Research

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Acceptance and Utilization of Information and Communication Technologies: Case Study of Health Care Managers in Ankara

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ABSTRACT

Rapid advances in information and communication technologies has a significant impact in many industries, including the health care sector. Health information systems aid healthcare managers mostly in compiling the information required in decision making processes, as well as handling the daily routines. Since the demand for healthcare has been increasing rapidly, there is a need for increased capacity for recording and storing medical data, as well as handling and processing the stored data. The purpose of the study is to identify the resistance towards healthcare information systems from managers' perspective, try to find out potential problems during the implementation of information systems and to provide some suggestions in the process of information systems applications. The data used were obtained from a questionnaire survey conducted with 108 hospital administrators working in 16 public hospitals, 12 of which were in the Ministry of Health and 4 were university hospitals in Ankara. The results show that managers and employees are reluctant and are afraid of change. To overcome this resistance and inconfidence, managers should identify the reasons behind the resistance and should explain the new procedures in a very detailed way.

Keywords: *Information systems, health ınformation systems, resistance to technological changes*

Bilgi Sistemleri ve İletişim Teknolojilerinin Kabulu ve Kullanımı: Ankara'daki Sağlık Yöneticileri Örneği

ÖZ

Bilgi ve iletişim teknolojilerindeki hızlı değişim ve gelişmeler sağlık hizmetleri sektörünü de önemli ölçüde etkilemiştir. Hasta verilerini kullanma, işleme, tekrar ulaşma zor bir hal alırken, sağlık bilgi sistemleri sayesinde hem bu işlemler hızlı ve güvenilir şekilde yapılabilmekte, hem de hastane yöneticilerinin karar verme süreçlerinde ihityaç duydukları bilgiler derlenebilmektedir. Sağlık hizmeti talebinin hızla artması ile birlikte, tıbbi verilerin kaydedilmesi ve depolanması için artan kapasite ihtiyacı yanı sıra, depolanmış verilerin taşınması ve işlenmesine ihtiyaç vardır. Bu çalışmanın amacı, sağlık bilgi sistemlerine karşı hastane yöneticilerinin karşılaştıkları direncin ve sistemlerin kullanımı esnasında karşılaşılan problemlerin belirlenmesi ve bilgi sistemlerinin uygulanma süreci için bazı öneriler sunmaktır. Kullanılan veri, Ankara'da faaliyet gösteren 12'si Sağlık Bakanlığı, 4'ü Üniversite Hastanesi olmak üzere toplam 16 kamu hastanesinde görev yapan 108 hastane yöneticisi ile yapılan anket çalışması ile elde edilmiştir. Sonuçlar göstermektedir ki, yöneticiler ve çalışanlar değişime karşı isteksizdirler. Bu önyargı ve direncin kırılabilmesi için yöneticilerin isteksizliğin arkasındaki nedenleri sorgulamaları ve çalışanlara yeni iş prosedürleri hakkında detaylı bilgilendirme yapmaları gerekmektedir.

Anahtar Kelimeler: *Bilgi sistemleri, sağlık bilişim sistemleri, teknolojik değişimlere karşı direnç*

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I. INTRODUCTION

Information and communications technology have become one of the indispensibles in every aspect of our lives. In parallel with this, every organization, including the ones in health care industry, have started to employ information systems in their operations. Consequently, presentation and the quality of health services are positively affected by this development. It is seen that, high quality service is highly dependent on well planned information process. Therefore, the investment on information systems is increasing both in monetary values and in context of the systems in every kind of organizations.

Hospitals, which are the largest organizations in the healthcare sector, are complex structures that combine multiple complex services at the same time. The use of information systems in this complex organization plays an important role in the solution of many problems. For example, in providing better delivery of health services, monitoring the costs, maintaing the level of quality standards, keeping the accounting reports and in many other topics, information systems provide the biggest assistance to managers in decision making. However, people tend to show resistance to new systems even though they agree to advantages of the system.

In an extended literature research, it is seen that both national and international studies address to acception and utilization of information technologies in different sectors, such as education, tourism, communications (for example, Yorgancıoğlu Tarcan, Çelik 2016, Ömürbek et al. 2013, Lam et al. 2007, Lapointe, Rivard 2005, Turan, Çolakoğlu 2008). Parallel with this trend, the purpose of this study is to investigate the attitudes of managers in healthcare towards application of information systems in health care sector and to provide some suggestions in the process of information systems applications.

The study consists of four sections. In the first part, the evolution and main concepts about health care information systems are given, in the second part importance of health care information systems are discussed, in the third section resistance and acceptance models to Information Systems (IS) are provided, and the final part of the study is devoted to emprical study and discussions made on the results.

I. HEALTH CARE INFORMATION SYSTEMS

Information systems are the major element responsible for collecting, prioritizing and preparing all health related data to be used in research to improve the delivery of health services. Considering the fact that health services are continous and should be uninterrupted, it is crucial to have a rapid and accesible health system.

Health care information systems can be classified into two main groups as shown in Table 1 below. The first group is called as “diagnosis and treatment systems”, and the second group is called as “clinical information systems” (Güleş, Özata 2005).

Table 1. Classification of Healthcare Information Systems

Healthcare Information Systems	**Subsystems**	**Functions**
Clinical healthcare systems	-Electronic Medical / Patient Records -Clinical Decision Support Systems -Nursing Information Systems -Medical Image Management and Storage Systems -Patient Tracking Systems -Clinical Communication Systems -Tele medicine -Case Composition -Virtual Reality Applications -Smart Card Applications -Hospital Information Systems	Systems that collects important clinical information about patients
Diagnosis and Treatment Systems	-Imaging Systems -Laboratory diagnosis systems -Other Medical Technologies	Systems used in diagnosis and treatment

Source: Güleş and Özata 2005

II. IMPORTANCE AND ROLE OF INFORMATION SYSTEMS IN HEALTH CARE ORGANIZATIONS

In hospitals, starting from the patient's admission until discharge from the hospital, a lot of data is collected. However, management of this data is not very easy and therefore requires a good data management. Monitoring of patients and control and planning in management fuctions are the major reasons which constitute the need for creating a health management information system. By doing so, it would be possible to manage the daily tasks and to establish planning and control in a much efficient and effective way (Villalabos 1982). Moreover, as Onay (1998) points out, establishing an efficient information system aids companies in enlarging the service area, acquiring more customers, developing the market, decreasing costs and increasing efficiency, and finally in better managing the resources of the company.

Considering the fact that there is a huge amonut of data accumulated in hospitals, processing such as data gathering, screening, analysis and finally presenting the results to management requires an effective utilization of information systems (Özbek et al. 2007). In addition to these, full integration and usage of all the modules in the information systems prevents double postings or contradictions in reporting. In this manner, the main benefits of information systems can be summarized as regularity of operations, improved patient care, better management and control, improved capital management, smart management of income and cost (Kelkar 2010).

However, despite the benefits of information systems, there is also some resistance towards these as well. Resistance towards usage of healthcare information systems and the reasons for the resistance are discussed below.

III. RESISTANCE TOWARDS EMPLOYMENT OF HEALTHCARE INFORMATION SYSTEMS AND ITS REASONS

The concept of change is complex and includes a large amount of uncertainty. Due to these reasons, people are generally reluctant to change and do not want to change the way they do their business, although the new way of doing business actually easier for them.

Managing the resistance for change is one of the crucial points for information systems to achieve its intended roles. Workers are always in the tendency to show reluctancy towards change and feel insecure when there is uncertainty. One of the best ways to overcome these feelings is to explain the new processes and changes to ocur in a very detailed way. Moreover, if still a resistance to change ocur, this resistance should be supressed or better, should be solved before the problem grows. In this context, understanding the attitudes and perceptions of healthcare personel could be said to ease a change to occur (Altındiş et al. 2011).

The general reasons towards change could be summarize under the headings below:

Personal reasons: Individualistic resistance towards change could be due to;
- fear against unknown processes,
- difficulty to give up the habit,
- lack of information about changes going on in the organization
- fear of failure
- difficulties in learning new technology and systems
- lack of self-esteem

Social reasons. Social reasons to form a resistance to change might be;
- Dissonance between work-group norms and personal targets
- distrust and negative attitudes towards those who implement change
- negative attitude of one's reference group towards change
- belief that change occurred outside of their team
- belief or perception that change is for the benefit of one specific group only

Psychological reasons: Working personel are accustomed to doing work in one specific way and most of the time have problems in learning alternative methods. Knowing that they will have problems, seed fear in them. This fear automatically forms a border towards change (Karabulut 2012).

IV. HOSPITAL MANAGERS AND INFORMATION TECHNOLOGIES

Healthcare information systems is very closed related with concepts of efficiency in terms of cost, service quality and patient satisfaction as it is a major tool in gathering, analyzing and disseminating data in healthcare services.

Considering the budget and capacity of health institutions, attitudes and intentions to invest in the appropriate information technology of the hospital management and administration is important. Choosing the wrong technology by management and a low performance of the system will lead to negative effects in the adaptation process and will cause unnecessary costs, in terms of time and effort (Yorgancıoğlu Tarcan, Çelik 2016).

Hospital management information systems, which initially arouse due to the need for issuing dispatch notes and correct bills, are now the irreplaceable part of the management in many everyday procedures including (but not limited to) forming patient records,

appointment procedures, reports and prescribing, displaying laboratory results and electronic patient records, purchasing, management decision support analysis; monitoring of the quality related processes, etc. (Rodoplu 2008).

Today, hospital administrators, should shift their paradigm in managing the nonprofit organization of hospitals, and start managing as if a private company. This situation should be close to implementing financial solutions and investment as well as building better skills. This includes working more closely with the staff, paying attention to their satisfaction, making sure that performance criteria are applied fairly, medical error rates are lowered and the quality of service as well as patient satisfaction are increased. This way, the productivity will be increased, leading in a stronger organization. However, in order to be able to do all these things, health information technology is needed.

In addition to these, hospital managers should continually monitor all emerging technology. Mobile applications, wireless communications and for use in hospitals, patient monitors and can be reached at the beginning of data per patient and to speed up data entry, it causes acceleration in parallel to increase productivity. Radiology Information Systems (RIS), Picture Archiving and Communications Systems (PACS), Laboratory Information Systems (LIS) and such technologies can help to save paper and time savings. With the use of Radio frequency identification (RFID), medical devices within the hospital offers ease of monitoring and reduce errors (Cenk 2011).

V. EMPRICAL STUDY

5.1. Purpose of the Study

As there is an increase in health conciousness, expected life length and increase in variety of diseases, demand for health services is also rapidly increasing. In paralel with this, the rivalry among industry is also getting more fierce. Therefore, healthcare managers try to control costs without sacrificing from quality. In this manner, implementation of a well planned information system will enable the organizations the cut costs by decreasing redundancies, better and rapidly accessing information and controlling every process in a better way. However, as discussed before, people are reluctant to change and tend to show resistance towards changing the procedures. Therefore, in order to be able to implement a successful information system, first attitudes of personel towards this sytem should be identified.

Consequently, the purpose of the study is to identify the attitudes and perceptions of hospital managers towards healthcare information systems and to try to find out potential problems during the implementation of information systems.

5.2. Methodology

In this study, level of acceptance and use of information systems of manager level employees in healthcare sector are investigated. Employees having the title of deputy surgeon general, hospital manager, deputy hospital manager, director of financial and administrative affairs and director of medical services are the respondents of a survey. The questionnaire used in this study is adapted by former studies in the literature such as Altınöz (2008) and Köksal and Esatoğlu (2001).

The population of the study is consisted of state hospitals (both general and specialized) and university hospitals operating in Ankara, in the year 2015. Within this population, only the ones in the city center are selected to the sample group. Therefore, the sample of

hospitals consisted of 12 state and 4 university hospitals. There are 172 hospital managers with above identifed titles in those hospitals. All of them are handed with the quationnaire, however, only 108 of the distributed questionnaires are found to be correctly filled. Therefore, the response rate of the questionnaires are found to be 62%. In testing the reliability of the study, Cronbach's Alfa is calculated and found to be .67, suggesting that the study is at acceptable level.

Descriptive statistics in order to summarize the data for categorical variables are shown in frequency tables. For comparing the different groups, independent samples t test and One-Way ANOVA are used and for relationships between categorical variables Fisher-Freeman-Halton test is utilized. All statistical analyzes areperformed with SPSS v.22 and statistical significance level was taken as .05.

The scale used is 5-point Likert Attitude Scale, which is widely used in social sciences to learn the thoughts and attitudes of the people involved in the sampling (Karagöz and Ekici 2004). In the used sclae, the options are as follows. 1- It does not matter at all, 2- It does not matter 3- Indifferent, 4- It is important, 5- It is very important.

Survey is applied through with face-to-face-one interviews, and the variables in the questionnaire were explained to participants throughly in order to prevent any misunderstandings. Questions about the institution and individual were placed to the first part of the questionnaire to overcome reluctancy towards answering. Then, the problems encountered in using Information Systems and participants thoughts about using IT and systems are asked in parallel with the aim of the research.

5.3. Research Hypothesis

In the current research, the following alternative hypothesis are tested:

H_1: Reasons of resistance to change varies with respect to hospital type.
H_2: Reasons of resistance to change varies with respect to manager's title.
H_3: Importance of problems faced in using information systems varies with respect to hospital type.
H_4: Importance of problems faced in using information systems varies with respect to manager's title.
H_5: Purpose for using information technologies varies with respect to hospital type
H_6: Purpose for using information technologies varies with respect to manager's title.
H_7: The success probability of information systems varies with respect to hospital type.
H_8: The success probability of information systems varies with respect to manager's title.

5.4. Findings

Descriptive statistics to summarize the data obtained from the study are given in the table (Table 2). For hypotesis testing, SPSS v.22 programme is used, with .05 significance level and independent samples t-test, ANOVA analysis and Fisher-Hamilton- Halton test are used as post-hoc.

Table 2. Descriptive Statistics

Demographics and General Descriptives		**n**	**%**
Gender	Female	17	15.7
	Male	91	84.3
Age	23-30	5	4.6
	31-40	54	50.0
	41-50	29	26.9
	50+	18	16.7
Title	Deputy Surgeon General	23	21.3
	Hospital Manager	10	9.3
	Deputy hospital manager	58	53.7
	Director of Financial and Administrative Affairs	10	9.3
	Director of Medical Services	7	6.5
	General Hospital	16	14.8
Hospital Type	University Hospital	18	16.7
	Specialized Hospital	24	22.2
	Research Hospital	50	46.3
Demographics and General Descriptives (cont'd)		**n**	**%**
Duration of Use of Information Technology	6-10 years	13	12.0
	11 and more years	95	88.0
Having an instruction document for IT usage	Yes	85	78.7
	No	18	16.7
	Not answered	5	4.6
Reporting function of IT	Yes	105	97.2
	No	3	2.8

According to survey, 71.3% of the managers state that they are faced with resistance from employees towards Information Technologies system implementation. The problems faced by managers in using information technologies in hospitals, and the reasons for resistance towards IT are summarized in table below (Table 3) from the perspective of managers.

Table 3. Problems Faced by Managers in Using Information Technologies

		n	**%**
Resistance to change	Yes	77	71.3
	No	30	27.8
	No answer	1	0.9
Reasons towards change in hospitals	Uncertainty	40	37.0
	Fear of failure	8	7.4
	Fear of future	2	1.9
	Reluctancy	40	37.0
	Lost data	18	16.7

In further analysis, it is seen that "uncertainty" and "reluctancy" have the same proportion and they are the most frequent. Meanwhile, "fear of future" is stated with least frequency.

In testing whether there is a diffenrece in reasons for resistance with respect to hospital type, t test is applied. The results are summarized in Table 4.

Table 4. Results of T-Test to See The Variance in Reasons for Resistance with Respect to Hospital Type

		Hospital Type								Total		p
		General Hospital		University Hospital		Specialized Hospital		Research Hospital				
		n	%	n	%	n	%	n	%	n	%	
Reasons for resistance towards IT usage	Uncertainty	5	31.3	7	38.9	8	33.3	20	40.0	40	37.0	0.356
	Fear of failure	1	6.3	1	5.6	1	4.2	5	10.0	8	7.4	
	Fear of future	0	0.0	0	0.0	0	0.0	2	4.0	2	1.9	
	Reluctancy	9	56.3	7	38.9	6	25.0	18	36.0	40	37.0	
	Lost data	1	6.3	3	16.7	9	37.5	5	10.0	18	16.7	
Total		**16**	**100.0**	**18**	**100.0**	**24**	**100.0**	**50**	**100.0**	**108**	**100.0**	

As can be seen in the table above, the reasons for resistance does not vary according to the hospital type (p= 0.356>0.05). Therefore H1 is rejected.

In testing to see whether there is a difference in reasons for resistance with respect to title of the manager, t test is applied and results are summarized below (Table 5).

Table 5. Results of t-test to see the variance between different titled managers towards reasons for resistance towards IT usage

		Title										Total		p
		Deputy Surgeon General		Hospital Manager		Deputy hospital manager		Director of Financial and Admin. Affairs		Director of Medical Services				
		n	%	n	%	n	%	n	%	n	%	n	%	
Reasons for resistance towards IT usage	Uncertainty	9	39.1	0	0.0	20	34.5	8	80.0	3	42.9	40	37.0	0.112
	Fear of failure	0	0.0	1	10.0	6	10.3	0	0.0	1	14.3	8	7.4	
	Fear of future	0	0.0	0	0.0	2	3.4	0	0.0	0	0.0	2	1.9	
	Reluctancy	9	39.1	7	70.0	21	36.2	1	10.0	2	28.6	40	37.0	
	Lost data	5	21.7	2	20.0	9	15.5	1	10.0	1	14.3	18	16.7	
Total		**23**	**100.0**	**10**	**100.0**	**58**	**100.0**	**10**	**100.0**	**7**	**100.0**	**108**	**100.0**	

According to the results, reasons for resistance towards IT usage does not change with the title of the manager (p=0.112>0.05). Therefore H2 is rejected.

To test if there is a difference between importance of problems faced in using IT with respect to hospital types and titles, ANOVA analysis is used. The results of ANOVA tests for H3 and H4 are provided below (Table 5 - Table 6).

Table 6. Importance of Problems Faced in Using IT with Respect to Hospital Types

	n	Mean	Std. Dev.	p
General Hospital	16	3.812	0.444	0.596
University Hospital	17	3.596	0.312	
Specialized Hospital	24	3.767	0.498	
Research Hospital	50	3.708	0.546	
Total	107	3.719	0.488	

According to the results of one-way ANOVA, there is no significant variation in importance of problems faced between different hospital types.

Table 7. Variation in Importance of Problems Faced in Using IT with Respect to Titles

	f	Mean	Std. Dev.	p
Deputy Surgeon General	23	3.696	0.431	**0.005**
Hospital Manager	10	3.943	0.496	
Deputy hospital manager	58	3.788	0.516	
Director of Financial and Administrative Affairs	10	3.214	0.121	
Director of Medical Services	6	3.619	0.250	
Total	107	3.720	0.489	

In testing whether there is a significant variance in atributing importance to problems faced in IT usage with respect to titles, the analysis shows that there exists a significant difference ($p= 0.005<0.05$). Therefore, H4 cannot be rejected. In further analysis, it is found that the difference stems from the difference between Director of administrative and financial managers versus hospital managers and deputy hospital managers. In other words, both hospital managers and deputy hospital managers attribute more importance to problems than the director of administrative and financial affairs.

For testing hypothesis H5 and H6 about purpose of IT usage, again ANOVA test is applied with respect to hospital types and manager titles. Results of the tests are provided below (Table 8 and Table 9).

Table 8. Purpose of IT Usage with Respect to Hospital Types

	f	Mean	Std. Dev.	p
General Hospital				0.109
University Hospital	18	3.747	0.560	
Specialized Hospital	24	4.139	0.504	
Research Hospital	50	4.049	0.525	
Total	108	4.017	0.536	

Table 9. Purpose of IT Usage with Respect to Management Titles

	f	Mean	Std. Dev.	p
Deputy Surgeon General	23	3.870	0.417	0.681
Hospital Manager	10	4.033	0.593	
Deputy hospital manager	58	4.059	0.594	
Director of Financial and Administrative Affairs	10	4.033	0.419	
Director of Medical Services	7	4.111	0.480	
Total	108	4.017	0.536	

As the above tables show, there is no significant variance with respect to neither hospital type, nor management titles. The p-values for ANOVA test in testing these hypothesis are 0.109 and 0.681 respectively. Therefore, hypothesis H5 and H6 are rejected.

In an attempt to test the hypothesis, stating that "The success probability of information systems varies with respect to hospital type" (H7) or with respect to management title (H8), ANOVA test is applied. The results are given below, in Table 10.

Table 10. The Success Probability of Information Systems with Respect to Hospital Type

		Hospital Type								Total		p
		General Hospital		University Hospital		Specialized Hospital		Research Hospital				
		f	%	f	%	f	%	f	%	f	%	
Factors affecting IT systems success	Correct Price/Performance Analysis	3	18.8	3	16.7	8	33.3	6	12.0	20	18.5	0.002
	Correct identification of application purposes	2	12.5	4	22.2	5	20.8	8	16.0	19	17.6	
	Right company selection	6	37.5	1	5.6	2	8.3	16	32.0	25	23.1	
	Preparing contract in clear and unambiguous terms	4	25.0	4	22.2	0	0.0	14	28.0	22	20.4	
	Close supervision in supplier relations	0	0.0	0	0.0	2	8.3	0	0.0	2	1.9	
	Determination of service level criteria	1	6.3	6	33.3	7	29.2	6	12.0	20	18.5	
Total		16	100.0	18	100.0	24	100.0	50	100.0	108	100.0	

As seen above, there is a significant variance in success probability of information systems with respect to hospital type ($p= 0.002<0.05$). This variance stems from the difference between specialized hospital and research hospitals in making correct Price/Performance Analysis and the difference between university hospitals and genral hospitals in right company selection criteria. Therefore, H7 is not rejected.

In another hypothesis to test whether thesuccess probability of information systems varies with respect to management title (H8), ANOVA test is applied. The results are given below in Table 11.

Table 11. The Success Probability of Information Systems with Respect to Title

		Title										Total		p
		Deputy Surgeon General		Hospital Manager		Deputy hospital manager		Director of Fin. and Admin. Affairs		Director of Medical Services				
		f	%	f	%	f	%	f	%	f	%	f	%	
Factors affecting IT systems success	Correct Price/ Performance Analysis	8	34.8	0	0.0	11	19.0	0	0.0	1	14.3	20	18.5	0.003
	Correct identification of application purposes	0	0.0	4	40.0	12	20.7	2	20.0	1	14.3	19	17.6	
	Right company selection	5	21.7	3	30.0	15	25.9	2	20.0	0	0.0	25	23.1	
	Preparing contract in clear and unambiguous terms	7	30.4	2	20.0	12	20.7	0	0.0	1	14.3	22	20.4	
	Close supervision in supplier relations	0	0.0	0	0.0	2	3.4	0	0.0	0	0.0	2	1.9	
	Determination of service level criteria	3	13.0	1	10.0	6	10.3	6	60.0	4	57.1	20	18.5	
Total		23	100.0	10	100.0	58	100.0	10	100.0	7	100.0	108	100.0	

As the results summarized in Table 11 show, there is a significant vaariance in the success probability of information systems with respect to manager title (p= .003, < .05). In doing the post-hoc test, it is seen that this difference stems from higher levels of determination of service level criteria of director and finance and administrative affairs.

VI. RESULTS AND DISCUSSION

There is no doubt that health professionals and managers are required to continously monitor the external and internal variables in today's complex and dynamic environment. To do this, not only computer literacy but being able to effectively use the information technologies is required. Especially in hospitals, where there is need to cut costs due to fierce competition without any sacrifice from quality, application of information technologies could be a life-saver.

In a recent and similar study, carried out by Yorgancıoğlu Tarcan and Çelik (2016), the relationship between individual factors like age, gender, marital status, years of computer use and attitude of health information technology, which is determined by ease of use, perceived ease, perceived benefit and the purpose of use are investigated and it is found that there exists a significant relation between theses factors. Similar to that research, according to the results of the current survey, it is seen that hospital managers think that information technologies are worth their cost and use of information technologies will be used in a wider spread in time. However, as this is a new way of doing things, people are reluctant and are afraid of change. To overcome this resistance and inconfidence, managers should identify the reasons behind the resistance and should explain the new procedures in a very detailed way.

In addition to these, as shown in the analysis, the primary purpose of the use of information technology by hospital administrators is interpreted as a tool in cost reduction. Here, the decrease in the expenses occur by the improvement in service efficiency and productivity. In another study carried out by Omurbek and Altin (2009), the 76% of the participants thought that the cost of using information technology was exceedingly high. But 78.6% of the respondents think that information technology gives advantage in competitive environment. So, the present study study could be said to conradict with the pre-stated research, yet both studies reveal the fact that users agree the competitive advantage added by the IT systems. The use of information technology also increases the service quality and decreases the response time to patients, which is may be more important in the long term profitability and survial of the hospitals.

The results of hypothesis tests reveal that problems faced do not differ with respect to different types of hospitals. In other words, all hospitals suffer from the same problems. However, managers at different positions with different titles perceive problems with different levels of importance. That means, not every problem is with the same importance for everyone. This is one of the expected results, because different managers have different responsibilities and their success criteria are different. Therefore it is only normal to attribute different importance levels to different problems faced.

In addition to this, one other result shows that, information technology usage is perceieved in the same way among all hospital types and through all management levels. Moreover, it seems that hospital managers think that information technology is worth the cost and that the use of information technology will be used in a wider period of time. However, since there is a new way of doing these things, people are reluctant and afraid of change. In a survey carried out by Çimen (2014), it is seen that eventhough the use of hospital management information systems in the world was based on the early 1960s, this process started in 1967 at the Hacettepe University Hospital for the first time in Turkey, but could not be utilized in long-term. In those years, especially because of the resistance of the physicians, the practice was abandoned the same year. The research shows that, in order to overcome these resistance and disruptions, managers must identify the reasons behind the resistance and explain the new procedures in a very detailed way. In other words, the uses of information technology should be well communicated, which is a recommended approach (Uslu 2006).

By looking at the survey results, it can also be said that factors affecting the perception of success of the IT systems varies according to different hospital types, where the difference results from the difference between specialized hospitals and research hospitals in making pcorrect price/Performance analysis and the difference between university hospitals and general hospitals in right company selection criteria. This difference is logical because of the success factors in these hospitals performance regulations. Moreover, within the same context, it is seen that director of financial and administrative affairs significantly diverge from other managers in that they pay more attention to IT system's capability of determining the service level criteria.

Information systems have became irreplaceable part of any organization. Despite some resistance to change is present in the healthcare sector in terms of application of these systems, given the advantages and the great convenience it offers for both professionals and patients, no organizatiopn can be though to survive the competition without using proper information systems. Therefore, as it it also shown in this study, the advantages should be clearly communicated with the users of the system and more attention should be paid to different success criteria with respect to different job titles.

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