Investigation of Relationship between Knowledge Workers (KW) and E-Government Success

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ABSTRACT

The present research was conducted in order to investigate relationship between KW and E-government in Petroleum Industry Pension Funds. Statistical population of the research included all employees of Petroleum Industry Pension Funds. This research is a descriptive and correlation research and it is an applied one in terms of its goal. From data collecting point of view, it is a survey research and from temporal point of view, it is a sectional study. Two questionnaires were used to measure the basic concepts of the research, one for KW with 5 dimensions and another one for e-government. Reliability of the questionnaires was calculated by means of Cronbach's alpha method. Validity of the questionnaires was verified by means of content validity and construct validity methods through exploratory and verification factor analyses and KMO index. results of Pearson correlation test which was conducted by SPSS showed significant relationship between research variables and dimensions.

KEYWORDS: knowledge workers (KW), knowledge creation, knowledge packaging and e-government success.

INTRODUCTION

21st century has had many serious challenges and worries, such that none of the development plans designed and none of the new technologies have been able to remove these issues(Kelly, 2003). After emergence of global internet network and introduction of using E prefix at the beginning of many words, a new phenomenon called "e-government" has come to existence in the recent years. Governments emphasize on using new technologies in order to improve their service quality level and increase efficiency. Many factors facilitate implementation of e-government and direct public sector towards using it. Human factors and a kind of employees called "knowledge workers" can influence on the success of this system and improvement of e-government. Managers and experts are called KW altogether because knowledge is the main element in their activities. The main duty of KW is identification (of a problem or a possible opportunity), decision-making, supervision and programs scheduling rather than physical work. Therefore, knowledge and technical workers are employees who are involved in analysis of situations and scenarios and evaluation of different methods and decision-making or suggestion of new methods using information. The main goal of the present research is investigation of relationship between KW and e-government success.

LITERATURE REVIEW

Knowledge workers

Peter Drucker was the first person who described KW (tomorrow land, 1959). He wrote in 1969: increasing the productivity of a knowledge working environment is one of the main duties of management in the recent century, just as increasing productivity of labor was the main duty of management in the previous century. In 1997, Drucker stepped beyond the definition of KW and wrote: knowledge productivity and knowledge workers are the only advantages in global economy and it is a determining factor at least in most industries of developed countries (Harvard Business School, 2001).

Donport's definition of KW in this decade is:KW has a high level of smartness, education or experience and their main duty is creation, distribution or application of knowledge.

KW live with their thinking and intelligence and their main heavy burden at work is intellectual and not physical. They solve problems, identify customers' needs and try to satisfy their needs. They are decision-makers and cooperate with employees in their tasks (Eliot, 1982). The problem is with differentiation of employees which cannot be said whether they are knowledge workers not. Most jobs require knowledge application more or less and actually the number of jobs which do not need knowledge is very small. Conceptually, everyone with whom you face can be a knowledge worker. Therefore, the fact that the number of employees who use knowledge at their work is increasing does not convert them to knowledge workers (Brown et al, 2000).

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KW can find, create, package and distribute knowledge or apply it. The role of employees in knowledge can influence on the quality of changing or improving activities. A job which has a knowledge creation nature must be considered as different from a job which has a nature of application of knowledge (Donport).

**Search for existing knowledge:** Employees whose job nature is looking for knowledge must identify knowledge needs, look for them in different references and deliver it to knowledge applicant. One example of this is library employees or smart competition. Today, most organizations expect their employees to find necessary information on their own but they must be trained well in order to be able to do this and this is not usually possible. Relationship between knowledge finder and knowledge applicant is a key factor in knowledge-based processes success.

**Knowledge creation:** the nature of some employees’ job is creation of knowledge. Examples like pharmaceutical companies’ researchers, creative managers in advertisement section, and book authors or scenario writers. Creation of knowledge may be the most difficult knowledge activity which can be formed or improved, because it is usually done in the mind of knowledge individual. However, the solution to this problem is not forgetting about KW because their performance influences on organizational success and knowledge economy. Productivity and effectiveness of knowledge creators can be usually improved by access to created knowledge which can be re-used or by the results of the previous events reports.

**Knowledge packaging:** employees whose job nature involves knowledge packaging integrate knowledge which has been created by others. Publication is an example of packaging. Packaging is usually conducted in order to make others’ knowledge works more effective. For example, we read a newspaper because its news has been collected by reporters or editors. Therefore, there is no need to read all news reports. These people’s job is not creation of knowledge, but designing and the work of an editor-in-chief is considered as a knowledge work. One of the cases in which packaging is seemed inefficient is when knowledge packagers usually wait for new knowledge creation and they cannot rely on knowledge creators who finish their work late.

**Knowledge distributors:** People, who are active in knowledge management professionally, are mostly knowledge distributors. They create systems and processes which facilitate others' access to knowledge. It is possible for an organization not to have many knowledge distributors but their roles are important for involvement of other KW as a driving motor.

**Application of knowledge:** those who apply knowledge are at the end of knowledge line. Such knowledge employees use knowledge for their own work or re-use knowledge, but they usually do not create a large volume of knowledge (although each employee produces some knowledge.). Accountants and auditors, low-level hygienic care experts are examples of this kind of knowledge work. Such KW is abundant in an organization and is usually targeted at change programs.

**E-government**

Many commentators, researchers, managers and governors believe that IT revolution can have fundamental role in confrontation with new challenges (Backus, 2001). One of the most important opportunities which have been presented by IT to managers and governors is the possibility of re-engineering of government architecture and increase in accessibility, strengthening efficiency and responsiveness of government and utilization of IT in governing process has led to e-government phenomenon (Murnane, 2001). The time period in which we live have been named “E-everything”, because many electronic phenomenon exist in this period (Grove, 2003) including e-commerce, e-banking, e-learning, e-logistics, e-citizenship and e-government and generally e-life. Some of the definitions of e-government are more comprehensive. Gartz believes that e-government is the continuous improvement of service, participation of government and beneficiaries through technology, internet and new media (Fang, 2002). Fang believes that e-government is a suitable method for using new technologies which facilitate access to information and public service with high quality and provides more opportunities for people participation in democratic processes (Fang, 2002). Hic defines e-government as a method for governments by which they use new technologies to facilitate individuals’ access to information and public service, improvement of service quality and presentation of many opportunities for individuals’ participation in processes (Hic, 2002). In one glance, e-government refers to application of IT by public organizations which results in ability to change the way of relationship with citizens through access to public information, increase in transparency, more satisfaction and increase in benefits and reduction in costs (WWW.WorldBank.org). Reshenthaler and Thompson regard application of IT to government processes as the last phenomenon in a string of large transformations which give new shapes to governments. E-government can be defined as government attempts at provision of information and service for citizens through wide application of information and communication technologies (Burn, 2003).

**Research background**

RikioMarutainvestigated productivity through innovation and knowledge creation in a paper titled "conversion of KW into innovative employees for improvement of organizational productivity". He investigated 3 indices: information, knowledge and insight. In this paper, up-to-date PDCA concept has been used in order to
train innovative employees (RikioMaruta, 2012). Kaplan et al (2013) investigated KW selection of residential place in city in his research titled "selection of living place by KW: the role of facilities at work and cities life style". 833 sample members who were all KW emphasized on the importance of technology in offering service, issues analysis, relative importance of life quality, cultural and welfare facilities. Guo (2012) referred to human capital as an important intangible asset which has important role in employment of KW in companies and investigated relationship between human capital and KW job success in a paper titled "studies on relationship between human capital and KW job satisfaction" (WenchenGuo, 2012).

Ali Sanei and Mohammad Ali Rezvani tried to present some recommendations for removal of e-commerce obstacles and creation of e-government which is an essential factor for steady development and spreading e-commerce based on experiences of developed countries like Japan and developing countries like Thailand and India in their research titled "e-commerce and e-government: lessons from Japan and some developing countries experiences for Iran" (Sanei). Hamid Reza MalekMohammadi and MajidHadiZadeh (2004) investigated special information and electronic technologies and introduced IT as the main battle yard and identified this phenomenon and e-government and its advantages in their paper titled "re-engineering of government within in the form of e-government: a new way towards production and policies implementation" (MalekMohammadi, 2004). ShabanElahi et al (2010) conducted a research titled "acceptance of e-government in Iran: explanation of the role of individual, organizational and social variables which are important in technology acceptance" and identified factors influencing on acceptance of e-government in Iran. These factors are categorized in three groups: individual, organizational and social variables. Results showed that infrastructure and service accessibility are the most important factors influencing on e-government acceptance in Iran (ShabanElahi, 2010)

After investigation of research literature and background, the main question of the present research forms and that is: "whether the presence of KW result in e-government success or not?"

**RESEARCH METHODOLOGY**

The present research is an applied and a descriptive research in terms of its goal and considering the subject and hypotheses structure. In this research, our goal is to describe conditions and the phenomena under study (Bazargan, 2006). These phenomena include KW and its dimensions and relationship with e-government success in Petroleum Industry Pension Funds. Therefore, this research methodology is correlation and correlation coefficient was used to analyze data.

Considering research goals, research type and the variables, research hypothesis are as follows:

**Main hypothesis:** there is significant relationship between KW and e-government success in Petroleum Industry Pension Funds.

**Subsidiary hypothesis 1:** there is significant relationship between search for knowledge and e-government success in Petroleum Industry Pension Funds.

**Subsidiary hypothesis 2:** there is significant relationship between knowledge creation and e-government success in Petroleum Industry Pension Funds.

**Subsidiary hypothesis 3:** there is significant relationship between knowledge packaging and e-government success in Petroleum Industry Pension Funds.

**Subsidiary hypothesis 4:** there is significant relationship between KNOWLEDGE distribution and e-government success in Petroleum Industry Pension Funds.

**Subsidiary hypothesis 5:** there is significant relationship between knowledge application and e-government success in Petroleum Industry Pension Funds.

Above hypotheses show that KW is a human resource factor which influences on the success of e-government. KW dimensions include 5 dimensions of K search, KNOWLEDGE creation, knowledge packaging, knowledge distribution and knowledge application.

The following figure indicates the direction of relationship between hypotheses variables in a conceptual model:
A questionnaire with 5-point Likert scale was used and its validity was verified by experts in order to collect data and considering research hypotheses and statistical population (which included all employees of Pension Funds all over the country). Furthermore, SPSS software was used to calculate Cronbach's alpha. KW questionnaire reliability (=alpha) was 0.903 with 17 questions and e-government questionnaire alpha was 0.917 with 26 questions. Statistical population of the research included employees of Petroleum Industry Pension Funds. Sample size was calculated by means of Morgan Table (234 people). Descriptive test was conducted for data analysis and indices like frequency table and mean, median, percentage, standard deviation, variance and histogram diagram were calculated. Pearson correlation test was used for testing research hypotheses.

Data analysis

1. Descriptive results of the research

53.4% of the respondents were male (125 people) and 43.2% of the respondents were female (101 people). 8 people (3.4%) did not respond to this question. 35% of the respondents were single (82 people) and 62.4% of the respondents were married (146 people). 6 people (2.6%) did not answer to this question. 10 people (4.3%) were under 25 years old, 183 people (78.2%) were between 26 to 35, 23 people (9.8%) were between 36 to 45, 9 people (3.8%) were between 46-55, 4 people (1.7%) were above 55. 5 people (2.1%) did not specify their age. 18 people (7.7%) had diploma degree, 33 people (14.1%) had associate's degree, 151 people (64.5%) had bachelor degree, 25 people (10.7%) had master degree, 7 people (3%) did not answer this question. 86 people (36.8%) had a working experience below 5 years, 110 people (47%) had between 6 to 10 years, 9 people (3.8%) had between 11 to 15 years of experience, 5 people (2.1%) had between 16 to 20 years of experience, 18 people (7.7%) had more than 21 years of experience. Furthermore, 6 people (2.6%) did not specify their working experience. 18 people (7.7%) were permanent employee, 117 people (50%) were temporary employees, 87 people (37.2%) were employed in SabaNaft format and 9 people (3.8%) were cooperating with the organization as retired employees. 3 people (1.3%) did not answer to this question. 135 people (57.7%) were clerks, 67 people (28.6%) were working as office chairman and 14 people (6%) were department chairman. 18 people (7.7%) did not specify their organizational post. 114 people (48.7%) were educated in the field of humanities, 34 people (14.5%) had education in Basic Sciences field and 79 people (33.8%) had technical and engineering degree. Furthermore, 7 people (3%) did not specify their major of study.

2. Research hypotheses analysis

In the following sentences, research hypotheses are analyzed. First, each of the research hypotheses is propounded and then, reasons and results of verification or rejection of the hypotheses are discussed considering statistical evidence.
Main hypothesis: there is significant relationship between KW and e-government success in Petroleum Industry Pension Funds.

As it can be seen in table 1, it can be observed that correlation coefficient between these two variables is $r=0.531$ in $P<0.01$ level and this coefficient is significant statistically. It can be observed that significance level of Pearson correlation test for relationship between KW and e-government is less than 0.05. Therefore, it can be said that this relationship is significant with 95% certainty. It can also mention that relationship intensity is 53.1%.

1st subsidiary hypothesis: there is significant relationship between search for knowledge and e-government success in Petroleum Industry Pension Funds.

As it can be seen in table 1, it can be observed that correlation coefficient between these two variables is $r=0.497$ in $P<0.01$ level and this coefficient is significant statistically. It can be observed that significance level of Pearson correlation test for relationship between knowledge search and e-government is less than 0.05. Therefore, it can be said that this relationship is significant with 95% certainty. It can also mention that relationship intensity is 7.49%.

2nd subsidiary hypothesis: there is significant relationship between knowledge creation and e-government success in Petroleum Industry Pension Funds.

As it can be seen in table 1, it can be observed that correlation coefficient between these two variables is $r=0.473$ in $P<0.01$ level and this coefficient is significant statistically. It can be observed that significance level of Pearson correlation test for relationship between knowledge creation and e-government is less than 0.05. Therefore, it can be said that this relationship is significant with 95% certainty. It can also mention that relationship intensity is 47.3%.

3rd subsidiary hypothesis: there is significant relationship between knowledge packaging and e-government success in Petroleum Industry Pension Funds.

As it can be seen in table 1, it can be observed that correlation coefficient between these two variables is $r=0.482$ in $P<0.01$ level and this coefficient is significant statistically. It can be observed that significance level of Pearson correlation test for relationship between knowledge packaging and e-government is less than 0.05. Therefore, it can be said that this relationship is significant with 95% certainty. It can also mention that relationship intensity is 48.2%.

4th subsidiary hypothesis: there is significant relationship between knowledge distribution and e-government success in Petroleum Industry Pension Funds.

As it can be seen in table 1, it can be observed that correlation coefficient between these two variables is $r=0.473$ in $P<0.01$ level and this coefficient is significant statistically. It can be observed that significance level of Pearson correlation test for relationship between knowledge distribution and e-government is less than 0.05. Therefore, it can be said that this relationship is significant with 95% certainty. It can also mention that relationship intensity is 47.3%.

5th subsidiary hypothesis: there is significant relationship between knowledge application and e-government success in Petroleum Industry Pension Funds.

As it can be seen in table 1, it can be observed that correlation coefficient between these two variables is $r=0.372$ in $P<0.01$ level and this coefficient is significant statistically. It can be observed that significance level of Pearson correlation test for relationship between knowledge application and e-government is less than 0.05. Therefore, it can be said that this relationship is significant with 95% certainty. It can also mention that relationship intensity is 37.2%.

Table 1: results of correlation coefficient test for research hypotheses

<table>
<thead>
<tr>
<th>variables</th>
<th>Correlation coefficient value</th>
<th>Significance level</th>
<th>result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main hypothesis</td>
<td>KW and e-government success</td>
<td>0.531</td>
<td>0.000</td>
</tr>
<tr>
<td>Subsidiary hypothesis 1</td>
<td>Search for knowledge and e-government success</td>
<td>0.497</td>
<td>0.000</td>
</tr>
<tr>
<td>Subsidiary hypothesis 2</td>
<td>Knowledge creation and e-government success</td>
<td>0.365</td>
<td>0.000</td>
</tr>
<tr>
<td>Subsidiary hypothesis 3</td>
<td>Knowledge packaging and e-government success</td>
<td>0.473</td>
<td>0.000</td>
</tr>
<tr>
<td>Subsidiary hypothesis 4</td>
<td>Distribution of knowledge and e-government success</td>
<td>0.482</td>
<td>0.000</td>
</tr>
<tr>
<td>Subsidiary hypothesis 5</td>
<td>Application of knowledge and e-government success</td>
<td>0.372</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Results rap-up

Results of the analyses verified the presence of a positive and significant relationship between KW and e-government success in Petroleum Industry Pension Funds. Results of the analyses are summarized in table 1. Of
course, it must be mentioned that research process, especially in humanities field, never ends. In other words, results of any research are considered as an experimental result and future studies might prove that the results were incorrect (Iran Nejad, 2003).

In the present research, all hypotheses were verified (main hypothesis and 5 subsidiary hypotheses). The following recommendations are presented considering the results: 1) because KW enjoys freedom of action, implementation of improvement actions must be done with care so that their freedom of action will not be hurt. 2) KW is usually smart people. Therefore, we must care before it is perceived that a particular duty is unnecessary or a working process can be improved easily. 3) Commitment is important for KW and everything that influences on their commitment adversely must be avoided. 4) Preparation of a guide or utilization of computer for guiding employees may be applicable to low-level knowledge employees, but it is less valuable for complex knowledge working processes. 5) computers can be helpful in improvement of knowledge work but they cannot be helpful in all jobs because such jobs are less structured and their nature is based on cooperation. 6) Smart software methods are more useful than engineering methods for guidance and improvement of knowledge work. 7) IT is classified into 2 categories for improvement of knowledge work: organizational and individual.

8) Portals used for supporting performance are tools for reduction of need to wandering and searching in spread knowledge warehouses for KW whose tasks are intensive. 9) the most binding new viewpoints and the most effective methods of implementation of them in KW working environment are those which combine changes in culture and management, IT and physical work. This action needs new cooperation levels in supporting units. 10) An efficient management can assure a productive environment and satisfy KW for achieving the best result. 11) Managers of KW must be knowledge managers. They are players/coaches. Maintenance of balance between playing and coaching is very important but difficult. 12) Decision-making structured processes have been automated. In most cases, low-level works of employees are done by computers but experts help is necessary in more advanced steps.

Other recommendations obtained from this research results: 1) identification of KW differences is important. A four-faced matrix of cooperation value and necessary expertise will be useful in forming the way of involvement in knowledge work. 2) Because not all knowledge works are improvable at the same time, one of the key elements of improvement is development of a ranking plan which indicates the priority of tasks which must be carried out. 3) Attention to knowledge work as a process can be a very effective method for improvement of performance, although a purely-process approach is not adequate in knowledge work. 4) Evidence show that process approach results in KW freedom, because they can concentrate more on creative and non-structured aspects of their jobs. 5) the most common types of involvement in knowledge work are participative, gradual and continuous. 6-Sigma is a good example of involvement methods in knowledge work. 6) a substitute for knowledge warehouses is combination of knowledge and KW job process. Of course, this is very difficult but it will be very effective in case of success. 7. There are other organizational software like weblog and social networks software for KW. Such software needs more studies and experiments in organizational aspects and specification of commercial value. 8) Some companies recently have considered personal information and knowledge environment and have taken steps beyond a pure approach to technology. They have chosen a comprehensive approach for this issue, and have paid attention to productivity in individual level and training for increasing KW effectiveness. 9) Technological involvements in knowledge work can be helpful but some employees believe that they achieve most valuable information from other employees in social networks. 10) KW is referred to more than ordinary employees for searching information and they have more powerful social networks. Contribution to KW for improvement of personal networks means training more KW.

Finally, the following recommendations are provided for future researchers: 1) studies similar to the present research should be conducted in other organizations and the results should be compared. 2) An in-service training course should be held concerning KW and the results should be compared with what was before training. 3) Knowledge management and KW success should be investigated. 4) Effectiveness and efficiency of KW should be investigated. 5) Relationship between organizational employees and organizational commitment should be investigated. 6) Innovation and creation of KW should be investigated. 7) Managers’ commitment and their influence on creativity in KW should be investigated.

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