The Role of Strategic Information System Characteristics on Customer Service Quality
(An Empirical Study at Soran and Sardam Private Hospitals in Iraqi Kurdistan Region Erbil City)

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Abstract

This study empirically seeks to examine the role of strategic information system characteristics represented by four dimensions (reliability, cost, time, and flexibility) on customer service quality that represented by four dimensions as well (courtesy, competence, communication, and credibility). In conducting this study data collected through primary sources using a survey questionnaire from a random sample of 43 participants. Questionnaire consists of (32) items measured on five point Likert scale. The obtained data was analyzed quantitatively using SPSS program version 20 for both descriptive statistical as well as analytical statistics. The result from this study reveals that there is a strong positive relationship between strategic information system characteristics and customer service quality, and statistically there is a significant strong impact of strategic information system characteristics on customer service quality.

Keywords: strategic information system, customer service, quality.
Introduction

Recently, the leading huge organizations use information and information system in various fields as a tool to outperform their competitors. A certain information system used to achieve this goal called strategic information system. The growth of the strategic use of information system led to the change in concept as well as the role of information in the organizations. Furthermore, the use of strategic information system requires a change in the objectives of the organization or its relationship with consumers, suppliers, internal processes, and structure information. Organizations that build a successful strategic information system can go beyond the regulatory barriers between jobs and allow the participation of information between the organization and the various functions, and between consumers and suppliers. Many organizations including hospitals seeking to improve the quality of services provided in order to reach the point of excellence. Besides, the organizations are using a variety of strategies to improve the level of performance. The most important of these strategies is depending on information system characteristics that help hospitals to providing high quality of services to customers in order to satisfy customers’ needs and wants.

The study problem:

Current study adopts an important topic as a framework involving the revitalization of the organization's effectiveness through the availability requirements of basic system for strategic information characteristics in the hospitals under study. Despite the facts that hospitals owning information system , but there are ambiguous and vulnerable in the interest of these hospitals to recognize the importance of the characteristics of the output of informatics. Therefore, the study problem can determine by the following question:
Is there is a role of strategic information system characteristics on customer service quality?

The importance of the study:
1. The importance of this study is being considered as one of the few studies in Iraqi Kurdistan Region that link between two important subjects which they are strategic information system characteristics and customer service quality.
2. It is considered to be the only study in the health field in Iraqi Kurdistan Region (according to knowledge of researchers) that addresses the role of information system characteristics as a strategic tool to achieve customer service quality.
3. Health sector is considered to be one of the most sectors that need modern and sophisticated information system
4. Accordingly, it can be emphasized that this study represents an important addition to the literature of strategic management and information system and thus enrich the gap of this area.

The objectives of Study:
1. To clarify the concepts of strategic information system characteristics and customer service quality.
2. To identify the most important factors that enhance customer service quality.
3. To determine the strongest impact of strategic information system characteristics on customer service quality.
4. To find out the strongest correlation between strategic information system characteristics and customer service quality.
Theoretical Framework of the Study:

Figure (1) shows the study theoretical framework. The model assumed a relationship along with an impact of strategic information system characteristics and customer service quality. The independent variable in this study is "strategic information system characteristics" that represented by four dimensions (reliability, cost, time, and flexibility). On the other hand, the dependent variable is "customer service quality" which represent by four dimensions as well and they are (courtesy, competence, communication, and credibility).

"Source: prepared by researchers"

Study Hypotheses

Based on the objectives above, this study will examine two main hypotheses and a number of sub-hypothesis:

1. There is a positive correlation between strategic information system characteristics and customer service quality. The first hypothesis is derived from it the following Sub-hypothesis:
   - There is a positive correlation between reliability and customer service quality.
   - There is a positive correlation between cost and customer service quality.
   - There is a positive correlation between time and customer service quality.
   - There is a positive correlation between flexibility and customer service quality.

2. There is a statistically significant impact of strategic information system characteristics on customer service quality. The second hypothesis is derived from it the following Sub-Hypothesis:
   - There is a statistically significant impact of reliability on customer service quality.
   - There is a statistically significant impact of cost on customer service quality.
   - There is a statistically significant impact of time on customer service quality.
There is a statistically significant impact of flexibility on customer service quality.

**Literature Review:**

**Strategic Information System Characteristics**

Many researchers classified strategic information system as a present strategic as well as valuable for achieving competitiveness and sustainability in today's business environment. Pappard and Ward (2004, 168) indicates that strategic information system is all methodologies that employ information technology in order to improve business competitiveness. According to Al-Bakri (1997, 199) strategic information system is a system of formation and supporting competitive strategy for the business unit, it conseder to a system of information that based on computer used as a tool to implement the organization's strategy that rely on the use of information, operation of information, and contact information. Turban, et.al., (2002, 83) states that strategic information system can supports or constitutes a competitive strategy for the business unit is able to change its way of working to help the organization to gain competitive advantages and reduce competitive disadvantages. O'Brien (1990, 34) claims that the strategic information system is a system that supports or identifies strategic options competitiveness of the organization, the system that have three key strategic roles which they are: enhance organization's creations, improve the efficiency of their operations, and exploit the possibilities offered by information technology. In this study the characteristics (dimensions) of strategic information system are as following:

1. **Reliability:** it means that strategic information must be comprehensive, accurate, be correct, its ability to solve problems, and free from the mistakes that affect decisions (Turban, et.al., 1999: 567).
2. **Cost:** it refers to the financial burden of the information hence the expected return which is greater than the amount of the getting cost of them (Al-Asaady, 2010, 58).
3. **Time:** making any decision is linked to the availability of information at right time, because the lack of strategic information at the right time leads to loss its value (Al-Najar, 2005, 28).
4. **Flexibility:** refers to the system's ability to acclimatize in order to meet the changing requirements of the beneficiaries, as well as high flexibility to output information means multi-purpose use by decision makers in the organization (Al-Naama, 2007, 11).

**Customer Service Quality**

In today's competitive environment delivering high quality service is the key for a sustainable competitive advantage (Angelova, and Zekiri, 2011, 233). The quality of servicing customers nowadays become importance because it ends in increasing product quality, gaining competitive advantage, gaining profitable opportunities, and consequently increasing sales and income (Jahanshahi, 2011, 254). Customer service according to Harris (2000, 32) is anything that organizations do for the customers that enhances the customer experience. Ladhari, (2008, 70) argues that service quality is considered an important tool for a business’s struggle to differentiate itself from its competitors. Mackay & Crompton (1988, 47) defined it as the relationship between what is customer desired from service and what is realize actually upon receipt.

Voss et al, (2004) emphasized that providing excellent service quality is generally recognized as a critical business requirement. Bastos and Gallego (2008) concluded that customer service quality directly affects satisfaction as well as satisfaction directly affects the
positive behavioral objectives. Angelova, and Zekiri (2011, 236) states that in general the satisfaction of customer translates to more market share increase and profits for organizations. Organization's service quality is based on how the customer perceives it. Quality of customer service is a measure of the degree to which customer expectations matches the experience of the service delivered (Lewis, 1990).

One of the most important organizational processes is customer service which organizations perform considering the growing competition as well as for attracting entrepreneurial opportunities for increasing profitability, and increasing the customer satisfaction and loyalty level (Kwamega et al, 2015, 44). Satisfaction of customers or their dissatisfaction is a measure or evaluation of a service or product's ability to meet the need or expectations of customer’s (Zeithaml et al., 2006). Angelova, and Zekiri (2011, 234) identified a number of factors that affect customer satisfaction namely; service quality, quick service, good value, friendly and courteous employees, knowledgeable and helpful employees, accuracy of billing, billing timeliness, billing clarity and competitive pricing. Several studies found that there is a relationship as well as an impact between customer satisfaction and customer loyalty (Rust and Zahorik 1993), (Shankar et al., 2003), (Bodet, 2008), (Wong et al., 2008) (Chai et al, 2009). In this study the dimensions of customer service quality are as following:

1. **Courtesy**: level of attention, and respect shown by employees to customers during service delivery.
2. **Competence**: means employees possessing the required skills and knowledge needed to provide the services and understanding the customers.
3. **Communications**: The ability to listen to customers to understand all their wishes and requirements, whether spoken or silent is also seen as a way to express along with proving the customers the necessary information.
4. **Credibility**: includes making the organization trustworthy, reliable, trust, and defends the interests of customers which generating confidence between the organization and customers.

**Methodology**

This study can be categorized as descriptive research based on the method of obtaining the considered data and is of correlative type. The design of the questionnaire in this study with 32 closed-end questions and was primarily based on multiple-item measurement scales taken from previous studies (table 1). 16 questions are designed to evaluate strategic information system characteristics as well as 16 questions are designed to evaluate customer service quality (table 1). The 32 items were measured by a five-point Likert scale, strongly disagree (1), disagree (2), uncertain (3), agree (4), and strongly agree (5). The software which have been used for analyzing the data is SPSS 20. Moreover, several tests have been used in order to analyzing data derived from questionnaire such as descriptive analysis and analytical methods analysis. Among the descriptive analysis, mean and standard deviation were administrated. Furthermore, among the analytical analysis methods, correlation was applied in order to discover the relationship among the variables and regression were run to measure the impact of strategic information system characteristics on customer service quality.
Table (1) Questionnaire instruments

<table>
<thead>
<tr>
<th>Study Variables</th>
<th>Sub variables</th>
<th>No. of Items</th>
<th>Items</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost</td>
<td>4</td>
<td>X5 – X8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>4</td>
<td>X9 – X12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flexibility</td>
<td>4</td>
<td>X13 – X16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competence</td>
<td>4</td>
<td>Y5 – Y8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>4</td>
<td>Y9 – Y12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Credibility</td>
<td>4</td>
<td>Y13 – Y16</td>
<td></td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"

Participants
The data was collected from employees at two private hospitals in Iraqi Kurdistan Region Erbil city namely: Soran Private Hospital (date of establishment 2009) and Sardam Private Hospital (date of establishment 2010). 50 Questionnaires were distributed among employees that they were selected randomly as well as were distributed personally, 43 questionnaires were returned, the overall response rate was 86% that represents the sample size of present study. Table (2) shows details about the number of distributed and returned questionnaires.

Table (2) number of distributed and returned questionnaires

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>Number of Distributed Questionnaires</th>
<th>Number of Returned Questionnaires</th>
<th>Response Rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soran Private Hospital</td>
<td>25</td>
<td>21</td>
<td>84%</td>
</tr>
<tr>
<td>Sardam Private Hospital</td>
<td>25</td>
<td>22</td>
<td>88%</td>
</tr>
<tr>
<td>Overall</td>
<td>50</td>
<td>43</td>
<td>86%</td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"

Reliability of the Study:
For determining reliability of the study the method of Cronbach’s Alpha was administrated. Sekaran (2005) pointed out that the coefficient alpha ranges in values from 0 (no reliability) to 1 (perfect reliability). The followings are the results from study variables:
1. For questions related to strategic information system characteristics the Cronbach’s Alpha coefficient of (0.971) was calculated.
2. For question related to customer service quality Cronbach’s Alpha coefficient of (0.989) was calculated.
3. For question related to all items Cronbach’s Alpha coefficient of (0.990) was calculated.
Table (3) Reliability Statistics

<table>
<thead>
<tr>
<th>Study Variables</th>
<th>No. of Items</th>
<th>Cronbach's Alpha value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Strategic Information Systems Characteristics</td>
<td>16</td>
<td>.971</td>
</tr>
<tr>
<td>2 Customer Service Quality</td>
<td>16</td>
<td>.989</td>
</tr>
<tr>
<td>3 All items</td>
<td>32</td>
<td>.990</td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"

Descriptive Statistics Analysis:

1. Strategic Information System Characteristics:

The table below (4) illustrates the descriptive analysis of strategic information system characteristics. The results revealed that the two hospital under study had high (mean) levels in the characteristics of strategic information system including reliability (4.1552), time (3.7862), cost (3.7845) and flexibility (3.7241). The overall characteristics of strategic information system has a high level of attribute (mean = 3.8621). Among these characteristics, "reliability" has a comparatively higher level of attribute with a rate of 83.104% agreement. In contrast, "flexibility" has a lower level of attribute with a rate of 74.482% agreement.

The significance value of the four independent variables is 0.000 which is less that 0.05 thus the four independent variables is statistically significance in predicting how the characteristics of reliability, cost, time and flexibility influence customer service quality. The t-ratio calculated of the four independent variables at 5% level of significance was (7.111, 5.595, 4.285, and 4.370) respectively, this results explains that the two hospitals under study rely on strategic information system characteristics in order to present a high quality of services to their customers.

Table (4) Strategic Information System Characteristics Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Coefficient of Variance</th>
<th>Rate of Agreement</th>
<th>t-ratio</th>
<th>Sig.* (2-tailed)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>4.1552</td>
<td>.87478</td>
<td>21.052%</td>
<td>83.104%</td>
<td>7.111</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Cost</td>
<td>3.7845</td>
<td>.75511</td>
<td>19.952%</td>
<td>75.69%</td>
<td>5.595</td>
<td>0.000</td>
<td>3</td>
</tr>
<tr>
<td>Time</td>
<td>3.7862</td>
<td>.98589</td>
<td>26.039%</td>
<td>75.724%</td>
<td>4.285</td>
<td>0.000</td>
<td>2</td>
</tr>
<tr>
<td>Flexibility</td>
<td>3.7241</td>
<td>.89229</td>
<td>23.959%</td>
<td>74.482%</td>
<td>4.370</td>
<td>0.000</td>
<td>4</td>
</tr>
<tr>
<td>Overall Strategic Information Systems Characteristics</td>
<td>3.8621</td>
<td>.84752</td>
<td>21.944%</td>
<td>77.242%</td>
<td>5.478</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"
2. Customer Service Quality:

The table below (5) illustrates the descriptive analysis of customer service quality. The results revealed that the two hospital under study had high (mean) levels in presenting high service quality to their customers including courtesy (4.1897), credibility (3.9655), competence (3.9310) and communication (3.7931). The overall customer service quality has a high level of attribute (mean = 3.9698). Among these variables, "Courtesy" has a comparatively higher level of attribute with a rate of 83.794% agreement. On the contrary, "communication" has a lower level of attribute with a rate of 75.862% agreement. In addition, table (5) explains that statistically significant differences (p< 0.05) existed in the levels of factors that affect customer service quality.

Table (5) Customer Service Quality Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Coefficient of Variance</th>
<th>Rate of Agreement</th>
<th>t-ratio</th>
<th>Sig.* (2-tailed)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courtesy</td>
<td>4.1897</td>
<td>.75491</td>
<td>18.018%</td>
<td>83.794%</td>
<td>8.486</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Competence</td>
<td>3.9310</td>
<td>.83692</td>
<td>21.290%</td>
<td>78.62%</td>
<td>5.991</td>
<td>0.000</td>
<td>3</td>
</tr>
<tr>
<td>Communication</td>
<td>3.7931</td>
<td>.83203</td>
<td>21.935%</td>
<td>75.862%</td>
<td>5.133</td>
<td>0.000</td>
<td>4</td>
</tr>
<tr>
<td>Credibility</td>
<td>3.9655</td>
<td>.90811</td>
<td>22.900%</td>
<td>79.31%</td>
<td>5.726</td>
<td>0.000</td>
<td>2</td>
</tr>
<tr>
<td>Overall Customer</td>
<td>3.9698</td>
<td>.82199</td>
<td>20.706%</td>
<td>79.396%</td>
<td>6.354</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"

Pearson Correlation analysis:

The table below (6) clarifies the result of analysis carried out to test the first hypotheses which states that "there is a positive correlation between strategic information system characteristics and customer service quality". To test the relationship among the variables; Pearson’s (r) correlation was calculated. The correlation coefficient for the data revealed that there is a strongest and positive correlation (r= 0.973) between strategic information system characteristics and customer service quality. This results illustrated that if there is an increase and interest in characteristics of strategic information system then customer service quality will also increase extremely. As a result, the first main hypotheses is accepted.
Table (6) testing the first main hypotheses

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Customer service quality</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic information system characteristics</td>
<td>.973**</td>
<td>.000</td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"

Furthermore, in table (7) the correlation matrix shows that all the characteristics of strategic information system (reliability, cost, time, and flexibility) were positively correlated with customer service quality. The table illustrates that the characteristic of "time" achieved the highest positive correlation with customer service quality (r=0.984). In contrast, the characteristic of "flexibility" has the weakest correlation with customer service quality (r=0.900). Besides, table (7) shows that the four characteristics of strategic information system have positive relationship with customer service quality at the value of (0.000) which they are less than 0.05. Therefore, the four sub-hypothesis that derived from the first main hypotheses were accepted.

Table (7) testing the sub-hypothesis

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Customer service quality</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>.958**</td>
<td>.000</td>
</tr>
<tr>
<td>Cost</td>
<td>.912**</td>
<td>.000</td>
</tr>
<tr>
<td>Time</td>
<td>.984**</td>
<td>.000</td>
</tr>
<tr>
<td>Flexibility</td>
<td>.900**</td>
<td>.000</td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"

Regression Analysis

This study conducted a multiple linear regression analysis in order to find out the impact of strategic information system characteristics on customer service quality. The overall characteristics of strategic information system illustrate 94.8% of the customer service quality as characterized by the (R²). As a result, this means that other elements not studied in this study contribute 5.2% of the customer service quality. The significance value is 0.000 which is less than 0.05. Therefore, the model is statistically significance in predicting how the overall characteristics of strategic information system impacts customer service quality. At 5% level of significance, the F calculated was 488.397, which explains that the overall model was significant. Consequently, the second main hypotheses is accepted that states "there is a
statistically significant impact of strategic information system characteristics on customer service quality”.

Table (8) Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.9738</td>
<td>.948</td>
<td>.946</td>
<td>.19159</td>
<td>.948</td>
</tr>
</tbody>
</table>

T= 22.100 (n=43)

"Source: prepared by researchers"

Furthermore, the table below shows that statically there are a significant impact of the four characteristics of strategic information system on customer service quality. The characteristic of "reliability" illustrate 91.8% of the customer service quality as characterized by the (R^2). The value of (B) is amounted (0.900) which illustrates that the change in reliability by one unit will lead to a change in the customer service quality by (0.900). At 5% level of significance, the F calculated was 302.787, as well as T calculated was 17.401. The characteristic of "cost" illustrate 83.3% of the customer service quality as characterized by the (R^2). The value of (B) is amounted (0.993) which illustrates that the change in cost by one unit will lead to a change in the customer service quality by (0.993). At 5% level of significance, the F calculated was 134.286, as well as T calculated was 11.588. The characteristic of "time" illustrate 96.8% of the customer service quality as characterized by the (R^2) which is considered to be the strongest characteristic that impact on customer service quality. The value of (B) is amounted (0.820) which illustrates that the change in time by one unit will lead to a change in the customer service quality by (0.820). At 5% level of significance, the F calculated was 821.151, as well as T calculated was 28.656. The characteristic of "flexibility" illustrate 80.9% of the customer service quality as characterized by the (R^2). The value of (B) is amounted (0.829) which illustrates that the change in flexibility by one unit will lead to a change in the customer service quality by (0.829). At 5% level of significance, the F calculated was 114.728, as well as T calculated was 10.711. this results explains that flexibility is weakest characteristic that impact on customer service quality. The significance value for the four characteristics was 0.000 which is less than 0.05. Consequently, the four sub- hypothesis that derived from the second main hypotheses were accepted.
Table (9) testing the sub- hypothesis

<table>
<thead>
<tr>
<th>Characteristics of strategic information systems</th>
<th>R Square</th>
<th>F Change</th>
<th>B</th>
<th>Beta</th>
<th>T</th>
<th>Sig F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>.918</td>
<td>302.787</td>
<td>.900</td>
<td>.958</td>
<td>17.401</td>
<td>.000</td>
</tr>
<tr>
<td>Cost</td>
<td>.833</td>
<td>134.286</td>
<td>.993</td>
<td>.912</td>
<td>11.588</td>
<td>.000</td>
</tr>
<tr>
<td>Time</td>
<td>.968</td>
<td>821.151</td>
<td>.820</td>
<td>.984</td>
<td>28.656</td>
<td>.000</td>
</tr>
<tr>
<td>Flexibility</td>
<td>.809</td>
<td>114.728</td>
<td>.829</td>
<td>.900</td>
<td>10.711</td>
<td>.000</td>
</tr>
</tbody>
</table>

"Source: prepared by researchers"

Conclusion:

This study tested two hypotheses and a number of sub- hypotheses. The results found that there is a strong and positive correlation along with a statistically a significant impact of strategic information system characteristics on customer service quality. The results from this study concluded that from the characteristics ranks according to their relative significance to customer service quality, the characteristic of time was the most important characteristic stimulating to impact on customer service quality. On the other hand, the characteristic of “cost” was the least important characteristics to impact on customer service quality.

Organization's should keep in mind the needs and wants of their customers’ in addition to when they develop their products and perform their services. The satisfaction of customer is a significant objective of all business activities as well as it has been a central concept in marketing literature. Organizations who closely track the needs and wants of customers usually enjoy better success, since, the success of any business organization is determined by customer service quality. Conducting the satisfaction of customer and expectation surveys could assist maximize the organization’s proceeds and value. Studies confirm that customer services quality is one of the significant factors in identifying the needs of new customer in addition to the customer satisfaction and loyalty key.

Recommendation:

1. It is essential that the organizations concerned with the design of strategic information system in line with developments in technology, information, and communications in order to providing the customers the necessary information that they wish for.
2. The need to provide an integrated and variety of modern and sophisticated high quality service that increase the level of customer satisfaction and therefore loyalty to the organization.
3. It is essential that organizations take into consideration all the dimensions and characteristics of strategic information system as a tool and technique to influence customers’ loyalty and satisfaction especially give priority to the characteristics of cost and flexibility that customer desire.
4. Conduct similar studies on management information system at the other service organizations using different dimensions that not studied in present study to find out customers’ orientation.
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