The Relationship Between the Quality of Hospital Information Systems and User Trust

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ABSTRACT

Introduction: In the much complex and dynamic system of health, the smallest difference in services leads to increase in customer demand. Medical centers and hospitals need to expand internet and Application Service Providing (ASP) and to convert that in to a competitive, long-lasting choice. The present study was carried out with the aim of determining the relationship between the quality of service providing software systems and customer Trust in selected hospitals of Tehran University of Medical Sciences using similar hospital information systems. Method of Investigation: This research is a correlation, descriptive analysis. The statistical group includes employees in the hospital revenue and clearance unit and the study was carried out through census and using questionnaire. To analyze the data, SPSS software was used and in addition to descriptive statistics of: frequency distribution and mean tables, inferential statistics like KS and Pearson tests were used. Findings: With a 95% trust level one can conclude from this study that there is a meaningful relationship between the quality of service providing software programs with customer trust in the selected hospitals of Tehran University of Medical Sciences. Also the results showed that the intensity of the relationship between trust and other variables of service quality, system quality and information quality is 0.835, 0.732 and 0.703 respectively (P<.05). Conclusion: Although all variables have positive and meaningful relationship with customer trust, their average is less than moderate limit so with regard to the meaningful relationship but less than average of the research variables, the managers in the field of health are advised to consider these issues in their management methods.

INTRODUCTION

Medical centers need an information technology that responds to patients' medical needs. They are aware that although development and maintenance of software programs is expensive, they are necessary for providing suitable service, remaining competitive and attracting customer. Provision of services in a less qualitative state than anticipated always leads to lack of trust among patients and service receivers (1); quality assessment takes place during service provision. Every contact is a moment for building trust and a chance for satisfying or the opposite (2), so medical centers and hospitals need to expand internet and Application Service Providing (ASP) and to convert that in to a competitive, long-lasting choice. Users engaged with information systems are effective arms of service provision in medical centers and their level of satisfaction with such software are very important in providing suitable service. Software programs play an important role in marketing programs of many organizations and service excellence is part of the requested value package by the customers. Therefore in open and competitive markets, procedures like qualitative service provision and advanced systems have attracted most of the attention (3). There is a meaningful relationship between customer involvement and their satisfaction and trust (4). There is also a certain concern regarding the importance of customer perceptions from service encounter, since from the customer's view the sign of service quality becomes evident at the time of service encounter i.e. the crucial moment when the customer contacts the organization (5). That is why the quality of service software programs is mentioned as a key competitive weapon which leads to superiority of companies and the services provided by them from the customer's point of view (6). In design and development of information systems we must note that the employees are key elements that manage these systems. If hospital information systems do not respond to user needs (internal customers), they will be ignored or be even considered as a nuisance (7). Since hospitals, as any other business activity, require user trust for success and user trust also leads to decrease in expenses and increase in hospital income, in this study we have investigated the relationship between the quality of hospital

information systems and user trust in selected hospitals of Tehran University of Medical Sciences.

Trust

Trust is the facilitating factor in human communications; trust enables people to perform business transactions and aids a more fluent economy. In another description trust is relied on as a belief or expectation of the salesman's word or commitment and the salesman will not misuse the customer's vulnerability (8). Trust and risk are completely related and in other words risk is the nucleus of trust (9). According to a more accurate definition, trusting a commercial brand means customer tendency and his confidence in the commercial brand's capabilities and abilities in performing the determined responsibilities (10). Establishing the spirit of trust and honesty in the work place is very important and we must believe that the economic life of any organization as well as external customer satisfaction, depends on the confidence the users have on the system. When we build trust in a person and make them believe they can meet the high-ranking managers of the service providing company and discuss their issues when necessary, we have certainly stabilized his presence in our company. Transformations and variations in service provision with regard to employee suggestions will encourage them to cooperation and so the employees consider themselves to be part of the company. Managers that pursue and study all users' views, even the unsatisfied users, and try to implement them are among successful managers.

System Quality

One of the main techniques a service institute can use to make itself distinguished among other competitors is continuous and qualitative service provision to customers. Many of the organizations and companies are aware of the important fact that providing qualitative services can be a powerful competitive advantage for them, a n advantage which leads to higher profit and to achieve this it is only enough to respond to customer expectations or even surpass that in providing qualitative service (11).

Service Quality

Many organizations claim that "the employees are their main asset" but a small number of great managers actually believe in that (12). Hal Rosenbert states in his book "Customer is in Second Place" that organizations must initially focus and emphasize their employees. He notes that: "only when people feel superior in another person's view, they can honestly share this feeling with others" (13). In services which require high contact, we tend to remember the roles played by behind the counter employees more than other aspects of the act; often the employees are part of the service. Due to inseparability of services, we tend to not dissociate the service from the person providing it. A unit employee may play several roles; for example as part of the service received, part of the distribution system acts as counseling and guidance and marketing. In fact employees in contact with the customers must simultaneously observe operational goals and marketing and on one hand the employees must produce and provide the service and actually be producers and on the other hand accept the responsibility of marketing. In summary it can be said that the employees play a threefold role in service provision. They act as operational experts, marketer and part of the service. This plurality or multiplicity may lead to role opposition among employees. As a result organizations that possess widespread service encounter are inclined towards a more rigid and strict management than those who are not so and as the human element complicates stability in service provision, their responsibility for quality improvement and profit is also complicated (12). Front desk employees are considered "border spreaders" because they work at the borders of the organization. Border spreaders are the factor connecting external customer and the environment with internal activities of the organization. So the first step is selecting suitable employees for service provision. Also, lack or underutilization of tangible factors in service provision increases the value and importance of employees engaged in providing service. In fact, due to their engagement with the customers, front desk employees have a major share in determining the quality level of the service provided. So part of the effort towards improving service quality must focus on front desk employees. According to the concept of internal marketing, front desk employees are the aim of internal marketing strategy in order to improve the quality of service provision (14).

Quality of Hospital Information Systems

Hospital Information System (HIS) consists of an integrated system of producing information necessary for managing all activities related to health such as programing, supervision, coordination and decision making. Supporting hospital activities takes place at operational, tactical and strategic levels. The responsibility of the HIS is to utilize the computer and means of communication for gathering, reserving, processing, reviving and relating patient care and official information for all activities related to hospital. Human work labor as the most important and valuable asset of the organization can create a powerful and dynamic organization through optimal use of other resources. Clearly all software and hardware and advanced technologies are tools which requires educated, interested and committed work force for optimal use. Providing employee satisfaction has undeniable effect on organization efficiency (15). In design and development of information systems one must consider that the employees are key elements managing such systems. If hospital information systems do not fulfill user expectations (internal customers) they will be ignored or even be viewed as a nuisance (7).

Research Hypotheses:

Main hypothesis: there is a meaningful relationship between the quality of service providing software systems with customer trust

Secondary hypotheses:
1- There is a meaningful relationship between system quality and user trust.
2- There is a meaningful relationship between information quality and user trust.
3- There is a meaningful relationship between service quality and user trust.

Research method:

This research is a descriptive analysis carried out in 2015 in hospitals selected by Tehran University of Medical Sciences. The statistical group included all users working in revenue and clearance unit, estimated to be 102 at the time of research. "user" in this context means those hospital

employees in the research participating in one way or another in entering, processing and retrieval of information and using this system is part of their work activity or responsibility. Due to limitations of the statistical group, no sampling was carried out and the study was performed through census and 102 questionnaires were distributed out of which 90 completed, documented questionnaires were obtained. The hospitals under study were Shari′ati, Moheb Yas, Razi and Roozbeh. In this study correlation method was used and to investigate factors field and library study were carried out. The tool used for gathering information was questionnaire. In this research the standard questionnaire of Kim et al was used to investigate the factors related to satisfaction. This questionnaire consisted of two demographic parts of 4 questions and the specialized part of 12 questions in four aspects as explained in table 1. The questionnaire was based on Likert scale (1: completely disagree, 2: disagree, 3: no comment, 4: agree, 5: completely agree). Regarding the validity of this research, the questions are described according to theoretical principles and other similar research and with regard to details of each variable. The questions have also been discussed with scholars in the field and management professors and the original questionnaire was distributed after being edited. Therefore the validity of the questions is confirmed with respect to contents. To estimate the constancy of the questionnaire Alpha Chronbach was used. In this study alpha Chronbach coefficient varied from 0.72 to 0.87 with regard to dimension separation.

To analyze the data in addition to descriptive statistics of: tables, frequency distribution percentage and average, inferential statistics like KS and Pearson tests were used.
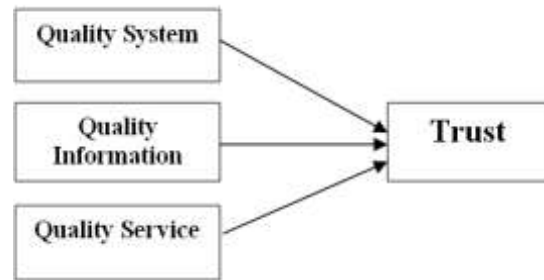

Fig (1) Conceptual Model

Demographic findings

Descriptive findings show that the participants in the research were mostly women (56%) mostly married (64%) between the ages of 31-40 (32%) and had a bachelor's degree (48%).

Research variables' distribution

To investigate customer trust distribution and the effecting factors KS test was used.

As the data in table 1 show the results of the KS test reveal that user trust and the effective factors (system quality, information quality, service quality and trust) are distributed normally among users ($p > 0.05$). Therefore to describe the above variables, mean and standard deviation and to respond to research hypotheses, parametric tests are used.

Table 1: Evaluation of user Trust and factors affecting it:

User Trust and factors affecting it	KS test	P value
Quality System	1.305	.066
Quality Information	1.091	.185
Quality of service	1.185	.121
Trust	1.090	.115

Result of the Research

The results state that the mean of factors effecting user trust in educational hospitals selected by Tehran University of Medical Sciences was between 2.97 and 2.62. so as is shown in table 2 the mean of factors affecting the quality of service providing software systems in educational hospitals of Tehran University of Medical Sciences was less than the average limit.

Also investigations showed that the average user trust in educational hospitals selected by Tehran University of Medical Sciences was between 2.84 and so the average user trust in service providing software systems in educational hospitals of Tehran University of Medical Sciences was less than the average limit.

Table 2: Mean and standard deviation factors affecting user Trust

Factors of affecting user Trust	Average	Standard deviation	min	max
Quality System	2.97	.80	1.00	5
Information	2.62	.80	1.00	5
Quality of service	2.63	.80	1.00	5

Evaluating Research Hypotheses

Since variable are quantitative and no violation of normality is witnessed in data, to respond Pearson correlation coefficient was used.

Hypothesis 1 – meaningful relationship between system quality and user trust

The results of Pearson correlation coefficient in table 3 show that: there is a meaningful relationship between the

quality of information systems and user trust ($P < 0.05$, $r = 0.734$). Positive correlation indicates that the higher the quality of service providing software systems, the higher the users' confidence. This finding illustrates that null hypothesis is rejected and research hypothesis is approved. So it can be said that there is positive and meaningful relationship between system quality and user trust in

educational hospitals selected by Tehran University of Medical Sciences.

<u>Hypothesis 2 – meaningful relationship between information quality and user trust</u>
The results of Pearson correlation coefficient in table 3 show that: there is a meaningful relationship between the quality of information systems and user trust (P< 0.05, r = 0.703). Positive correlation indicates that the higher the information quality, the higher the users' confidence. This finding illustrates that null hypothesis is rejected and research hypothesis is approved. So it can be said that there is positive and meaningful relationship between information quality and user trust in educational hospitals selected by Tehran University of Medical Sciences.

<u>Hypothesis 3 – meaningful relationship between service quality and user trust</u>
The results of Pearson correlation coefficient in table 3 show that: there is a meaningful relationship between the quality of service providing systems and user trust (P< 0.05, r = 0.721). Positive correlation indicates that the higher the service quality, the higher the users' confidence. This finding illustrates that null hypothesis is rejected and research hypothesis is approved. So it can be said that there is positive and meaningful relationship between service quality and user trust in educational hospitals selected by Tehran University of Medical Sciences.

Table 3: Pearson correlation test

Factors affecting the ASP	Trust	
	Pearson correlation coefficient	P value
Quality System	0.732	.001
Information	0.703	.001
Quality of service	0.835	.001

Discussion and Conclusion:
This research aiming at determining the relationship between the quality of hospital information systems with user trust in selected hospitals of Tehran University of Medial Sciences, consists of one main and three secondary hypotheses. The relationship between the variable of user trust with factors causing this important factor is investigated through descriptive statistics. In the present research the results showed that the most fundamental factor related to user trust is service quality, so the higher the quality of service systems the higher the confidence of users. This point is not in compliance with a research Poorsalimi (16) carried out entitled "the effect of the quality of services and employee emotional conditions on customer trust in Mashhad Mellat Bank" but in a similar study Kim, J et al, 2011(17) carried out in small and medium companies in the South Korea it was confirmed that the quality of information systems' services leads to more confidence and so the results are similar to the present study. Also the findings of this research showed that there is a positive, meaningful relationship betwenn system quality and user trust. In a study performed by Kim the results showed that quality system does not lead to trust which is not in compliance with the results of this research. The reason could be the difference in nature of service companies and medical institutes. In the end the results showed that there is a meaningful and positive relationship between information quality and user trust. Also in a similar study Kim 2011 it was confirmed that the quality of system information leads to higher confidence which is in compliance with the results of the present research.
Finally with 95% confidence level, one can conclude from this research that there is a meaningful relationship between the quality of hospital information software programs and user trust in selected hospitals of Tehran University of Medical Sciences and there is higher correlation in the relationship between service quality and user trust. Also through investigating the variables of this research it was confirmed that although all variables have positive and meaningful relationship with user trust, the man is less than average limit. So it is suggested that the hospitals look for production ideas and value creation and providing the highest level of information system quality so that users believe that providing better services through their system is not possible in other similar centers (competitors). Also the hospitals can provide services which respond to welfare, security, superiority and uniqueness and special requirements of the users. In order to improve information quality, hospitals can equip systems to video conferencing between medical experts and make the information available through the internet and telephone communication (mobiles) and utilize multimedia technologies for recording all kinds of audio-visual information. Constant face-to-face communication of organization managers and software users and analyzing their complaints is also a common and suitable method for promoting the quality of information systems.

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