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An assessment of the Effect of Information Communication Technology on Human Resource Productivity of Mobarekeh Steel Complex in Isfahan (IRAN)

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Abstract

Today, business settings have changed along with the improvement of knowledge-based economy and information communication Technology (ICT) has become the vital component of organizational productivity. Information communication technology is one of the strategic factors towards the improvement of business and human resource productivity. The present study aims to investigate the effect of Information Communication Technology dimensions on work force productivity of Mobarekeh steel complexion in Isfahan. The statistical population of the study was all managers and staff members working in different areas related to Information communication technology of Mobarekeh steel complex in 1388-89 (N> 6000). A questionnaire (with Cronbach's Alpha coefficient of 75%) was used as the data collection method. The findings of the study indicated that the dimensions of Information Communication Technology (Information technology, Management Information System, Internet, Office automation and Internet) affect human resource productivity of Mobarekeh Steel complex in Isfahan. Also the demographic variables of education level and the type of available jobs had effects on the Internet dimension of human resource productivity of the company.

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Keywords: Information & Communication Technology, Information Technology, Productivity

1. Introduction

The application of Information technology has a great stance among basic industries since it plays an important role in different industries such as productivity, social services and job opportunity improvement. Therefore technology can be taken as one of the strategic factors which can help improve business productivity (yang et al, 2007). Information technology began in 18th century along with industrial revolution and continued to the present which is still being used in different organizations (Harris & Nelson, 2003). Productivity improvement, service quality improvement, Cost reduction, Individuals' satisfaction and long-term profitability is among the expectations of those researchers dealing with Information Communication Technology (Law and Jogaratnam, 2005). They have also realized the controversial and useless results of productivity as a result of its investment in many industries. However, many studies validate the effect of information technology on productivity, service quality improvement

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and long-term profitability (Karadag& Dumanogl, 2009). Researchers' studies on productivity (2005) indicate that information technology investment has positively affected productivity from 1995 to 2003.

2 . Literature Review

Information technology is known as the last officially recognized revolution in the history of mankind. It affects all areas of business, society and global life and is developing with an unbelievable speed. This technology has a considerable effect on globalization and is a revolution in information, knowledge and organizational changes (Pavic et al, 2007). Information technology is a term which covers the concept of technology in information production, processing, retrieval and distribution cycle. Furthermore, it is a new way of obtaining and processing information which makes discontinuous activities be analyzed some sort of less effective. This technology has brought a lot of advantages for customers and industries and helps them have options when choosing various products and services in international market. It helps companies find new ways of improving their market by providing their customers with their immediate needs (Phuong, 2008). Information technology implementation is very costly for organizations. These charges are not compensated in public organizations until it is followed by cost reduction, productivity and service delivery quality improvement, increasing the capacity of public organizations' decision-making and efficiency improvement and providing a better access to information (Gichoya, 2005). Unfortunately companies have fundamental and financial limitations, inefficient and incompatible information system, organizational culture and leadership style, skilled staff and attitude problems. Such limitations hinder the process of IT implementation (Ndou, 2004). Information technology is defined as different types of technology which process, store, and send information electronically. Bradi et al (2008) believe that obtaining high efficiency and effectiveness in organizations requires investment in information technology components such as internet (Deeter-Schmelz and Kennedy , 2004), office automation (Geiger and Turley, 2005) and management information system (Li , 1995). The Net is a global network of computers which work independently and offers a variety of useful tools such as email, web and news groups (Obra et al, 2002). Most companies use internets and know it to be a boost for national economy (Martin and Matlay, 2001) with a much more profitability than telephone, fax etc. (Grandon. and Pearson, 2004). Administrative automation systems are one dimension of information & communication technologies which creates administrative, oral, written or video correspondence. They finally correct, store, display and transfer the information (HIRSCH Helm, 1986). All office works are organized through software systems in a full office automation system with the purpose of creating an office system without papers to improve productivities. Another dimension of information communication technology is management information system which is a unified part of comprehensive management system in an organization. This system involves planning for organizational sources and information systems with the operational result of supporting organization decisions (Sorensen et al 2010). Management systems support management activities at all levels and offers some key indices of the process (folinas, 2007). Since these systems can be used as middle managers, these managers are against the creation of such systems in the organization. This establishment affects human resource productivity as well. Human resource productivity is a dimension of productivity and is defined as the number of hours an individual is works. Josephine and Iwe, 2005 define productivity as measuring a human resource efficiency in different situations. Economists believe that Labour productivity is a key factor for economic health and more importantly economic growth. Therefore life standards should follow human resource productivity (Battitsi and Iona 2009).

3. The effect of information & communication technologies on productivity

Information technology as a new human technology is rapidly affecting business and life styles specially productivity and thus leading to wide range of changes in all activities (Zafiropoulos 2006). Most organizations are investing on information technology for more efficiency and profitability (Brady et al 2008). Information technology is considered in most industries as one of the strategic factors for business process improvement and human resource productivity .Williams and Williams and Clark (2007) report in their studies that most companies heavily invest on Information technology for getting better business feedbacks. Loukis and Sapounas 2008 support the relationship between Information technology and performance. However many SME's (Small-to-Medium sized Enterprises) are hesitated about investment in this technology and do not believe it to be a strategic resource (Carr 2003). One of the reasons these companies do not use this technology is that their managers do not use it completely (Maguire et al 2007) and do not have enough skill for its use (Chibelushi and Costello 2009).

4. Purpose

The increasing importance of Information technology in promoting human resource productivity of the organizations is inevitable. The present study aims to investigate the relationship between the dimensions of Information communication technologies (information technology, management information system, office automation internet and internet) and force productivity of Mobarekeh steel complex in Isfahan.

5. Research methodology

This study is of descriptive-statistical type and practical regarding its goal. The present study aims to investigate the effect of Information Communication Technology dimensions on human resource productivity of Mobarekeh steel complex in Isfahan. The statistical population of the study was all managers and staff members working in different areas related to Information communication technology of Mobarekeh steel complex in 1388-89. Simple random sampling was used and 159 individuals were chosen for the sample group. A questionnaire was used as data collection method based on Likret Scale from completely disagree (1) to completely agree (5).
The validity of the study was validated using expert comments and the reliability of the questions was approximately calculated 78% using Cronbach's Alpha coefficient. Single variable t-test, Friedman and variance analysis tests were used for data analysis of the study.

6. Data analysis:

The results of the study indicated that 56 percent of test takers were in the age bracket of 37 to 55 and a majority of them were employees and held B.A degrees. Also 74.2 percent of them had at least 20 years of working profile in the company. Although all the components of information technology played a role in human resource productivity but the results of Friedman test in table 1 revealed that variable priorities are not equal at significant level of 0.05. So the information technology component (IT) with a mean of 4.52 has the upper hand in human resource productivity. Internet with a mean of 1.53, on the other hand came last in effect.

Table 1. The results of Friedman test on grading dependant variables of the study

Independent variable	Mean	Sig. level	
Information technology	4.52	0.000	247.264
Information Management system	3.34		
Internet	1.53		
Office automation	3.39		
Intranet	2.24		

The effect of Information Communication Technology on human resource productivity is analyzed based on demographic variables (age, educational level, job and working background) in the first section of this study. Therefore ANOVAs test was used as the variance analysis test. The result of the effect of Information Communication Technology on human resource productivity based on age variable is summarized in table 2.

Table 2. The results of variance analysis test on the effect of Information Communication Technology on human resource productivity based on age variable

Sig.level	F	Independent variables
Independent variable	1.210	0.309
Information technology	0.330	0.857

Internet	0.686	0.602
Office automation	1.851	0.122
Intranet	1.083	0.367

The results show that the observed F was not significant at the level of (0.05). Therefore were no significant differences between the answers of test takers at different ages. Table 3 illustrated the results of variance analysis test on the effect of Information Communication Technology on human resource productivity based on their level of education.

Table 3. The results of variance analysis test on the effect of Information Communication Technology on human resource productivity based on their level of education

Sig.level	F	Independent variables
Independent variable	0.297	0.827
Information technology	0.312	0.817
Internet	9.114	0.000
Office automation	2.491	0.062
Intranet	1.153	0.330

The results show that the observed F was significant at the level of (0.05) only for the internet component. Therefore there was a significant difference between the answers of test takers with different levels of education on the effect of internet on human resource productivity.
The results of the effect of Information Communication Technology on human resource productivity based on their job are summarized in table 4.

Table 4. The results of the effect of Information Communication Technology on human resource productivity based on their job

Sig.level	F	Independent variables
Independent variable	0.513	0.6
Information technology	0.173	0.842
Internet	7.262	0.001
Office automation	0.057	0.944
Intranet	1.227	0.296

The results show that the observed F was significant at the level of (0.05) only for the internet component. Therefore there was a significant difference between the answers of test takers with different jobs on the effect of internet on human resource productivity.

On the other hand, the results of the effect of Information Communication Technology on human resource productivity based on their working background are summarized in table 5.

Table 5. The results of the effect of Information Communication Technology on human resource productivity based on their working background

Sig.level	F	Independent variables
Independent variable	0.225	0.924
Information technology	0.059	0994
Internet	1.634	0.168
Office automation	1.096	0.361
Intranet	1.135	0.342

Based on the observed F, none of the independent variables were significant at the level of (0.05). Therefore there were no significant differences between the answers of test takers with different working backgrounds on the effect of information technology on human resource productivity in none of the dimensions.
In the second part of the study, the research questions were analyzed. The major purpose of this study is to investigate the effect of Information Communication Technology dimensions on human resource productivity of

Mobarekeh steel complex in Isfahan. Thus a single variable t-test was used for the analysis of each question of the study and the results are summarized in table 6.

Independent variables	Mean	T	Sig.level
Information technology	4.3218	21.951	0.000
Information Management system	3.9227	13.857	0.000
Office automation	3.8553	21.615	0.000
Internet	3.2035	6.798	0.000
Intranet	3.3826	7.456	0.000

The first question is on the effect of Information Communication Technology dimensions on human resource productivity of Mobarekeh steel complex. According to the above table, the mean is more than the expected. Furthermore, the observed t is significant at the level of 0.05. So it can be concluded that information technology has increased human resource productivity more than expected. On the other hand, the results related to the effect of management information system on their human resource productivity shows that the calculated mean. The observed t is significant at the level of (0.05). So it can be concluded that management information system has increased human resource productivity more than average. The third question is about the effect of office automation on human resource productivity. According to the results of the above table, the mean is more than the expected and the observed t is significant at the level of (0.05). Consequently, office automation has increased human resource productivity more than average. The same thing turned out to be true about the effect of internet and intranet on their human resource productivity and all the personnel were willing to use more internet and intranet in their organization.

7. Conclusion

Today, organizations are increasingly using IT as a means to improve their productivity and their customer and personnel satisfaction. The main purpose of this study was to investigate the effect of Information Communication Technology on human resource productivity of Mobarekeh steel complex in Isfahan. The results of the study indicated that using IT had a considerable effect on their productivity. This result has been approved by many other previous studies. In a study by Gichoya (2005), it was found out that encouraging governmental and non-governmental organization for using IT both improves productivity and makes communications more effective. Timmer and Arky proved that using ICT from 1995 to 2001 increased the American human resource productivity more than that of Europeans. Iwe (2005) proved that Nigerian women human resource production incredibly increased using IT. It seems as if Mobarakeh steel company needs to make more investments in teaching ICT techniques to its employees in order to have more desired improvements. There was no significant difference between the answers of test takers based on their age and they equally used this technology but the results of a similar study by Koning and Gelderblom (2006) does no validate this finding. They believed that older people used ICT less than younger personnel. Apparently, variables like level of education and job have a more significant effect on ICT acceptance.

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