

## **The Impact of Using the Information Technology on the Quality of Health Services in the Hospitals of Private Sector in Najran**

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**Abstract:** *Information technology and the quality of health services in the hospitals acquired the attention of the hospitals in the private sector, due to the positive impact on improving the levels of health services provided in the hospitals of the private sector. This study aims to explore the impact of information technology on the quality of health services in the hospitals of the private sector in Najran area from the hospital's staff perspective, that by exploring the availability of information technology in hospital under study, exploring the relationship of information technology with quality dimensions of health services in the hospital under study, and explore the impact of information technology on each dimension of quality health services in the hospital under study. This study was to answer the question of: The impact of information technology on the quality of health services in the hospitals of private sector in Najran by proposing a model represents the use of information technology and the quality of health services. The model was tested by using survey data collected from (64) employees. Correlation and Regression analysis show the importance of information technology in improving the quality of health services. The results show that there is a strong relationship and a positive impact of information technology on the quality of health services.*

**Keywords:** *Information Technology, Quality of Health Service.*

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### **I. Introduction:**

All organizations have seen rapid developments of information technology (IT) that changed the world in which we live. Organizations trying to take maximum possible advantage, one of these organizations are hospitals, where one of the important and active organizations in the community through its role in the provision of health services to the beneficiaries to keep them safe and to increase their ability to construction and development. So, Information technologies have changed the face of the world we live in. Mishra et al. (2013) Technology can be defined as the application of scientific knowledge to design contrivance and service solutions. Two widely applicable technologies have mesmerized our lives these are – Information Technology and Communication Technology. Information Technology is a branch of engineering that deals with the use of computers and telecommunications to retrieve, store and transmit information. Communication Technology is a method of meaningful exchange of information among people. Emergence of Internet has boosted the use of this technology and now this has become an imitable source of healthcare services.

Hospitals have focused on quality because it has become important and necessary concept in the delivery of health services, so the hospitals became employ information technology to upgrade the services they provide.

Štaras et al. (2013) It should be noted that the rapid development of the IT has led to miscellaneous changes (new organizational tools, changes in management practices), which resulted in internal and external transformations in health institutions. Health care institutions are facing various challenges as an outcome of the IT development, including innovative thinking, collaboration and the need for authorities to foster synergy in health care institutions.

Ortiz & Clancy (2003) Information Technology (IT) is gaining ground in all areas of life and developing nations are taking advantage of this opportunity in various sectors including the development of health care systems. IT allows health care providers to collect, store, retrieve, and transfer information electronically.

Information technology (IT) has the potential to improve the quality, safety, and efficiency of health care.

Kabene (2010) The prevalence and increasing pervasiveness of information technologies is resulting in far-reaching change in how nearly every healthcare organization and healthcare provider functions. Healthcare organization taking advantage of its benefits to enhance customer service, connect with customers, reduce costs, and increase market share. The complexity of the healthcare industry and its need for nearly-instances, accurate information means that the adoption of information technology to deliver health services poses many substantial benefits, such as improving the quality of healthcare services and to be more financially efficient.

Santos (2003) The service is mainly provided in order to satisfy the wishes and requirements of customers; it thus forms strong relationships between customers and organizations providing service. The concept of service is not limited to the performance of an activity; it should rather fit and match the preferences of customers benefiting from the service.

Wisniewski (2001) Service quality is a concept that has aroused considerable interest and debate in the research literature because of the difficulties in both defining and measuring it with no overall consensus emerging on either.

Lewis & Mitchell (1990) There are different definitions as to what is meant by service quality. One such definition describes service quality as the extent to which a service meets customers' needs or expectations.

Zeithaml & Bitner (2000) Another definition explains service quality as a focused evaluation which reflects the customer's perception of specific dimensions of service such as reliability, responsiveness, assurance, empathy and tangibles.

Itumalla (2012) Service quality refers to a number of inter-related factors including the way in which customers are treated by providers, the scope of services and contraceptives available to the customers, the quality of the information provided to the customers and quality of the service, the promotion of individual choice, the technical competence of providers and the accessibility and continuity of services.

The research aims to check the availability of information technology in the hospitals under study, know the extent of the use of information technology in hospitals under study, know the nature of the relationship between information technology and the quality of health services in hospitals under study. And know of the impact of information technology on the quality of health services in hospitals under study. This study has not been previously made in private hospital in Najran area at Saudi Arabia.

This study is a practical application in the Saudi Arabia arena. Serving the Saudi Arabia economy by directing organizations to activate the use of information technology and invest them better, which increases the organization's ability to provide services to the largest number of beneficiaries with high quality, less time and less cost.

## **II. Literature Review**

### **1. The Concept of Information Technology:**

(Krajewski & Ritzman, 2005, p509) defined information technology as: includes Know-How, physical components and procedures used in the production of services and products. (Alqodhah, 2007, p. 47) defined information technology as: scientific, technological and engineering knowledge and set of methods and the arts for converting inputs to outputs.

### **2. The Information Technology's Components:**

(Ajam, 2007, p. 95) stated that the information technology consists of two aspects, namely: the physical side and the mental side, the physical side consists of the computer and automated control equipment and communications technology, either mental side consists of software, artificial intelligence, and programs engineering.

### **3. The Application of Information Technology Requirements:**

The application of information technology in different organizations need to many of the basic requirements necessary to make the information to operate efficiently and effectively technology, thus obtaining the positive benefits of their use. (Hussein, 2010, pp. 330-331) stated that there are different requirements must be provided when the information technology applied in the organizations in order to achieve the success of the organization, these requirements are: Technical Requirements, Economic Requirements, Social Requirements, Administrative Requirements, and other requirements.

### **4. The Information Technology's Characteristics:**

(Al-Otaibi, 2010, pp. 21-23) and (Alhadi, 1989, p. 155) and (Bdrisi, 1994, pp. 5-6) and (Boumaylh and Bobakur, 2004, pp. 206-206) stated that the information technology is characterized by the following features: reduce the Time, reduce the place, low cost and speed of time, artificial intelligence, training networks, interactive, asynchronous, decentralized, mobility and motor, convertibility, not publicly, common and non-proliferation, global and cosmic.

### **5. The Importance of Information Technology:**

(Arab, 2012, p. 322) and (Chechen, 2004, p. 19) explained that the importance of information technology, including the following:

- A. Help organizations in obtaining needed information to perform their work properly and distinctive.
- B. Help organizations in finding new jobs.
- C. It is a fundamental basis, which the organizations build its competitive advantage because the technology play an active role to the success these organizations.
- D. Change the way the organizations operate and reshape their products and services.

### **6. Benefits of Information Technology:**

(Arab, 2012, p. 322), (Ghammas, 2006, p. 44) and (Alqodhah, 2007, p. 55) explain that the information technology affect the organizations capability to perform its core functions, the most important benefits and advantages that can accrue to these organizations -if these tools are used optimally- are as follows:

- A. Speed and accuracy in the completion of the work required.
- B. Reduce costs and the use of paper files that take up too much space in the organization.
- C. Improve the efficiency and increase effectiveness through doing things in the right way with the ability to increase coordination between the various administrative departments and divisions.
- D. Determine the channels of communication between the various administrative levels of the organization.
- E. Create the conditions for effective decision making by processing information briefly and in a timely manner.
- F. Help in prediction the organization's future and the prospects in order to take the necessary precautions in the event of a defect in achieving the goals.
- G. Keep pace with global developments with regard to the methods of customer service and diversification of it.
- H. Reserve historical data and information that are necessary to the work of organizations.

### **7. Information Technology Management:**

(McNurlin, 2009, p. 15) confirmed that the information technology management within the organization requires several key administrative functions, such as budgeting, staffing, and change management, organization and control, along with other aspects that are unique to the technology, such as software design, network planning, and technology support.

### **8. Quality of Services:**

(Barhoum, et al., 2007) defined quality as: "a pioneering step towards better performance to reach the achievement of global standards by which to meet the needs of customers in various categories, and in order to achieve satisfying these desires and achieve the goals established whether physical or moral profit. The British Organization defined quality as: "administrative philosophy of the institution, which recognizes the achievement of which all of the consumer's needs and achieve the objectives of the project together".

(Humairi, 2003) defined Quality Management as: "the work style based on cooperation and continuous participation of all departments and members of the organization in order to improve performance, products and services to reach customer satisfaction. The World Health Organization defined quality of health services as: "The activities diagnostic for each patient uniformly, which includes the best results in the field of health, according to the current state of the science of medicine at the best results in the field of health and at the best cost with less risk".

The President of the American Society for Consumer Protection and Promotion of Health Care stated that the quality of health services determined by the following three points:

- Ensure mirroring use of health services.
- Correction increases and the extremes in the presentation of health care.
- Reduce health care errors.

(Claire, 2001) stated that the concept of quality in health organizations seeks to satisfy the patient and provide better services to customers (patients), which is the continuous development of medical, hospitality and administrative processes through the reviewing and analyzing it, and searching for ways and means to increase performance and reduce the time to complete by cutting out all the tasks and functions that are useless and unnecessary for the client and the administrative process, so as to reduce the cost and raise the quality level of the beneficiaries in all stages of the process to develop the requirements and needs of the customer (patient).

### **9. Goals of Quality of Health Services:**

(Al-Salmi, 1990) stated that the quality of health services include the following goals:

- 1 -It is a method based on the joint cooperation of employees.
- 2 - Improving the performance of medical, hospitality and administrative processes.
- 3 - Access to satisfy the customers (patients) and provide better services to them.
- 4 - Follow-up and development of the requirements and the needs of patients.
- 5 - Improved confidence and performance of employees to improve health quality.
- 6 - Determine the quality of jobs that fit with the nature of the health work.
- 7 - Building an organizational culture focused on customer service (patients).

### **10. The Quality of Health Care:**

(Ali, 1999) stated that the health care include the provision of health services and communication between health care providers and the patients, in addition to hospitality and administrative services that seek to health care support, so it must be ensure the accuracy of information provided by the health information systems, including:

- 1- Continuous assessment of the information because that information is used to describe the service provided.
- 2- Provide information that consistent with the best available data.
- 3- Care and advice are issued by a qualified competence when providing care or medical advice personally.
- 4- Make sure that the clarity of data adopted by the information being based on scientific studies or consensus of experts or on personal opinions.
- 5- Decision that some issues are still a matter of dispute and controversy, and in these cases should be made sincere efforts to display all reasonable aspects of fair and balanced manner.
- 6- The language of the display is clear and easy to read and appropriate to beneficiaries.
- 7- The display must be in a way that meets the needs of beneficiaries.

**11. Quality Measurement in Health Services:**

(Nuseirat, 2008) stated that the quality of health services can be measure and control, which include:

1. Continuous assessment of indicators for health, hospitality and administrative cadre, taking into consideration the scientific and practical qualifications to ensure the use of qualified manpower to provide high level of health services.
2. Focus on preventive means, that will improve the quality of health service.
3. Assess and control the quality of medical care through medical retrospective audit carried out by doctors at the hospital.
4. Focus on mainstream medical education program and continuing nursing in the light of education needs.

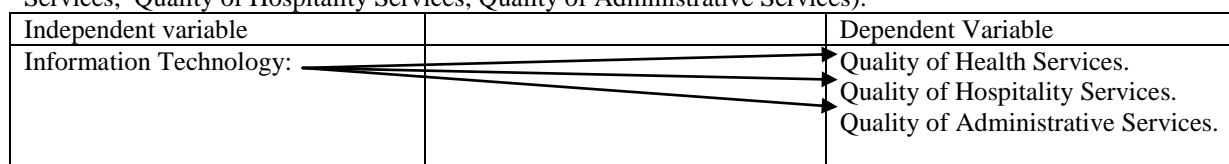
**12. The Dimensions of Quality of Health Services:**

(Bakri, 2005) select five dimensions of quality health services, which the customers (patients) rely on in assessment the quality provided to them at the level of the degree of its quality and through the following dimensions:

1. Reliability: The ability to perform in the completion of what has already been determined and accurately.
2. Response: It is real help in providing the service to the (customer) patient.
3. Confirmation: The characteristics of the workers, knowledge, ability and confidence in providing the service to the customer (patient).
4. Civility (Kindness) is the degree of care and personal attention that helps to satisfy the customer and satisfy his wishes (patient).
5. Tangibility: The capacity and physical facilities, equipment, personnel and communication equipment.

**III. Research model and hypotheses**

In light of problem and objectives of the study, the researcher presents the following model, which reflects the independent variable information technology. It also reflects the dependent variable quality (Quality of Health Services, Quality of Hospitality Services, Quality of Administrative Services).



**3.1 Scale of the study model:**

Model's scale consists of (6) paragraphs to indicate the general characteristics of respondents, (6) paragraphs to indicate the availability of information technology, (14) paragraphs to indicate the quality of health services in the hospitals surveyed.

**3.2 Study's Hypotheses:**

- **The first main hypothesis H1:** There is no correlation between information technology and the quality of health services in hospitals under study at the level of significance ( $\alpha = 0.05$ ) from the staff perspective.
- **The second main hypothesis H2:** There is no statistically significant impact study at the level of significance ( $\alpha = 0.05$ ) for the use of information technology on the quality of health services in the hospitals under the from the staff perspective.
- **IV. Methods of Data Collection:**

The **secondary data: by reviewing the researches, articles, books, and literatures related to the study**, both available in the university's libraries or through access to Web sites, in order to clarify the basic concepts and the various dimensions of the subject of this study. The primary data, where the study conducted on to clarify the

phenomenon throughout the collection of data as follows: interviews: structured interviews with some of the managers, assistant managers, employees to complete and clarify the study's variables addressed by the study, and to enhance the information that can be accessed, as well as to find out the relationship between information technology and the quality of health services in the hospital surveyed. Questionnaire was designed and contained general information about the employees, it also includes an independent variable information technology, and the dependent variable is the quality of health services, in order to collect the raw data from management of hospital surveyed.

**Table (1):** Internal consistency coefficient (Cronbach's Alpha) of the different paragraphs of the measurement tool

No.	Dimensions of the Study	Number of Paragraphs	Alpha Values
1	Information Technology	6	82.5%
Independent Variable		6	82.5%
2	Quality of Health Services	14	83.1%
Dependent Variable		14	83.1%
Total (Model)		20	82.8%

Likert Scale was used, and the weights assigned for approval are: (5) Strong Agree (4) Agree (3) Nutral (2) Disagree (1) Strong Disagree. Where the study relied on specific criteria in the interpretation of the degree of approval depending on the values of the arithmetic average. The measurement had been tested in two phases: First stage is testing the validity measurement tool: through presentation of the questionnaire to a group of specialists in the field of information technology and business administration, were made the necessary adjustments, and then were presented to a group of arbitrators of specialists from academics and professionals, in order to make sure of the questionnaire validity, where all the notes were introduced into consideration until the appearance of the questionnaire in its final form. The researcher has conducted a preliminary study on four of the surveyed departments, so as to make sure that the paragraphs contained in the questionnaire is clear and understandable to measure the purpose of the study. Second stage is testing the stability of the measurement tool: internal consistency coefficient though the use of (Cronbach's alpha), (SPSS Version 20.0) was used to extract the internal consistency coefficient of the different paragraphs of the measurement tool to find the total stability coefficient for the questionnaire, which is (82.8%) this percentage considered a strong indicator of the stability of the measurement tool, table (1).

**Statistical Methods Used:**

SPSS version 20.0 was used for the analysis of data collected through the questionnaire devoted to this study, descriptive statistics methods were used (frequency distribution, percentages, arithmetic mean and standard deviation).

**Table (2):** The verbal values of arithmetic mean

Value of the Arithmetic Mean	Verbal Explanation
0 - < 1.5	very weak
1.5 - < 2.5	weak
2.5 - < 3.5	Average
3.5 - < 4.5	High
4.5 - ≤ 5	very high

The criteria have been identified to explain the degree of approval, depending on the values of the arithmetic average, as is shown in the above table (2).

**Table (3):** Standard Strength Answer

Correlation Coefficient	Strength of Answer
0- < 0.3	Weak
0.3- < 0.7	Average
0.7- ≤ 1.0	Strong

The inference statistical techniques were used Nonparametric tests / Spearman's correlation coefficient to measure the strength and direction of relations between the independent and the dependent variables. The three criteria adopted for the classification of the relation's strength, are shown in the above table (3).

A stepwise regression analysis was used to measure the level of the impact of independent variable on the dependent variable. Multiple regression analysis was used in order to reach the value of statistical test and the degree of confidence, as well as access to the coefficient of determination to demonstrate the impact of independent variables on the dependent variables.

**V. Analysis of Results**

**5-1 Characteristics of the staff sample at the hospital surveyed:**

Table (4): Distribution of the study sample individuals by variables (Gender, Age, Educational level, Experience, Using IT in the Department, Time of using IT, The presence of information technology in the Department, No. of Computers in the Department)

Variable	Level	Number	Percent
Sex	Male:	48	75
	Female:	16	25
Age	Less than 30:	30	47
	30- less than 40:	26	41
	40- less than 50:	4	6
	50 and more	4	6
Educational level	G. Secondary and less:	14	22
	Diploma:	10	16
	Bachelor:	34	53
	Post Graduate:	6	9
Experience	1-5 years:	38	59
	6-11 years:	22	35
	12-17 years:	2	3
	18-24 years:	0	0
	24-29 years:	2	3
	30 years and more:	0	0
Using IT in the Department	Yes:	60	93.3
	No:	4	6.7
Time of using IT	Most of the time:	38	59
	Mostly:	20	32
	Sometimes:	2	3
	very few:	4	6
Presence Computer in the Department	Yes:	62	97
	No:	2	3
No. of Computers in the Departments	Nothing:	0	0
	One:	24	37
	Tow:	26	41
	Three:	6	9
	Four and more:	8	12

According to the above table (4), gender variable male represents 75% and female 25%. With regard to the age variable, employees aged less than 30 years represented 47% of the study sample, followed by employees aged between 30 to less than 40 years representing 41%, followed by employees aged between 40 to less than 50 years representing 6% and employees aged above 50 years representing 6%.

With regard to the Educational level variable, the above table that the highest proportion was in favor of staff with a bachelor's degree amounting to 53%, followed by the proportion of employees holding general secondary or less amounting to 22%, then intermediate diploma amounting to 16%, and finally post graduate amounting to 9%.

With regard to experience, staff with 5 years or less represented 59%, whereas 35% of the study sample had 6-11 years in experience, 3% of the study sample had 12-17 years in experience, and 3% of the study sample had an experience of 24-29 years.

With regard to using IT in the department, 93.3% of employees using IT and 6.7% are not using IT in their departments. About the time of using IT variable, 59% of study sample are using IT most of time, 32% are using IT mostly, 3% are using IT sometimes and finally 6% are using IT very few.

The study sample shows that 97% of departments have computers and 3% have not. The study shows that 41% of departments have tow computers for each, 37% of departments have one computer for each, 12% of departments have four computers and more for each, and 9% of departments have three computers for each.

**5-2 Quality of Health Services:**

**Table (5):** Arithmetic Means and Standard Deviations/ Answers on improving performance

Number	Paragraph	Arithmetic Means	Standard Deviations
1	Hospital shows higher interest in solving the health problems suffered by patients.	4.56	.50
2	Provides health service in the hospital in the right way at the first time.	4.69	.46
3	The hospital tells patients about the date of the delivery of health service to them.	4.38	.86
4	The hospital's staff provides health service to the patients quickly and without delay.	4.72	.45
5	The hospital's staff shows a clear desire to provide assistance to the patients.	4.66	.64
6	The patient feel safe when dealing with medical staff and employees within the hospital.	4.75	.61
7	The hospital's staff gives patients personal attention clearly.	4.37	.65
8	The hospital's staff understands the personal needs of patients.	4.34	.64
9	Doctors at the hospital spends an appropriate amount of time with patients.	4.34	.64
10	The doctor exists in the hospital most of time when requested.	4.31	.92
11	The hospital provides health services at all times around 24 hours.	4.63	.48
12	The doctors and nurses gives all the information needed by the patient clearly.	4.53	.50
13	Doctors and the nurses used hand washing technique and sterilized with alcohol before the provision of services for patients and beyond.	4.63	.65
14	Hospital takes public safety into consideration.	4.78	.41

As shown in the above table (5). It was explained that the arithmetic means of quality of health services paragraphs ranged from (4.31 to 4.78), it reflects a high degree of approval, the standard deviation of the different paragraphs demonstrates the severity of answers and that their agreement that the information technology help to improve quality of health services, it ranged between (.41- .92), which means that the most of answers were centered around the middle and not dispersion.

**5.2 Test Hypotheses:**

- H1: There is no correlation between information technology and the quality of health services in the hospitals under the study at the level of significance ( $\alpha = 0.05$ ) from the staff perspective.

**Table (6):** Spearman's Correlation Coefficients and the Values of (F) between the Elements of Information Technology and Quality of Health Services.

No.	Quality of Health Services Indicators	Information Technology The Value of the Correlation Coefficient (R)	Calculated Value of (F)	Tabulated Value of (F)	Statistical Significant of (F)
1	Hospital shows higher interest in solving the health problems suffered by patients.	0.578**	4.78	3.11	Significant
2	Provides health service in the hospital in the right way at the first time.	0.471*	2.71	2.25	Significant
3	The hospital tells patients about the date of the delivery of health service to them.	0.592**	5.13	3.11	Significant
4	The hospital's staff provides health service to the patients quickly and without delay.	0.671**	7.78	3.11	Significant
5	The hospital's staff shows a clear desire to provide assistance to the	0.371	1.52	1.87	Not Significant

	patients.				
6	The patient feel safe when dealing with medical staff and employees within the hospital.	0.581**	4.83	3.11	Significant
7	The hospital's staff gives patients personal attention clearly.	0.558**	4.31	3.11	Significant
8	The hospital's staff understands the personal needs of patients.	0.592**	5.12	3.11	Significant
9	Doctors at the hospital spends an appropriate amount of time with patients.	0.787**	15.46	3.11	Significant
10	Doctors exists in the hospital most of time when requested.	0.812**	18.39	3.11	Significant
11	The hospital provides health services at all times around 24 hours.	0.608**	5.87	3.11	Significant
12	Doctors and nurses gives all the information needed by the patient clearly.	0.592**	5.12	3.11	Significant
13	Doctors and the nurses used hand washing technique and sterilized with alcohol before the provision of services for patients and beyond.	0.470*	2.70	2.25	Significant
14	Hospital takes public safety into consideration.	0.548**	4.07	3.11	Significant
	<b>Total Health Services Indicators</b>	0.588**	6.27	3.11	Significant

\*\*Correlation is significant at  $\alpha \leq 0.01$

\*Correlation is significant at  $\alpha \leq 0.05$

Table (6) shows the existence of a strong positive correlation of (0.578, 0.592, 0.671, 0.581, 0.558, 0.592, 0.787, 0.812, 0.608, 0.592, 0.548) respectively are statistically significant at the level of importance ( $\alpha = 0.01$ ) between the information technology and the following total quality paragraphs: (solving the health problems suffered by patients, the hospital tells patients about the date of the delivery of health service to them, the hospital's staff provides health service to the patients quickly and without delay, the patient feel safe when dealing with medical staff and employees within the hospital, the hospital's staff gives patients personal attention clearly, the hospital's staff understands the personal needs of patients, doctors at the hospital spends an appropriate amount of time with patients, doctors exists in the hospital most of time when requested, the hospital provides health services at all times around 24 hours, doctors and nurses gives all the information needed by the patient clearly, and hospital takes public safety into consideration) respectively of hospital surveyed. The calculated value of (F) (4.78, 5.13, 7.78, 4.83, 4.31, 5.12, 15.46, 18.39, 5.87, 5.12, 4.07, and 6.27) respectively at the level of significance ( $\alpha = 0.01$ ) and degrees of freedom (6 and 57) are greater than the tabulated value of (F) (3.11), and shows the existence of a strong positive correlation of (0.471 and 0.470) respectively are statistically significant at the level of importance ( $\alpha = 0.05$ ) between the information technology and (health service Provided in the hospital in the right way at the first time and doctors and the nurses used hand washing technique and sterilized with alcohol before the provision of services for patients and beyond) respectively. The calculated value of (F) (2.71 and 2.70) respectively at the level of significance ( $\alpha = 0.05$ ) and degrees of freedom (6 and 57) are greater than the tabulated value of (F) (2.25). All the calculated value of (F) for the preceding total quality paragraphs is greater than the tabulated value of (F) except paragraph (5) of quality of health services (The hospital's staff shows a clear desire to provide assistance to the patients) shows the existence of a strong positive correlation of (0.371) but not statistically significant at the level of importance ( $\alpha = 0.01$  and  $\alpha = 0.05$ ), the calculated value of (F) (1.52) is less than tabulated value of (F) (1.87). Null hypothesis is rejected and the alternative hypothesis is accepted.

- The second main hypothesis H2: There is no statistically significant impact at the level of significance ( $\alpha = 0.05$ ) for the use of information technology on the quality of health services in the hospitals under the study from the staff perspective.



**Table (7):** Regression Analysis of Information Technology on Quality of Health Services.

Quality of Health Services Indicators	Value of the Coefficient of Determination (R <sup>2</sup> )	Calculated Value of (F)	Tabulated Value of (F)	Statistical Significant of (F)
Hospital shows higher interest in solving the health problems suffered by patients.	0.34	4.78	3.11	Significant
Provides health service in the hospital in the right way at the first time.	0.22	2.71	2.25	Significant
The hospital tells patients about the date of the delivery of health service to them.	0.35	5.13	3.11	Significant
The hospital's staff provides health service to the patients quickly and without delay.	0.45	7.78	3.11	Significant
The hospital's staff shows a clear desire to provide assistance to the patients.	0.14	1.52	1.87	Not Significant
The patient feel safe when dealing with medical staff and employees within the hospital.	0.34	4.83	3.11	Significant
The hospital's staff gives patients personal attention clearly.	0.31	4.31	3.11	Significant
The hospital's staff understands the personal needs of patients.	0.35	5.12	3.11	Significant
Doctors at the hospital spends an appropriate amount of time with patients.	0.62	15.46	3.11	Significant
The doctor exists in the hospital most of time when requested.	0.66	18.39	3.11	Significant
The hospital provides health services at all times around 24 hours.	0.37	5.87	3.11	Significant
The doctors and nurses gives all the information needed by the patient clearly.	0.35	5.12	3.11	Significant
Doctors and the nurses used hand washing technique and sterilized with alcohol before the provision of services for patients and beyond.	0.22	2.70	2.25	Significant
Hospital takes public safety into consideration.	0.30	4.07	3.11	Significant

DF = 6,57

Table (7) shows the results of regression analysis test in order to demonstrate the impact of information technology on the quality of health services in the hospital surveyed.

The information technology has been interpreted (34%) of the variance in the hospital's interest in solving the health problems suffered by patients, the calculated value of (F) (4.78) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on hospital's interest in solving the health problems suffered by patients.

The information technology has been interpreted (22%) of the variance in the Providing health service in the hospital in the right way at the first time, the calculated value of (F) (2.71) at the level of importance ( $\alpha \leq 0.05$ ) which is statistically significant, and this means that there is an impact of information technology on Providing health service in the hospital in the right way at the first time.

The information technology has been interpreted (35%) of the variance in telling patients about the date of the delivery of health service to them by the hospital, the calculated value of (F) (5.13) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on telling patients about the date of the delivery of health service to them by the hospital.

The information technology has been interpreted (45%) of the variance in providing health service to the patients quickly and without delay by the hospital's staff, the calculated value of (F) (7.78) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on providing health service to the patients quickly and without delay by the hospital's staff.

The information technology has been interpreted (14%) of the variance in providing assistance to the patients by the hospital's staff, the calculated value of (F) (1.52) at the level of importance ( $\alpha \leq 0.05$ ) which is not statistically significant, and this means that there is low impact of information technology on providing assistance to the patients by the hospital's staff.

The information technology has been interpreted (34%) of the variance in the patient's feeling safe when dealing with medical staff and employees within the hospital, the calculated value of (F) (4.83) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on the patient's feeling safe when dealing with medical staff and employees within the hospital.

The information technology has been interpreted (31%) of the variance in the hospital's staff gives patients personal attention clearly, the calculated value of (F) (4.31) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on the hospital's staff gives patients personal attention clearly.

The information technology has been interpreted (35%) of the variance in the hospital's staff understands the personal needs of patients, the calculated value of (F) (5.12) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on the hospital's staff understands the personal needs of patients.

The information technology has been interpreted (62%) of the variance in doctors at the hospital spends an appropriate amount of time with patients, the calculated value of (F) (15.46) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on Doctors at the hospital spends an appropriate amount of time with patients.

The information technology has been interpreted (66%) of the variance in doctors at the hospital spends an appropriate amount of time with patients, the calculated value of (F) (18.39) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on doctors at the hospital spends an appropriate amount of time with patients.

The information technology has been interpreted (62%) of the variance in the hospital provides health services at all times around 24 hours, the calculated value of (F) (5.78) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on the hospital provides health services at all times around 24 hours.

The information technology has been interpreted (35%) of the variance in the doctors and nurses gives all the information needed by the patient clearly, the calculated value of (F) (5.12) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on the doctors and nurses gives all the information needed by the patient clearly.

The information technology has been interpreted (22%) of the variance in doctors and the nurses used hand washing technique and sterilized with alcohol before the provision of services for patients and beyond, the calculated value of (F) (2.70) at the level of importance ( $\alpha \leq 0.05$ ) which is statistically significant, and this means that there is an impact of information technology on doctors and the nurses used hand washing technique and sterilized with alcohol before the provision of services for patients and beyond.

The information technology has been interpreted (30%) of the variance in hospital takes public safety into consideration, the calculated value of (F) (4.07) at the level of importance ( $\alpha \leq 0.01$ ) which is statistically significant, and this means that there is an impact of information technology on hospital takes public safety into consideration. Null hypothesis is rejected and the alternative hypothesis is accepted.

## **VI. Discussion of results**

As a result of the application of a study's model on the hospital surveyed, the study found the following results.

### **6.1 Information Technology:**

The results show that information technology tools available in the hospital surveyed, where it owns the hardware, human resources, software, procedures, networks, and databases. Furthermore, there is special unit of information technology in each of these institutions to employ qualified personnel theoretically and practically .

The managers and staff in the hospital surveyed reported that the hospital keep pace with technological developments that related with information technology tools. This confirms that the hospital surveyed are using information technology tools in order to improve the quality of health services provided by the hospital surveyed; the hospital surveyed represent's this by showing higher interest in solving the health problems suffered by patients, leading to provide health service in the hospital in the right way at the first time, telling patients about the date of the delivery of health service to them, providing health service to the patients quickly and without delay, showing a clear desire to provide assistance to the patients, patients feeling safe when dealing with medical staff and employees within the hospital, giving patients personal attention clearly, understanding the personal needs of patients, doctors spending an appropriate amount of time with patients, doctor existing in the hospital most of time when requested, providing health services at all times around 24 hours, doctors and nurses giving all the information needed by the patient clearly, doctors and the nurses using hand washing technique and sterilized with alcohol before the provision of services for patients and beyond and taking public safety into consideration.

The hospital surveyed retain data and information about the patients in the databases of each department. They are working continuously on updating and processing throughout using special software in each department to access to information, so the department has the ability to provide health services to the patients with high level of quality.

This confirms that the hospital surveyed possess and use databases to store all data and information about patients to build information and knowledge bases to supply the hospital management and staff with the information required by the hospital surveyed in improving the quality of health services.

### **6.2 Quality of Health Services:**

It is found through the interviews with managers and staff in the hospital surveyed that the hospital has the information technology which appropriate to its position and capabilities. This technology is used by this hospital to improve the quality of health services provided by it.

Results of the study show that the hospital surveyed is improving health services. This leads to increase patients satisfaction relying on the elements of the information technology available.

The hospital surveyed are develop itself relying on the information technology available to it, which leads to the improvement of quality of health services provided to the patients, as well as raising the ability of the hospital to face various positions and process it, where they are depending on the information technology elements available to it. It also possesses important information bases that benefit it in developing its work and methods, so all what is mentioned before is depend on the selected qualified and expert human resources in the field of information technology.

### **6.3 The impact of Information Technology on Performance:**

Model has been applied to study the surveyed hospital in order to determine the impact of information technology on the quality of health services that depending on the statistical analysis, we have the following results:

1. There is a correlation at the level of significance ( $\alpha \leq 0.01$ ) between information technology and quality of health services in the hospital surveyed.
2. There is an impact at the level of significance ( $\alpha = 0.01$ ) for information technology to raise the level of quality of health services in the hospital surveyed.

## **VII. Conclusions:**

The impact of information technology on the quality of health services and the relationship between information technology and quality of health services are the theoretical foundations of this study. The use of study model to predict and explain the impact of information technology on quality of health services, helped to clarify the impact of information technology on each quality of health services indicator. The experimental validation of the model is the impact of information technology on quality of health services in a sample of 64 directors and employees showed the impact of information technology on quality of health services. The results of the study confirmed the results of previous studies that have confirmed the positively affect of information technology on quality of health services.

Previous studies have examined the impact of information technology on quality of health services indicators separately. This study showed the importance of information technology and its impact on quality of health services indicators combined. And explored the relative impact on each quality of health services indicator.

The results showed that hospital with information technology is able to improve the quality of health services through providing health service in the hospital in the right way at the first time, telling patients about the date of the delivery of health service to them, providing health service to the patients quickly and without delay, showing a clear desire to provide assistance to the patients, patients feeling safe when dealing with medical staff and employees within the hospital, giving patients personal attention clearly, understanding the personal needs of patients, doctors spending an appropriate amount of time with patients, doctor existing in the hospital most of time when requested, providing health services at all times around 24 hours, doctors and nurses giving all the information needed by the patient clearly, doctors and the nurses using hand washing technique and sterilized with alcohol before the provision of services for patients and beyond and taking public safety into consideration.

This corresponds with the results of the previous studies of Kabene (2010) Štaras et al. (2013) Santos (2003) (Arab, 2012), (Chechen), (Ghammas, 2006),(Alqodhah, 2007). Moreover, the organizations use of information technology to contribute to the selection and adoption of qualified human elements in the field of information technology, this improves the services provided to beneficiaries. This corresponds with the results of the previous studies of Baloh & Trakman (2003), Ruel, Bondarouk & Velde (2007). Although the results presented by this research, further studies can be conduct to illustrate the impact of the demographic characteristics of staff on information technology and quality of health services at every level of quality of health services.

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