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The Relationship between Demographic Characteristics with Information and Communication Technology and Empowerment in General Organizations (Case Study: Sari Municipality)

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ABSTRACT

This study was an attempt to investigate the relationship between demographic characteristics with information and communication technology (ICT) and empowerment of Sari municipality staff in 2015. "Research methodology" in this study was descriptive and correlational. To fulfill the purpose of this study, 152 staff were selected from among a total number of 250 population based on stratified sampling using Krejcie and Morgan sampling table. "The data collection tools" consisted of two standard questionnaires, including ICT questionnaires (%96 validity) and empowerment questionnaire (87% validity). "The data analysis method" was inferential statistics conducting by SPSS. "The results" showed that there was not a significant difference between the mean of ICT and empowerment components among Sari municipality staff in terms of their age, gender, education, work experience, and organizational post.

Keywords: Information and Communication Technology, Knowledge Management, Demographic Characteristics
JEL Classifications: E37, E32, C53, C5

1. INTRODUCTION

Today the use of information technology is necessary and inevitable to coordinate with the environment rapidly changing and gaining flexibility. In the most superficial look to information technology it can be viewed as "any hardware or software that is used to build, operate, or maintain the information system applications, including technologies and tools for decision support as well as infrastructures IT transaction processing systems, servers, networks and website" (Benamati and Lederer, 2008). If we look a little deeper, we are confronted with a series of mechanisms that attempts to produce services and provide facilities to solve the major problems of humanity in the field of tools preparation and access to information and knowledge. Undoubtedly, in the current era, something called information, determined the fate of societies. Today, collection, production, stockpiling and recycling information has become a great resource. IT or in other words, the practical application of computer systems, has been able to help different sciences so that each of these sciences have taken a long step (Lucas, 2008).

Individual factors has been one of the most important factors that plays a role in the application of information technology. Individual factors such as staff attitudes towards information technology and their demographic characteristics are factors that influence the rate of staff adoption and use of IT (Alquraini et al., 2007; Loraas and Wolfe, 2006). The success in use of IT depends on the characteristics of the technology and the skills and expertise of those who employ it. In other words, the behavior related to the use of technology is controlled by factors outside the workplace (such as job characteristics, scope of work, responsibility, physical comfort, etc.) and also under the influence of personal characteristics (gender, education, attitude, perception, etc.). Researches on the adoption of information technology have been done well at the individual level, and useful studies have been conducted in the field of adaptation and use of information

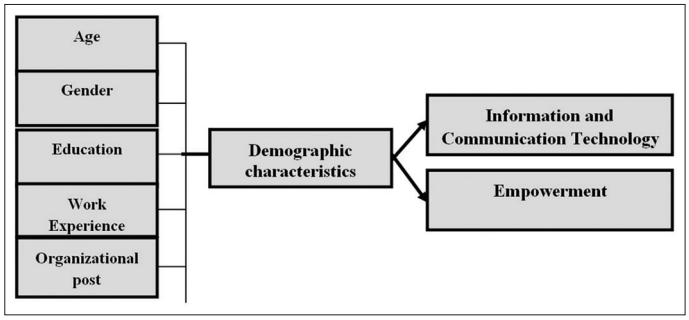
technology (Eshraghiyan et al., 2011). A model that has been used widely in the field of information technology acceptance is technology acceptance model, which deals with the factors at the individual level. Davis introduced this model in 1986, based on the theory of reasoned action for modeling of acceptance IT by users. This model provides an explanation for the factors affecting PC acceptance by users, as well as is a model at the level of individual factors. Two factors form the basis of this model: Perceived usefulness and perception. These two factors impacted on people's attitudes towards the use of technology, and makes the decision to use the technology and finally use it (Davis et al., 2007).

According to Appelbaum and Honeggar (1998), empowerment is considered in the sciences, including sociology, psychology, management, social sciences, etc., and in each of them defined in certain aspects. Empowerment is the process of competence of staff through identification and elimination of the conditions that lead to their inability (Mehrara and Vedadi, 2013). Empowerment is examined from different aspects in management, that psychological empowerment is one of them. According to Thomas and Velthouse (1990), psychological empowerment is the process of enhancing intrinsic motivation toward the four cognitive tasks, including sense of choice, meaningfulness, competence, and effectiveness. Other definitions have been provided in this case; for example, empowerment is people's intrinsic motivation to improve potential (Sharon et al., 2014). Empowerment is not sharing the constant amount of power, but it's a process that increases the relative power of every individual. Empowerment is a power derived from the idea that power can and should be created through continuous improvement of competence and its application. Empowerment people are self-control and self-adjustment. They accept responsibility easily and have positive view about themselves, others and the environment. They are optimistic about the work life, and basically they see others as colleagues and partners rather than competitors. When a conflict or a problem with the job arise, instead of ignoring and blaming, they look for a solution. They accept criticism and are learning constantly (Galilian and Moradi, 2015).

Information and communication technology (ICT) dimension is included automation, processing, storage, information and communication (Damghanian et al., 2013) and empowerment is included sense of choice, meaningfulness, competence, effectiveness and confidence (Sprietzer, 1995). Several researches were carried out related to the subject of this study which some of them are mentioned below: Bahramzadeh and Faqani (2015), in a study entitled "the relationship between ICT with staff psychological and creative empowerment" achieved that there is a significant relationship between ICT with psychological empowerment, and also between ICT and empowerment components there is a positive relation between competence and effectiveness, but there is a negative relation between competence and choice. Taghvai (2015), finds in a study entitled "the relationship between IT and managers psychological empowerment" that there is a significant relationship between information technology and psychological empowerment and its components excluding competence. Jamshidi et al. (2015), in a study entitled "the relationship between the use of ICT with university staff empowerment" achieved that there is a significant correlation between the use of ICT with empowerment components including improving performance, independence and freedom of action, responsibility for decision-making, job diversity, self-control, the ability and willingness of staff professional development. Among the different aspects of empowerment, improving performance had the most relation, and staff self-control had the least relation with ICT. Kamalian et al. (2013), in a study entitled "the role of information technology on staff empowerment" found that there is a significant positive relationship between ICT and empowerment. As well as the level of staff empowerment in terms of competence is higher, and in terms of effectiveness is less than other aspects of empowerment. Islami (2013), in a study entitled "the relationship between information technology with staff empowerment in Refah Bank" achieved that there is a positive significant relationship between ICT and empowerment components including improving the quality of performance, knowledge, job opportunities, independence and freedom of action, responsibility for decision-making, self-control, and professional development of staff. Ghasemi (2011), in a study entitled "the effect of information technology on staff empowerment and providing optimal model in Iran porcelain factories" found that there is a significant relationship between ICT and empowerment, and by Friedman test it was determined that the factor of hardware and extrane are the highest and the lowest priorities to staff empowerment respectively. Hosseini et al. (2012), in a study entitled "the relationship between demographic characteristics and psychological empowerment of education department's staff" achieved that there is a significant differences between gender and educational level with psychological empowerment. Eshraghiyan et al. (2012), in a study entitled "the effective human factors influencing the use of information technology by middle managers of Tehran University of Medical Sciences" found that there was a significant relationship between perception and decision-making with the use of information technology, but there was no significant relationship between work experience, education and training with the use of information technology. Amirkabiri and Mohammadian (2011), in a study entitled "the relationship between empowerment, job satisfaction, job stress and organizational commitment" in examining the demographic characteristics of the research variables, found that there is a significant relationship between empowerment and organizational commitment with the level of education, and job satisfaction and job stress with the age of people. Parirokh et al. (2009), in a study entitled "the relationship between the uses of ICT with the demographic characteristics of faculty members of Ferdowsi University of Mashhad" achieved that the use of ICT in educational performance was greater among women than men, and this rate was greater among men than women in management functions. There is a negative relationship with respect to age and there is no significant difference with regard to the obtained values of work experience. In this study the pattern of ICT of Damghanian et al. (2013) and empowerment of Spreitzer and Mishra (1995) was performed. So the analytical model can be presented on Figure 1.

Considering that studies show that there is a relationship between ICT with empowerment, and demographic characteristics with both of them, accordingly, this study may be small but effective step in order to aware the managers and operators of public

Figure 1: The analytical model (self-made)



organizations, especially Sari municipality, in promoting the use of empowering technologies to achieve updated information, improving educational performance and increasing staff empowerment and productivity. This research seeks to answer this main question: "Is there a significant relationship between demographic characteristics with ICT and empowerment of Sari municipality staff?" In line with the preceding question, the following hypotheses were stated:

- H_1: There is a significant difference between ICT and its components with demographic characteristics (age, gender, education, work experience, organizational post).
- H_2: There is a significant difference between empowerment and its components with demographic characteristics (age, gender, education, work experience, organizational post).

2. METHODOLOGY

Methodology in this study was descriptive and correlational. 152 staff (including 36 women and 116 men, in terms of education level 24 people with education level of diploma/associate degree, 75 bachelors and 53 MSc/PhD, in terms of work experience 63 people with work experience <5 years, 71 people between 5 and 15 years and 18 people more than 15 years, in terms of age: 44 persons <30 years, 89 people between 40 and 30 years, 19 people more than 40 years, and in terms of organizational post: 128 experts, 14 responsible experts, and 9 directors of office/department/unit) were selected from among a total number of 250 population based on stratified sampling using Morgan sampling table. The data collection tools consisted of two standard questionnaires: ICT standard questionnaires of Damghanian et al. (2013) which had 28 questions with the validity of 96%, was designed to measure components: Automation, processing, storage, informing, communications. The second one was empowering questionnaires of Spritzer and Mishra including 15 questions with the validity of 87% was used to measure features: Choice, meaningfulness, competency, effectiveness, confidence. The data analysis method was inferential statistics (Pearson correlation and correlation, ANOVA and MANOVA) conducting by SPSS.

3. RESULTS

- The first hypothesis (the main): There is a significant relation between ICT and demographic characteristics (age, gender, education, work experience, and organizational post).

Table 1: The comparison of ICT components in terms of demographic characteristics

Demographic variables	ICT components	F	Sig.	Observed power	Df
Age	Automation	2.545	0.082	0.502	2
	Processing	0.731	0.483	0.172	2
	Storage	0.837	0.435	0.191	2
	Informing	0.209	0.812	0.082	2
	Communication	0.243	0.785	0.088	2
		0.628	0.535	0.153	2
Gender	Automation	0.015	0.903	0.052	1
	Processing	0.276	0.600	0.082	1
	Storage	0.783	0.378	0.142	1
	Informing	0.346	0.557	0.090	1
	Communication	0.484	0.488	0.106	1
		0.082	0.775	0.059	1
Education	Automation	0.105	0.957	0.069	3
	Processing	0.234	0.873	0.093	3
	Storage	0.293	0.830	0.105	3
	Informing	0.416	0.742	0.131	3
	Communication	0.459	0.711	0.141	3
		0.299	0.826	0.107	3
Work experience	Automation	1.042	0.356	0.229	2
	Processing	0.561	0.572	0.141	2
	Storage	0.644	0.527	0.156	2
	Informing	1.316	0.271	0.281	2
	Communication	1.626	0.200	0.339	2
		0.973	0.381	0.216	2
Organizational post	Automation	0.562	0.571	0.142	2
	Processing	0.056	0.945	0.058	2
	Storage	0.173	0.841	0.076	2
	Informing	0.203	0.816	0.081	2
	Communication	0.272	0.762	0.092	2
		0.013	0.988	0.052	2

ICT: Information and communication technology

H_0: $\mu_1 = \mu_2$
H_1: $\mu_1 \neq \mu_2$

According to the results of Table 1, the significant level for ICT and all of its components (Sig = 0.05) is larger than the value of the predicted error. Therefore, with 95% level of confidence, H_0 hypothesis was accepted and there was no significant difference between ICT components of Sari municipality staff in terms of age, gender, education, work experience, organizational post.

- The second hypothesis: There is a significant relation between ICT and its components with demographic characteristics (age, gender, education, work experience, organizational post).
  H_0: $\mu_1 = \mu_2$
  H_1: $\mu_1 \neq \mu_2$

According to the results of Table 2, the significant level for empowerment and all of its components (Sig = 0.05) is larger than the value of the predicted error. Therefore, with 95% level of confidence, H_0 hypothesis was accepted and there was no significant difference between empowerment components of Sari municipality staff in terms of age, gender, education, work experience, organizational post.

Table 2: The comparison of empowerment components in terms of demographic characteristics

Demographic variables	Empowerment components	F	Sig.	Observed power	Df
Age	Competence	0.979	0.378	0.218	2
	Choice	0.042	0.959	0.056	2
	Effectiveness	0.748	0.475	0.175	2
	Meaningfulness	0.397	0.673	0.113	2
	Confidence	1.699	0.187	0.353	2
		1.065	0.348	0.234	2
Gender	Competence	0.222	0.638	0.075	1
	Choice	0.560	0.456	0.115	1
	Effectiveness	0.773	0.381	0.141	1
	Meaningfulness	0.766	0.383	0.140	1
	Confidence	0.091	0.763	0.060	1
		0.088	0.767	0.060	1
Education	Competence	1.164	0.326	0.308	3
	Choice	0.162	0.922	0.079	3
	Effectiveness	1.715	0.167	0.441	3
	Meaningfulness	0.474	0.701	0.144	3
	Confidence	1.008	0.391	0.270	3
		1.142	0.335	0.302	3
Work experience	Competence	0.375	0.688	0.109	2
	Choice	0.416	0.660	0.116	2
	Effectiveness	0.390	0.678	0.112	2
	Meaningfulness	0.470	0.626	0.126	2
	Confidence	1.599	0.206	0.334	2
		0.836	0.436	0.191	2
Organizational post	Competence	2.776	0.066	0.540	2
	Choice	0.435	0.648	0.120	2
	Effectiveness	0.494	0.611	0.130	2
	Meaningfulness	0.235	0.791	0.086	2
	Confidence	2.251	0.109	0.452	2
		1.200	0.304	0.259	2

4. CONCLUSION

The results of the study indicated that there was not a significant difference between mean of ICT components and empowerment of Sari municipality staff in terms of age, gender, education, work experience, organizational post. These findings are in line with Hosseini et al. (2012), Amirkabiri and Mohammadian (2011), Parirokh et al. (2009); but it is not in line with Eshraghiyan et al. (2011).

One of the most important factors that plays a role in the application of information technology has been individual factors. Individual factors such as staff attitudes towards information technology and their demographic characteristics are factors that influence the rate of staff adoption and use of technology. The success in use of ICT depends on the characteristics of the technology and the skills and expertise of those who employ it. In other words, the behavior related to the use of technology is controlled by factors outside the workplace (such as job characteristics, scope of work, responsibility, physical comfort, etc.) and also personal characteristics (gender, education, attitude, perception, etc.). Researches on the adoption of information technology have been done well at the individual level, and useful studies have been conducted in the field of adaptation and use of information technology.

The results showed that and there was no significant difference between demographic characteristics with ICT and empowerment, it means that in this organization it does not matter at what level is a staff in terms of age, education, gender, work experience, organizational post. He can properly carry out their duties with the use of IT in the organization. This shows two things: (1) A high level of use of ICT and empowerment in all Sari municipality staff that this was due to appropriate training program. (2) Sari municipality uses technologies with low level, and staff do not require much ability to use these technologies, so they have a same level of empowerment.

According to the results of this study, some solutions can be suggested to improve the use of ICT and empowerment staff with regards to demographic characteristics:

- The organization need to raise the level of IT and empower its staff by holding successive courses in introduction to ICT and updating their information. With increasing innovation, to raise awareness, the organization needs to hold lectures, seminars, conferences, meetings and workshops continuously, so that staff can offer their scientific publications in the field of ICT. In this condition can be created difference between staff, in terms of demographic characteristics and application of technologies and empowerment.
- The cause of lack of relationship between demographic characteristics and ICT and empowerment of staff can be searched by examining the strengths and weaknesses of the use of ICT, studding information literacy, the problems of any organization in the use of ICT, comparative study of demographic characteristics with other country, continuous measurement of the use of ICT in terms of evaluating the success and failure of staff to take advantage of it, proposing researches in the field of feasibility and devise of possible and useful ways for making effective use of ICT in the organization so that it will be in line with the orientations and service of system success.

In short, today information in organization be collected, processed, stored and transmitted through the ICT. The use of ICT in the organization is considered not a choice but a necessity, so that today doing anything and establishing any kind of communication is highly dependent on ICT. Which it has increased the speed and quality of affairs, and on the other hand, leads to empowerment of staff? Subsequently it influences organizational performance, to increase the speed and success of the organization in the field of competition.

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