inhabitants: Extension of the electronic government in rural regions – Japan”, he states that the necessity and application of IT will have a powerful, motivating role in facilitating the state affairs.

The results related to prevent centralization are in accordance with the findings of “Okhovat”, 1386, in which he states that rural development in itself has concepts such as growth, sustainable development, construction and human development. Meanwhile, Rural development has bridged the gap between the cities and the villages and improved the standard of life in villages same as in cities.

The results of present research about impact of IT application on the increase of chances of the villagers’ participation and decision making abilities is in accordance with the outcome of “Shayan”, 1388, as he states that the electronic learning plays its role in the rural development and villagers learning and participation.

It is also in accordance with the results of “Yaqubi”, 1388, in which he states that the rapid development of information and communication technologies has led to the introduction of new forms of communications and learning, including the electronic instruction and mobile learning.

**Table 1: Descriptive Statistics**

Standard deviation	Mean	Number	variables	Respondents Group
3/02162	13/1800	50	Productivity	Employees
3/71698	12/9800	50	Organizational knowledge transfer	
5/10606	19/3600	50	Transition from traditional society to modern society	
3/86803	10/7600	50	Tourism	
7/79230	24/8800	50	Decentralization	
3/89054	13/0800	50	Public participation and decision making power	
3/49486	11/7950	200	Productivity	
4/26501	11/0750	200	Organizational knowledge transfer	
6/01111	17/5850	200	Transition from traditional society to modern society	
3/58800	9/5250	200	Tourism	
7/97720	22/8200	200	Decentralization	
3/99484	11/6050	200	Public participation and decision making power	

Table 2: One-Sample Kolmogorov-Smirnov Test

Asymp. Sig. (2-tailed)	Kolmogorov-Smirnov Z	Number	Variables	Respondents Group
0/743	0/681	50	Productivity	Employees
0/848	0/612	50	Organizational Transfer of Knowledge	
0/675	0/722	50	Changing a Traditional Society to a Modern One	
0/491	0/834	50	Tourism	
0/647	0/738	50	Decentralization	
0/774	0/661	50	Public Participation & Decision Making Power	
0/257	1/013	200	Productivity	Village Inhabitants
0/038	1/408	200	Organizational Transfer of Knowledge	
0/065	1/308	200	Changing a Traditional Society to a Modern One	
0/028	1/459	200	Tourism	
0/073	1/286	200	Decentralization	
0/082	1/264	200	Public Participation & Decision Making Power	

Table 3: Result of the Correlation Coefficient test

Applications of Information Technology	Statistic	Increase of Productivity
Applications of Information Technology	Statistic	Increase of Productivity
0/783	r	
0/000	Level of Significance (Sig.)	
250	N	

Table 4: Results of the Independent t- Test in comparison with the organizational transfer of knowledge between the two groups of the employees and the village inhabitants;

Sig.	df	t	Standard deviation	Mean	Number	Respondents	Variable
0/004	248	2/89	3/71	12/98	50	Employees	knowledge transfer
			4/26	11/07	200	Village inhabitants	

Table 5: Regression Results

ANOVA sig	R-Square	Dependent variable	Independent variables
0/000	000/1	Information technology application	Productivity Managers' transfer of knowledge Changing a traditional society to a modern society Tourism Decentralization Public participation and the decision making power

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**DISCUSSION**

Information technology application have paved the way to development and by decreasing the time gap have provided better opportunities for the villagers for their activities. Golestan province is one of the pioneering provinces in the establishment and development of rural ICT centers in Iran. Therefore, the development of its rural regions could be effective in promoting the capabilities and capacities of the region. One of the functions of information technology could be centralization in planning for tourism to adapt the existing natural attractions which are deprived of potential incomes of tourism, such as ecotourism which may be arranged through the related sites and by informing the students of agriculture, natural resources, mining, etc., of the ongoing field trips. Therefore, travel agencies may provide this opportunity by using information technology.

Organizational knowledge leads to increased knowledge of the villagers, and since welfare organizations, Imam Khomeini's relief committee and public charity foundations are among the major rural support organizations in Iran, increased organizational knowledge of these centers could well improve the knowledge of the villagers and necessitate the application of information technology in those

regions even more. The ever growing participation of the villagers in pace with the advancement of technology and their use of the information technology functions has changed the traditional style of the rural community and replaced the old ways of thinking with modern ones. IT centers offering special information technology services play a remarkable role in improving the level of offered services to the residents of the region.

In addition to the above-mentioned cases, ICT offices have the capacity to cover the medical and treatment requirements as well as insurance services for the villagers through video and multimedia equipment, in case the necessary infrastructures are provided, and thus let them enjoy these services with the least cost possible and by doing so enable them to bridge the gap between themselves and the urban facilities. What is quite clear in this research is the attempt to adapt the rural traditional style of living with the needs of today's information society. Therefore, offering a suitable living pattern with regard to the modern necessities of the society and in accordance with the obligations of information society is among the significant plans of the age of information and ICT offices can fully fulfill this great duty to reduce villagers' dependency on the cities.

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