فصلنامه مدیریت شهری
(ضمیمه لاتین)
Urban management
No.**44** Automn **2016**
281 - 290
Received *23 Mar 2016*; **Accepted** *11 July 2016*

The impact of Management Information System on Employees' Performance of Tehran Province Water and Wastewater Company in District 5

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Abstract
The aim of this study was to investigate the impact of management information system on employees' performance of Tehran Province Water and Wastewater Company in district 5. The present study was an applied research in terms of purpose and a descriptive correlational survey in terms of method. Cochran's formula was used to determine sample size which was 219 employees. The statistical sample was selected using simple random sampling. A standard questionnaire was distributed among them to answer the questions. Some experts were asked to give their opinion on the face validity of the questionnaire. The reliability of the questionnaire was examined using Cronbach's alpha test. The data were analyzed using linear regression test. The results indicated that management information system affects employees' performance, decision-making, and reducing time of activities in Tehran Province Water and Wastewater Company in district 5. Friedman test results to rank the impact of management information system on employees' performance indicated that performance of employees is the first priority in terms of effectiveness.

Key words: *management information system, employee performance, Water and Wastewater Company*

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1.Introduction

Today, information is one of the main sources of power in the world. Information is considered as the basis of decision-making and planning (Ajami and Tavakkoli-Moghaddam, 2009). Some factors, including globalization, the emergence of a service economy based on knowledge and information, transforming the organization and management of successful organizations, and the emergence of the digital agency, has changed the business environment. Thus, Managers should pay more attention to the development of information systems to meet the challenges (Sarafizadeh, and Ali Panahi, 2007). Considering the increasing value of information, providing management with a reliable information system to manage decisions-making, planning, organizing, and controlling has become a basic necessity (Ahmadi et al., 2011).

Therefore, management information system is one of the great achievements of developments in information technology. In the last two decades, management information system has facilitated decision-making for employees and managers and has important effects on the organization's management system and organizational structure. Management and performance of employees and managers are two close terms for organizational management and activities. Today, it is very important to understand this effective process (Mohammadi Najaf Abadi et al., 2013). Management information system as a very valuable tool is capable of producing, organizing, storing and distributing information to the managers at different levels of decision-making. Therefore, an organization should be capable of creating and using information systems and effectively support the organization's strategies (Saeedi, 2007). Therefore, information system is a strategic factor for survival and creating a competitive advantage (Davis et al., 2011).

2. The importance of research

In the age of information and communication, the role of management information systems in organizations is undeniable. In the challenging environment of the new millennium and the competition among organizations and companies, one component for enhancing success of organizations is to focus on human resource management. Controlling resources effectively creates a competitive advantage for organizations. Human resources because of its restrictions and information resources because of its importance in making the right decisions are more important. The activities of recruitment, hiring, retention, development, training, evaluation, human resources planning, and other components of human resources management system require the right information at the right time. Each activity in the management of human resources has its own data flow and specific information. According to increasing the volume do data and the type of the need to the appropriate information for managers at different levels of the organization, it is necessary to create an appropriate system for organizing data (Saeed Keshavarz, 2007). Considering the increasing value of information, providing management with a reliable information system to manage decisions-making, planning, organizing, and controlling has become a basic necessity (Ahmadi et al., 2011). Water and Wastewater Company plays an important role in the provision of essential services; therefore, organizational performance of this company is very important. Tehran Province Water and Wastewater Company are responsible for creating facilities to supply and destitute water and wastewater treatment in the cities of Tehran Province. Management information system is one of the factors that can change the organizational performance (Azari, 2002). An efficient management information system is considered as a competitive advantage. Thus, considering management information system and organizational performance of Tehran Province Water and Wastewater Company in district 5 is necessary for its survival and development of performance. According to the research-

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er's observations, it seems that that the use of management information system can enhance employees' performance of Tehran Province Water and Wastewater Company in district 5. Hence, this study aims to investigate the impact of management information system on employees' performance of Tehran Province Water and Wastewater Company in district 5 based on the mediating role of employees' salaries.

3. Theoretical Framework

"Information systems" are essential for the operation and management of the new organization. Information is a resource generated by the information system and is critical for the operation and management in organizations. A suitable management information system for organizations leads to timely and accurate decisions to provide better services. The emergence of electronic services and the use of information and communication technology as a tool for providing integrated services have provided a context for the development of management information systems. Decision-making in today's rapidly changing environment without continuous access to relevant information brings confusion in practice. Today information systems are important to speed up the flow of information, interpretation, and data processing in real time. Understanding this issue is effective in achieving the goals, life, and survival of the organization (Banaian, 2003). The application of Information systems in today's business can be classified in different ways. Information systems are divided into support systems for operations and support systems for management (Rastegar et al., 2012). According to the classification of Kent Lavdin and Jane Lavdin (2004), information systems are divided into six categories:

(1) System of operation process; (2) Knowledge based system; (3) System of automating activities; (4) Information Management System; (5) Decision Support System; (6) Senior management support system.

Until the 1960s, the role of most information systems was simple, such as the processing of transactions, archive, accounting, and other electronic data processing applications. Then, another role was added as the concept of management information systems. The new role focused on developing new business applications to support end users through preset management reports. These reports provide the information required by managers to make decisions (Bahramian et al., 2013). Design and deployment of systems and the application of information technology, in general, and management information system, in particular, are considered as an action to respond to this need in the age of information. It is obvious that this action will be suitable for managers if it is designed and planned efficiently. The complexity of the internal and external organizational environments has increased the need for information and consequently information systems (Sarrafizadeh and Panahi, 2011). A system which controls and rebuilds the information system in the operational environment provides managers with necessary information for decision making, planning and controlling by organizing and selecting data (Kritzinger and Smith, 2008). Management information system is an integrated system for providing information to support the planning, organization, and performance control of organizations. This system covers middle management tasks through the provision of specific management reports (Sarrafizadeh and Panahi, 2007). Management information systems provide information in the form of preset reports and charts to support decision-making on business; for example, sales analysis, production performance, and reporting systems of cost process.

Organizational performance is an overall a structure that refers to how an organization functions. Employee performance in facilitating organizational effectiveness is an important task of human resources management. Undoubtedly, employees are considered as the greatest asset of any organization and profit

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and non-profit organizations has always considered enhancing their employees' performance. Performance is an individual characteristic which can be derived from one's own personality and environmental conditions. Managers are responsible for improving organizational performance and increasing productivity to achieve maximum efficiency of human and material resources (Barabadi et al., 2015). Mayer considered employees' performance as a function of two factors, including ability and motivation. According to the model proposed by Mayer, performance is a function of interaction between ability and motivation, and personality can be summarized in a motivating factor. Early studies suggest that performance is a function of motivation and ability (Rezaeaian, 2007). According to Mayer's model, Hollin Beck and Whitner investigated the role of personality in performance and argued that personality traits such as self-esteem reflect the individual differences in values, performances, beliefs, and needs. They stated that personality reflects the motivation of people to do the job reflects and the attitude reflects a person's ability to do the job. Thus, they hypothesized that performance should be predicted by the interaction between the ability and personality (Right et al, 1995). Dolan and Schuler divided variables affecting behavior and performance into three categories: personal, psychological such as personality, and organizational. John Holland's theory considered proportionality between job and personality. According to this theory, assuming that person's willingness reflects the personality, there should be the proportionality between willingness and work environment. This theory identifies six types of personality based on characteristics of certain jobs (Robbins, 1998). Brick and Monte divided research of the twentieth century about job performance and personality characteristics into two phases: (A) the first phase ends in mid-1980 and includes initial studies investigating the relationship between job performance and individual performance measures using multiple measures of personality. They concluded there is no significant relationship between personality and job performance. (B) The second phase starts from mid-1380 and involves two major advances: application of the five-factor structure of personality for research, and use of meta-analysis to summarize the relationships between the five-factor personality traits and job performance among studies (Barabadi et al., 2015).

Organizational performance is to achieve organizational objectives and perform individual duties (Hersey and Blanchard, 1983). Each organization can achieve optimal job performance and impressive efficiency and productivity through searching for ways to make the environment conducive for employees to achieve a degree of ability in their job (Barabadi et al., 2015). In fact, job performance is defined as general values expected by organizations and a distinct piece of a person's behavior over a specified period of time. People are able to function well in their careers when they have the necessary motivation and ability for the proper performance.

According to management experts in organizations, evaluation of performance is a suitable strategy for the improvement of human resources. The purpose of evaluating the performance is to enhance employees' ability and performance (Jaras et al., 2005). Performance evaluation is a process by which a manager measures employees' behaviors in the environment based on evaluation standards and records the results, and informs them about the obtained results. In evaluating performance, manager and subordinates are involved; however, the performance appraisal system includes organizational policies, regulations, and supporting resources of activities. Dimensions of performance appraisal system include program and time intervals for evaluations, the way of determining evaluator and evaluatee, methods and techniques of recording, storage, and distribution of information (Carl Hoffman et al., 2000). Job performance

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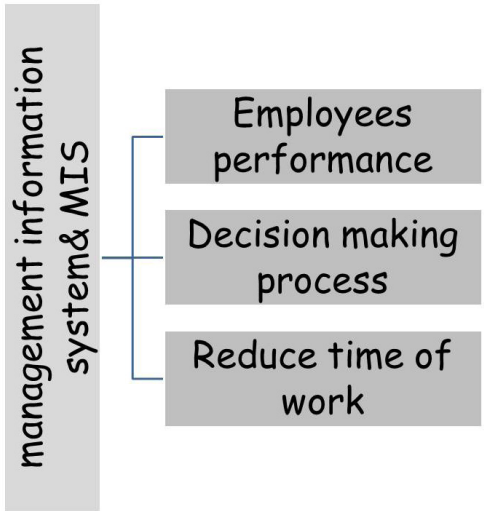


Figure 1. Conceptual model of research (Hashim et al., 2012)

can be measured using different criteria. Measures related to job performance are divided into two different types: objective information related to production and information related to personnel records (Saatchi, 2007). Industrial and organizational psychologists believe that design and use of methods for performance evaluation of employees play an important role in increasing the efficiency, effectiveness, and profitability of organizations. Various methods have already been used to evaluate job performance. The aim of these methods is accurate assessment of job performance. The systems applied in evaluating job performance include: graphic rating scale, employees' comparison methods, and behavioral scales and lists. Lanjnkr and Nikudym (1996) stated that performance appraisal system;

1) Provides feedback of the specified performance for improving employees' performance.

2) Defines the requirements for employee training.

3) Provides and facilitate employee development.

4) Creates a close relationship between results and performances of employees.

5)Increases employees' motivation and productivity.

4. Literature Review

Ahmadi et al. (2011) conducted a study entitled "assessment of the information needs of management information systems in Iran University of Medical Sciences". The results indicated that according to the unavailability of sources of information for 56% of managers, it is necessary to design a management information system based on critical success factors of managers and other scientific methods.

Dadashzadeh (2011) conducted a study entitled "an investigation on the relationship between the establishment of information systems and organizational performance (Case Study: Iran Namad software company). The results of the study indicated that there is a significant relationship between the establishment of information systems and organizational performance in two areas of customers and internal processes; there is no significant relationship between the establishment of information systems and organizational performance in terms of financial dimensions, learning, and development.

Kameli et al. (2011) conducted a study entitled "an investigation on the role of payroll management system in the efficiency of police staff". The results of the study indicated that there is a significant positive relationship between salaries and benefits, facilities and welfare services, bonuses and overtime, and efficiency of police staff.

Samavati and Nejat (2009) conducted a study entitled "an investigation on the performance evaluation system of police staff from the viewpoint of managers". The aim of the study was to investigate the performance evaluation system of police staff from the viewpoint of managers. For this purpose, favorable indicators were obtained using theories concerning the assessment of employees' performance and compared with common indicators to evaluate the performance of police staff.

Habibullah Ranaee Kordeshuli and Asiyeh Saghapoor (2011) conducted a study entitled "designing a model for evaluation of employ-

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ees' performance based on models of organizational performance management". In this study, the researchers proposed a model providing the necessary integration between performance evaluation systems at the organizational and individual level. For this purpose, after examining models of organizational performance management, EFQM excellence model and Balanced Scorecard were selected as the models of organizational performance assessment. Then, a set of basic indicators for evaluating employee performance were extracted by combining these two models and extraction of performance evaluation criteria and indicators.

Saeedi Keshavarz (2007) conducted a study entitled "the impact of management information systems on human resources management in the Telecommunication Company of Tehran Province". The results of the study indicated that management information system as a very valuable tool can produce, organize, store, and distribute information to the managers at different levels of decision-making. Therefore, an organization should be capable of creating and using information systems and effectively support the organization's strategies.

Mohammadi Tahrudi and Mohamadinejad (2007) conducted a study entitled "an investigation on the impact of project management information system on the success of managers and project". A project management information system as software package used in organizations helps managers decide on planning, organizing, and controlling projects. However, the real contribution of project management information systems in the success rate of project performance is unknown. The researchers provided a model to assess the quality of project management information systems and the effect of these systems on project managers and project performance. This model was composed of five structures: quality of project management information system, quality of output data of project management information system, the use of project management information system, impact of project management information system on managers, impact of project management information system on project success. The findings indicated that this system plays an important role in the success and performance of project and management.

Rezaeian et al., (2007) conducted a study entitled "analyzing the impact of strategic planning for information systems to improve performance". Today, "supply chain" is faced with instability in environmental factors because of an increase in competition and changes in technology levels. With the advent of information systems, strategic planning of information systems was formed to respond to the uncertainty in this area and alignment of the organization with the changes. The researchers proposed a model for supply chain management using the process of strategic planning of information systems. The performance of supply chain management described by several indicators was improved using the proposed model. In the end, four hypotheses on the steps of the proposed model were tested. Accordingly, the proposed model showed the activities carried out at each stage of the supply chain management. This study is based on Craft's theory (2001). Figure 1 shows the conceptual model of the research.

5. Research Hypotheses

Thus, the following research hypotheses were formulated:

• Main hypothesis

Management information system has an impact on employees' performance of Tehran Province Water and Wastewater Company in district 5.

• Sub-hypotheses

1. Management information system has an impact on employees' performance of Tehran Province Water and Wastewater Company in district 5.

2. Management information system has an impact on decision-making process in Tehran Province Water and Wastewater Company in

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district 5.

3.Management information system has an impact on reducing time of activities in Tehran Province Water and Wastewater Company in district 5.

6. Research Methodology

A) The aim of this study was to investigate the impact of management information system on employees' performance of Tehran Province Water and Wastewater Company in district 5. The present study was an applied research in terms of purpose and a descriptive correlational survey in terms of method.

B) This study was a descriptive and non-experimental research in terms of data collection and analysis method because the researchers tried to answer a question during the research process and aimed to investigate the impact of management information system on employees' performance of Tehran Province Water and Wastewater Company in district 5.

C) The present study was a survey in terms of implementation method.

7. Research Variables

The independent variable included management information systems, and the dependent variables included employee performance, decision-making process, and reducing the time of activities.

The population of the study included all employees of Tehran Province Water and Wastewater Company in district 5 in 2015. Cochran's formula was used to determine sample size which was 219 employees. The statisti-

Characteristics of respondents		Frequency	Percentage
Gender	Man	112	51.1
	Female	107	48.9
education	Associates' degree and below	31	14.2
	bachelor's degree	123	56.2
	Master's degree	56	25.6
	P.H.D	9	4.1
Age	years and below 25	24	11
	to 30 years 25	42	19.2
	to 35 years 31	57	26
	to 40 years 36	41	18.7
	years and above 40	55	25.1
type of employment	Formal	42	19.2
	specified period of time	71	32.4
	Manpower Supply Agreement	28	12.8
	Volumetric	43	19.6
	Other	35	16
Work experience	Less than 5 years	54	24.7
	to 10 years 6	62	28.3
	to 15 years 11	29	13.2
	to 20 years 16	40	18.3
	Above 20 years	34	15.5

Table 1. Demographic characteristics of respondents; Source: researcher's findings

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Parameter	Response Variable	regression coefficient	estimation error	Standardized coefficient	t-statistic	Significance level	correlation coefficient
Management Information System	Employee Performance	0.938	0.167	0.356	5.620	0.000	0.356
	Decision making process	0.948	0.026	0.930	37.145	0.000	0.930
	Reducing time of activities	0.359	0.048	0.456	7.557	0.000	0.456

Table 2. Results of well -fitting regression model

Parameter	Response Variable	coefficient of determination	F test statistic	Significance level
Management Information System	Employee Performance	0.127	31.580	0.000
	Decision making process	0.864	1379.764	0.000
	Reducing time of activities	0.208	57.107	0.000

Table 3. Results of regression analysis

cal sample was selected using simple random sampling. In this way, the population members have an equal chance of being selected as the subjects. Demographic characteristics of respondents are shown in Table 1.

8. Data collection

Data collection was conducted through a questionnaire. 219 questionnaires were distributed and collected in person. The respondents were assured that their name would be held confidential.

9. Examination of validity and reliability

In this study, the data were collected through a questionnaire for the quantitative analysis of the information and the awareness of employees' attitude Tehran Province Water and Wastewater Company in district 5. The questionnaire consisted of 51 questions. Since the questionnaire was standard, its validity was implicitly confirmed. However, the face validity (confirmed by experts) was used to future ensure. Cronbach' alpha was used to assess the reliability value of the questionnaire. An alpha of 0.7 indicated acceptable reliability. Each question of this questionnaire contained five choices (including strongly disagree, disagree, no idea, agree, and strongly agree) to be selected by respondents (Azar and Momeni, 2008).

10. Research Findings

After confirming the normality of the study variables using the Kolmogorov-Smirnov test, the linear regression test was used to examine management information system on employees' performance. The results are summarized as follows:

As displayed in Table 2, the management information system significantly affects three variables of response (P = 0.05). However, the management information system has the highest impact on the decision-making process. Thus, each unit increase in management information system leads to a 94 percent increase in the index of decision-making process.

According to Table 3, all models are significant at the 0.05 level. As expected, decision-making process is the main variable that explains the management information system because the highest coefficient of determination is related

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to decision-making process.

11. Conclusion

According to Tables 2 and 3, all hypotheses were confirmed. In other words, the management information system has an impact on employees' performance of Tehran Province Water and Wastewater Company in district 5. The results indicated that there is a significant relationship between the management information system and employees' performance of Tehran Province Water and Wastewater Company in district 5. In addition, the management information system had an impact on decision-making process in Tehran Province Water and Wastewater Company in district 5. According to the results, management information system had an impact on reducing time of activities in Tehran Province Water and Wastewater Company in district 5.

12. Suggestions

According to the results, the following suggestions are presented:

The results of the present study indicated that the management information system has an impact on employees' performance of Tehran Province Water and Wastewater Company in district 5. Therefore, it is suggested that managers and employees believe in the accuracy of the information. In addition, employees should access the necessary information from different channels and update their job knowledge. Mangers should implement management information systems in organizations as soon as possible. According to the obtained results, the management information system had an impact on decision-making process in Tehran Province Water and Wastewater Company in district 5. Therefore, it is suggested that employees consult with their colleagues about their decision-making and also use creativity, innovation, and up-to-date knowledge for their decision-making. In addition, managers should consider employees' comments for organizational decisions. In making organizational decisions related to employees, their opinion should be asked and their interests are considered. According to the results, management information system had an impact on reducing time of activities in Tehran Province Water and Wastewater Company in district 5. Therefore, it is suggested that employees spend enough time on job duties and organizational processes. In response to customers' requirements, employees should consider citizens' perceptions about the organization and carry out their duties accurately and on time.

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