

**The role of information and communication technology in
improving health services in private sector hospitals**
**(An exploratory study of a sample of individuals working in the
International Hospital and the Global Hospital)**

Assistant teacher:Wafaa Ayoub Kissara

Technical College of management-Baghdad

Middle Technical University

wafaaa@mtu.edu.iq

The role of information and communication technology in improving health services in private sector hospitals

(An exploratory study of a sample of individuals working in the International Hospital and the Global Hospital)

Assistant teacher:Wafaa Ayoub Kissara

Technical College of management-Baghdad

Middle Technical University

wafaaa@mtu.edu.iq

Abstract:

The research aims to activate the role of information and communication technology in improving health services in private hospitals / Baghdad. Information and communication technology represents the backbone of organizations in the current era, especially health organizations, as modern medical technologies are one of the requirements for adapting to the modern health environmental reality. Patient-related data has become digitally transferred between hospitals without the need for physical documents and transferred in the usual traditional ways, etc. The hospital only has to press a button to view the electronic medical file and the pictures and reports it needs on the health condition automatically and quickly, as it is not possible to achieve a high level of health service without the use of this information technology, as its use achieves high quality in the health service provided to patients, and this It means the necessity of correlation between the availability of medical technologies and their achievement of health service quality. The research sought to explain the role of modern information and communication technology in achieving health service quality in health organizations. The research sample was passed to 70 employees, including 28 male and 42 female employees. Coding the variables and entering them into the statistical program SPSS to analyze the data of the research under study. It was found that there is a correlation between information technology and the quality of health service, as information technology significantly affects the dimensions of health quality. The sample of the study was the International National Hospital and the International Hospital in Baghdad Governorate. The study concluded that This technology has an effective and important role in improving health services in hospitals.

Keywords: Information and communication technology; health service; Quality of health services.

1. Introduction

The human being is the goal of development, as well as its means, and health is the first human requirement and the most important component of life. The reality is that the health of the citizen is the most precious thing that societies possess, and it is a wealth that must be preserved. Therefore, it seeks Man since ancient times has sought to develop treatment and search for... Healing until medicine has reached the level of progress we have now, and researchers are still searching for further development in medicine using all available means of science, the most important of which is information and communication technology. Therefore, health institutions are among the institutions that most need to ensure and improve their services, especially after... D Progress in medical science and knowledge and successive scientific discoveries, including the development of devices and technologies, the spread of diagnostic technology and telemedicine, the spread of competition in health services between research and medical centers, and the emergence of donor institutions. ED, which sets quality standards to improve health services, and Therefore, the issue of improving and developing the service or searching for new services becomes one of the prominent features in the work of the health institution to keep pace with the speed of scientific and technological change in the field of medicine, which makes some of the health services provided obsolete over time and with the increase in the number of patients and the demand for a quick response to their requirements and needs. Accused of addition To increase the improvement of health and medical services provided to them, all of this made it necessary for those in charge of managing the quality of health services to find means and ways to meet these requests and respond to them, which led to the adoption of the use of information and communication technology in these health institutions, as Computers have become Automation and information technology are a basic means of work and management, especially in the field of health information management, storage, processing, and retrieval. With the development of health information systems and technology, it has bridged distances in a way that humans have never known before, and has enabled the storage of digital data and It also provides the ability to process this data at high speed, which helps provide extremely important information to decision makers.

1.1 Research problem

One of the reasons that prompted us to choose this topic:

1. The lack of applied studies that addressed the subject of information and communication technology in private health institutions and the focus of the majority of researchers on studying the institution's functions of production, marketing, and finance. Therefore, this study came as an attempt to contribute to research in the field of information and communication technology.
2. The increase in the volume of expenditures directed to the health sector, which requires thinking about ways to rationalize them by providing good service at the lowest possible costs.
3. The decline in health service, despite its importance and despite the available material and information equipment , Knowing the extent of activation of information and communications technology in health institutions and its impact on improving health services.

. 1.2 The importance of research

This research gains an important position within the various academic research presented in this field, given that our topic affects a sensitive sector of society. The importance of this research lies in the following:

1. The importance of improving health services because of their direct impact on human health.
2. The widespread and widespread use of information and communication technology because of its impact on the time and cost factor.
3. Seeking to highlight the benefits and feasibility of using information and communication to improve health services for private sector hospitals in light of the problems facing the sector and the challenges and competition it faces.

1.3 Research objectives

1. Explain the importance of information and communication technology in health institutions and its impact on health services.
2. Knowing the extent of activation of information and communications technology in health institutions and its impact on improving health services.
3. Identifying the most important needs of health institutions in order to be able to provide recommendations and suggestions that help improve the quality of health service through enhancing communication technology.
4. Providing solutions that can contribute to improving the quality of service in the sector.
5. Identify and analyze the relationship between information technology and health service quality.

1.4 Research hypotheses

The research was based on two main hypotheses:

- The first main hypothesis: There is a significant correlation between information and communication technology and the dimensions of health service quality:
The following sub-hypotheses:
 1. There is a significant correlation between the physical equipment and the dimensions of the quality of health services.
 2. There is a significant correlation between the software and the dimensions of the quality of health services.
 3. There is a significant correlation between databases and dimensions of the quality of health services.
 4. There is a significant correlation between communication networks and the dimensions of the quality of health services.
 5. There is a significant correlation between human resources and the dimensions of the quality of health services.
- The second main hypothesis: There is a significant impact relationship between information and communication technology and the dimensions of health service quality.

1.5 Hypothetical outline of the research

The following diagram shows the hypothetical diagram of the research, as it indicates the relationship between the variables, if the independent variable (information and communication technology) and the dependent variable (quality of service) are determined, as shown in Figure (1).

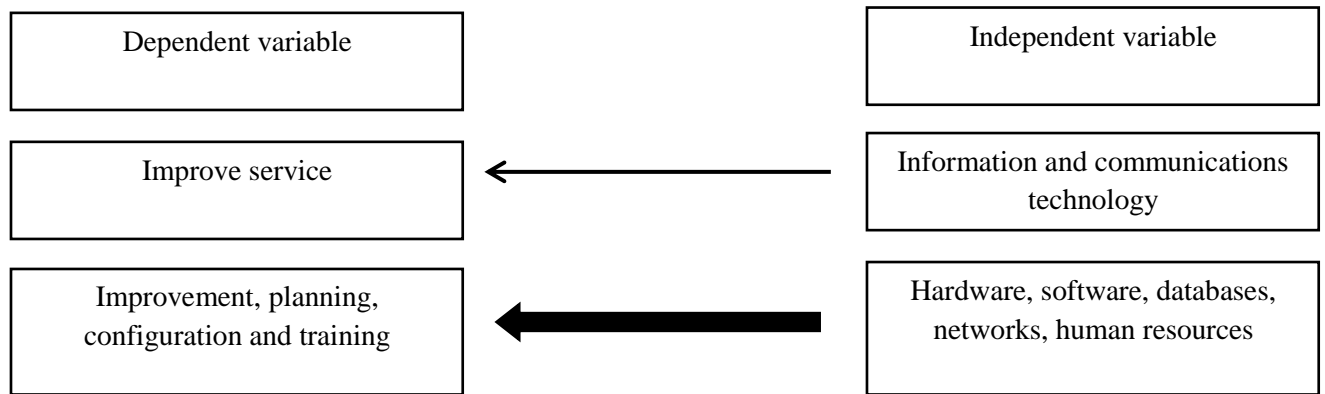


Figure No. (1) Hypothetical diagram of the research

Source: - Researcher

1.6 Research methodology

In order to reach the specific objectives, reliance has been placed on the descriptive and analytical approach that is compatible with this type of studies, which is based on collecting apparent quantitative facts and data to be studied, by defining the theoretical framework for the subject of the study and reviewing the studies that dealt with this subject and the experimental approach through the applied chapter on The method of case study, which enables one to delve deeper into the various aspects of the subject and reveal its dimensions through field visits to the institution under study. As for the research and study tools, we relied on a number of diverse sources and references. We also used observation as a means of research, in order to directly diagnose the reality of the institution to know The reality of applying information and communication technology in health institutions and the extent of its contribution to improving health services. We then analyzed the results of the interview we conducted.

1.7 Research limitations

- ✓ Spatial boundaries: The research was applied in hospitals in the private sector (International Hospital, International Hospital).
- ✓ Time limits: which is represented by the period for starting the preparation of the theoretical and applied aspects of the research from the date (12/15/2022 to the date (5/28/2023).

1.8 Research population and sample

1. The research community: The private health sector was chosen to implement the applied aspect of the research, as the community was represented by the International National Hospital and the International Hospital in Baghdad Governorate.
2. Research sample: A random sample consisting of (70) individuals from the hospital staff in all departments was selected. Table (1) shows the characteristics of the research sample members in terms of (gender, age group, number of years of service).

Table (1) shows the characteristics of the research sample members

percentage	the number	Category	Properties
40 %	28	male	Gender
60%	42	female	
100%	70	the total	
%27	19	Less than 30 years old	Age group
%49	34	30-40 years	
%24	17	More than 40 years	
% 100	70	the total	
%29	20	Less than 5 years	Years of service
%33	23	6-10 years	
%38	27	More than 10 years	
% 100	70	the total	

1.9 Statistical methods used in data analysis

The ready-made statistical program (SPSS) was used to analyze the data in the practical side of the research, as follows:

1. The arithmetic mean to determine the level of answers in the research sample.
2. Standard deviations to measure the degree of dispersion of the sample's answers from their arithmetic means.
3. Correlation coefficient to determine the degree of relationship between variables.
4. Simple regression analysis to measure the effect.

1.10 Previous studies

Many studies included the concept and application of the role of information and communication technology in improving the quality of services in different countries of the world. The researchers reviewed previous studies and research related to the topic of research with the aim of identifying the most important results and general indicators that resulted from those researches and studies. The following is a review of some of these. Studies:-

1. A study by Dr. Alaa Farag Hassan Radwan (2021), entitled: "The role of patient dealing skills in improving the level of health service quality" (an applied study on patients dealing with Menoufia University hospitals). This study aimed to measure the effect of the skills of dealing with patients, verbal communication, non-verbal communication, listening, and persuasion on

the quality of health service (responsiveness, reliability, empathy, material aspects, assurance). The study was applied to a sample of (264) individual patients. Visitors to Menoufia University Hospitals. The field data necessary to conduct the study was collected using a survey list, and the stability and validity of the measures used in the study were confirmed by relying on confirmatory factor analysis and the Cronbach coefficient. The study concluded: There is a positive moral effect for all skills in dealing with patients. The results showed that there is a significant positive effect for all dimensions of skills in dealing with patients, and there is also a positive moral effect for communication skills, whether verbal or verbal, for the health service. On the physical aspects dimension of health service quality dimensions, and finally, the results showed that there is a positive moral effect for each dimension of patient dealing skills on the assurance dimension as one of the dimensions of health service quality.

2. A study by Ammar Muhammad Zuhair Tinawi (2019), entitled: "The role of the use of information technology in improving the quality of services provided at the telecommunications company (MTN & Syriatel)." The study reached a number of results, the most important of which is the existence of a significant relationship between the use of information technology and the dimensions of quality. The service represented by (the dimension of tangible physical aspects, the dimension of reliability or credibility, the dimension of speed of response and customer assistance, the dimension of trust and security (warranty), the dimension of empathy with the customer), whether partially with each dimension alone, or with all dimensions combined.
3. Study by Yahyaoui Elham et al. (2016), entitled: "The importance of using information and communication technology in improving the quality of higher education at the Algerian university." The study aimed to use information and communication technology to improve the quality of higher education at the Algerian university, leading to the spread of education and improving its level, reducing costs, continuous improvement of the role of the professor, teaching methods, and artificial intelligence for education, and achieving the highest possible levels in practices and processes, including obtaining highly efficient outcomes.
4. Study by Muammar Muhammad Ambia Al-Toumi (2017), entitled: (The impact of information and communications technology on improving the quality of banking services for Libyan commercial banks: a field study). The study aimed to identify the impact of information and communications technology on the quality of services provided to clients of Libyan commercial banks, and to identify At the level of information and communications technology used, the study concluded that there is a statistically significant impact of information and communications technology on the quality of services provided to clients of Libyan commercial banks.

2. The theoretical framework of the research

This aspect addresses the theoretical framework of research from all aspects, as recent times have witnessed rapid and unprecedented developments in all aspects of life. The most prominent of these developments that have distinguished our current time is the dynamism that the technological field has known, especially those related to processing and disseminating information, or what has become known as information technology, and it is considered According to current developments, information and communication technology is a new form of means that keeps pace with developments and many paths.

2.1. Information and communication technology

The concept of information and communication technology is a somewhat overlapping concept due to the development it has witnessed, as most of this technology has been around for the past thirty years or more. Information and communications technology has become linked to the development of societies in our present era, as it is considered the most important means of transferring developing societies to more developed societies. The term Information and Communication Technology (TIC) is not a concept with a single meaning and specialization. It is the concern of several disciplines: mathematics, automated media, communication, literature, sociology, psychology, communications engineering, medicine... etc., and its concept has emerged. Original in USA as "Media Technologies". (Chubakumzuk Jamir : 2021)

Rowley defines information and communication technology as: "collecting, storing, processing, and transmitting information using information. This is not limited to hardware equipment or software, but also to the importance of the role of man and the goals he seeks from the application and use of these technologies and the values and principles he resorts to to achieve." His experiences. (Yasser Abd. Djawad: 2018)

Communications are important for the success and achievement of understanding and cooperation between communicating individuals and groups. The communication process represents one of the basic elements in human interaction. Through communication systems, institutions have been able to achieve tangible progress in various aspects (socially, economically, etc.). (Abdul Hadi, K: 2018).

2.2 Characteristics of information and communication technology:

Information technology has distinguished itself from other technologies by a number of characteristics, the most important of which are the following:(Ogungbade:2022)

1. Interactivity: This means that the one who uses these technologies is independent and a transmitter at the same time, and that the parties in the communication process can exchange roles, and this is due to a kind of effectiveness between people, institutions and other groups.
2. Not limited by time: This means that messages can be received at any time, such as in the case of e-mail (E-MAIL).
3. Decentralization: It is a characteristic that allows the independence of new NTIC technologies, such as the case of the Internet, which has continuity of operation in all cases. It is impossible for any party to stop the Internet because it is a communication network between people and institutions.
4. Mobility: This means that the user can benefit from services during his movements, such as a laptop computer and a mobile phone.
5. Globalization: It is the environment that activates these technologies because it uses more space in any part of the world and allows the flow of information capital in the information capital. Its decentralization has allowed it to flourish in the global environment, especially in trade exchange, which allows it to transcend the problem of time and space. (Dr. Qassim N:2020).

2.3 IT Infrastructure:

“The term ICT infrastructure in its traditional definition refers to communications networks that specifically provide traditional fixed-line telephone service, and which meet a basic human need, which is the need for remote communication. However, in the twenty-first century, the amazing development of technology and the accompanying growth of the system The needs of the modern era have raised the term and deepened the concept of IT infrastructure and given it dimensions that were not known or even imaginable in the past.

Laudon and Laudn also define IT infrastructure as: “the shared technological resources that provide the basis for information system applications in the company.” (Saleem, Farrukh:2020)

2.4 The concept of health service

Defined by Bitner and Zeitaml, they are all activities whose outputs are not physical products. They are generally consumed at the time of their production and provide added value such as comfort, health, and time saving, and they are essentially intangible.

The health service can be defined by dividing it into two parts:

a. Therapeutic health services represent health services directly related to an individual’s health and include diagnostic services and treatment services, whether this is done through direct drug treatment at home or through supportive health services that require clinical care inside hospitals in addition to health care services until recovery occurs. These services are services Medical treatment aimed at relieving the individual of his illness or alleviating the individual’s suffering from the pain of the disease.

B. Preventive health services, or what can be called environmental health services, as these categories are related to protection from infectious diseases and epidemics, and protection from health deterioration resulting from the behavior of individuals and projects that engage in environmentally polluting activities. (Musleh, Attia:2017)

2.5 Characteristics of health services:

Like other services, they have a set of characteristics that distinguish them from other products by intangibility, meaning they cannot be touched, their production coincides with their consumption, variability, meaning the inability to provide the same level of quality, perishability, meaning they cannot be stored, and lack of ownership. In addition, health services are distinguished by the characteristics next:

1. Health services are personal.
2. Health services often require speed in their performance, and this requires their spatial and temporal spread.
3. Health services consist of elements that complement each other. (Musleh, Attia:2017)

❖ In the field of health care, specialists in this field believe that there are two basic elements by which the quality of health services is measured:(DR MARGARET CHAN:2020)

✓ The technical element: It relates to the application of knowledge, information, medical techniques and other sciences in treating medical problems. The degree of quality in this element is measured by the extent of the ability to provide the maximum health benefits to the patient without this leading to an increase in the risks to which he is exposed.

✓ The human element: It represents the management of social and psychological interaction between health service providers and patients in accordance with the social values and

rules that govern interaction between individuals in general and in disease situations in particular. The degree of quality in this element is measured by the extent to which health service providers meet expectations. And the needs of patients, and also in terms of comfort and pleasure requirements in the stay, as they complement the social and psychological aspects. The service can be measured from non-measurable aspects, by directing survey lists to customers, and the questions are easy, simple, and closely related to the subject of the service, as It can be analyzed appropriately, and ensuring service quality may be more than ensuring quality for tangible goods and products, due to the characteristics of the service.

2.6 Health Gap Scale

It is called the (Servqual) scale and is based on health service quality as the appropriate and suitable performance for measuring quality in service hospitals by measuring patient satisfaction. This scale was developed by (Parasuraman et al 1988 and Perry). This approach starts from the premise that the quality of service provided is determined conclusively. In the difference between the patient's expectations and his perceptions of the service provided, here the quality of service can be defined as (the gap), which is equal to the extent of the patient's perception of the quality of the service. (Chimango Nyasulu:2018)

Or his evaluation of the overall service provided to him as excellent or superior, and it is considered the cornerstone in measuring the quality of health service. Accordingly, the gap takes three basic forms:

✓ If the patient's perception of the service actually provided is superior to the service that the patient expects, then the gap here is positive, which means that the patient gets more health services than he expects from the hospital. .

✓ If the quality of the health service provided (the perceived gap) is equal to the patient's expectations, then the gap will be equal to zero, which means that the hospital has paid attention to the patient's expectations for the quality of health services, and has developed its health services towards customers in a way that matches their expectations.

✓ If the expected quality (gap) is negative, this means that what the patient gets from health services is different from what he expected from the hospital, which means that the hospital failed to anticipate the patients' desires for the quality of health services, and therefore did not provide them with the services they desired. (Al-Zubaidi:2018) (Gargvanshi, Prasenjit:2020)

2.7 The impact of information and communication technology on the health service: (Hammadi, Majed:2018)

The introduction of information and communications technology into the health sector has a significant impact on various aspects of health service provision, from improving quality to achieving effectiveness and ease of access. This is in addition to the advantages and benefits that accrue to the organization, the citizen, and public health more broadly. However, this does not mean that there are no obstacles that hinder application, in addition to negatives about it.

❖ Advantages of applying information and communication technology in the health field: (Sittig, Dean: 2015)

Information and communication technology plays an increasingly important role in providing health services. These advantages benefit the doctor, the patient, health care workers, and citizens in general alike. Each of them benefits from this technology, and perhaps the most important advantages are the following: -

1. Increase work efficiency and effectiveness.

2. Improving communication between partners in the health service.
 3. Enhancing cooperation and improving the relationship between partners in the health service.
 4. Converging distances
 5. Improve sharing of information and knowledge.
 6. Improving the decision-making process.
 7. Reduce wasted time efforts.
 8. Reducing costs.
 9. Reducing medical errors.
 10. Reduce repetition of information
 11. Improving medical research and statistical processes.
 12. Improving administrative processes.
- ❖ Obstacles to the application of information and communication technology in the health field: (Sittig, Dean: 2015) (Yassir, Ali, Hameed:2016)

There are many obstacles that stand in the way of the success of the process of implementing ICT in the health sector. Satellife has identified three main obstacles:

1. Connecting to the network
2. Content
3. Capabilities.

Madanmohan added five other elements:

1. Community
2. Trade.
3. Culture.
4. Cooperation
5. Capital.

3. The practical aspect

This shows the practical aspect of the research variables, which includes passing the questionnaire form to 70 employees, including 28 male and 42 female employees. The variables were coded and entered into the statistical program SPSS to analyze the research data under study, and the conclusions shown below were reached:

3.1 Testing the level of importance of the research variables:

3.1.1 Testing the level of importance of the independent variable (information and communication technology) from the point of view of the sample members

This paragraph includes the presentation and analysis of the responses of the research sample members regarding the independent variable (information and communication technology), relying on a five-point Likert scale, which is represented.

Table (2): Description and diagnosis of the individuals in the research sample for the independent variable (information and communication technology)

N	the question	mean	standard deviation	Relative importance%
Hardware				
1	Providing computer connectivity between various departments and units within the hospital.	4.65	0.662	93%
2	The hospital has an infrastructure equipped to use information technology well.	4.4	0.545	88%
3	The hospital uses information and communication technology and modern means of communication to receive patient inquiries.	3.75	1.103	75%
4	The hospital has telemedicine technology.	4.57	0.675	91%
Software				
5	The hospital is working to develop capabilities in the field of information technology with the aim of improving performance	4.2	0.911	84%
6	Information technology provides the doctor with knowledge of the analysis available in the hospital while he is present in his department and is able to determine the analysis required to be performed on his patient.	4.60	0.671	%92
7	The hospital provides all information about new services on an ongoing basis thanks to information and communication technology.	4.6	0.671	92%
8	Information and communication technology contributes to overcoming the difficulties faced by the patient.	4.17	0.902	83.50%
9	The hospital works to quickly transfer information between different departments and administration based on information technology.	4.67	0.525	93.50%
Database				
10	The hospital maintains accurate electronic records about patients' medical reviews and consultations.	4.6	0.671	92%
11	Information and communication technology contributes to the possibility of organizing work with patients and managing relationships well.	4.55	0.714	91%
12	The hospital works to organize dealing with patients and managing relationships with them using elements of information and	4.75	0.493	95%

	communication technology to reduce effort and cost.			
13	Providing a database to facilitate booking and appointments with patients.	4.52	0.678	90%
Networks				
14	Laboratory tests are sent electronically to patients	4.35	0.735	87%
15	Medical consultations and drug prescriptions are given electronically	4.17	1.174	83%
16	The communication services provided by the hospital have helped improve health services provided to patients	4.62	0.667	92%
17	The hospital provides Internet service on an ongoing basis	4.42	0.747	88%
18	Ability to receive medical inquiries 24 hours a day.	4.5	0.716	90%
Human resource				
19	The hospital administration seeks to develop human resources (administrative and medical) through education and training in the field of information and communication technology	4.42	0.812	88%
20	The communication process between the patient and the doctor is carried out with ease through the information and communication technology available in the hospital	4.37	0.925	87%
21	Hospital workers have the knowledge and experience to answer all referral inquiries.	4.27	0.846	85%
22	Individuals working in the hospital in the field of computers and electronics have self-development capabilities.	4.75	0.438	95%
23	There is conviction and support from the hospital's senior management for the use of information technology.	4.42	0.675	88%

3.1.2 Testing the level of importance of the dependent variable (improving health services) from the point of view of the research sample

This paragraph includes the presentation and analysis of the responses of members of the research sample on the dependent variable (improving health services), relying on a five-point Likert scale.

Table (3): Description and diagnosis of the individuals in the research sample for the dependent variable (improving health services)

N	the question	mean	standard deviation	Relative importance%
Dependability				
24	Information and communication technology contributes to the speed and quality of service provided	4.32	0.828	86%
25	The hospital and its employees are committed to providing the best services to patients	4.27	1.061	85%
26	Patients place their trust in medical specimen skills confidently and safely	4.6	0.671	92%
27	Hospital workers have the knowledge and experience to answer all referral inquiries	4.27	0.846	85%
28	There is interest on the part of the hospital and its employees in the manner and form of work clothing that is appropriate to the level of service provided	4.47	0.816	89%
Response				
29	The hospital administration works to resolve complaints quickly and effectively	4.45	0.932	89%
30	The hospital pays attention to cleanliness, lighting, air conditioning, the necessary medical equipment, and providing an appropriate physical environment	4.2	0.822	84%
31	There is a sufficient number of doctors and nurses who provide services to patients	4.32	0.944	86%
32	The service provided is at the level that the patient expects	4.00	0.905	%80
33	The hospital cooperates with patients when a problem occurs	4.27	0.715	85%
34	The hospital administration sympathizes with patients when they submit complaints as you expect in your mind	4.27	0.846	85%
Location				
35	The interior design of the hospital provides a comfortable atmosphere for patients	4.55	0.749	91%
36	The hospital administration is interested in providing services in a limited time, quickly and accurately	4.32	0.693	86%
37	The hospital administration is committed to its promises to patients in the field of therapeutic health services and providing the appropriate	4.3	0.686	86%

environment as you expect			
---------------------------	--	--	--

3.2 Testing the correlation and influence between the dimensions of information and communication technology and improving health services.

Testing the first main hypothesis (there is a significant relationship (correlation) between information and communication technology in general and improving health services for the research sample by (73%)).

3.2.1 Analyzing the correlation of the research variables from the point of view of the research sample
The relationship between the research variables will be found by calculating the Spearman correlation coefficient for the correlation of ranks between both information and communication technology and improving health services through the ready-made statistical program (SPSS), as shown in Table No. (4), and the interpretation of the results is as follows:

Table (4) Spearman correlation matrix from the point of view of the research sample

Information and communication technology	B ₅	B ₄	B ₃	B ₂	B ₁	B
improving health services	0.794	0.694	0.736	0.731	0.564	0.737

The results of Table No. (4) showed that the value of the Spearman correlation coefficient reached (0.737) between information and communication technology and the improvement of health services in general, which is represented by (B), and from it it is clear that there is a significant correlation between information and communication technology and the improvement of health services from the point of view The research sample. The value of the Spearman correlation coefficient was (0.564) between the dimension (physical devices) and the improvement of health services (B₁), and from it it is clear that there is a significant correlation between the physical devices and the improvement of health services, and this means accepting the first sub-hypothesis from the point of view of the research sample. The value of the Spearman correlation coefficient was (0.731) between the dimension (software) and improving health services (B₂), and from it it is clear that there is a significant correlation between software and improving health services, and this means accepting the second sub-hypothesis from the point of view of the research sample. The value of the Spearman correlation coefficient was also (0.736) between the database dimension (B₃) and improving health services, and from it it is clear that there is a significant correlation between databases and the improving health services, and this means accepting the third sub-hypothesis from the point of view of the research sample. The table also reflects (4) The correlation between the dimension of communication networks (B₄) and the quality of health services, where the value of the Spearman correlation coefficient reached (0.694), and from it it is clear that there is a significant correlation between communication networks and the quality of health services, and this means accepting the fourth sub-hypothesis from the point of view of the sample. Research: Table (4) reflects the correlation between the human resource dimension (B₅) and the improving health services, where the value of the Spearman correlation coefficient was (0.794), and from it it is clear that there is a significant correlation between the human resource and the quality of

health services, and this means accepting the hypothesis. The fifth subscale from the point of view of the research sample.

Since all the values of the correlation coefficients were between the two values (0.564 and 0.794), which means that all the relationships between information and communication technology and the quality of health services were between medium and strong, as we notice from the results in the table above that the highest strength of correlation was between the supplier and The human and improving health services, where the correlation coefficient reached 0.794, while the lowest degree of correlation was between the physical devices and the quality of health services with a degree of 0.564. This reflects the close interrelation between the various dimensions of information and communication technology and the improving health services. Therefore, the institution must focus on the dimensions of information and communication technology and not focus on One after another.

3.2.2 Analyzing the impact relationship of the research variables from the point of view of the research sample

Testing the second main hypothesis (there is a statistically significant relationship (effect) between information and communication technology and the improving health services).

Analysis of the levels of influence of research variables:

A- The impact of information and communication technology on the improving health services in general

Table (5) Analysis of the impact of information and communication technology on the improving health services in general from the point of view of the research sample

Improving health services						Variables
R	R2	F		B		
		F	Sign	B	Sign	
From the point of view of the research sample						
0.694	.48	35.328	0.001	0.655	0.001	Information and communication technology

It is clear from Table (5) that information and communication technology, as an independent variable, has a significant impact on the improving health services as a dependent variable, as shown by the (F) test, as its value was (35.328), and the coefficient of determination (R2) had a value of (48). The regression coefficient (B) had a value of (0.655) and at a significance level of (0.001) less than (0.05). This means that information and communication technology as an independent variable explains and interprets (48%) of the changes occurring in the dependent variable, and this means that (52%) of the variables are due to other variables that are not shown in the research model from the point of view of the research sample, and this means accepting the second main hypothesis, which states: "There is a significant relationship (effect) between information and communication technology and the improving health services in the hospital under investigation."

B- The impact of physical equipment on the improving health services

Table (6) The impact of physical devices on the improving health services from the point of view of the research sample

Improving health services						Variables
R	R2	F		B		
		F	Sign	B	Sign	
From the point of view of the research sample						
0.613	38.	23.300	0.002	0.382	0.002	(physical devices)

It is clear from Table (6) that information and communication technology (physical devices) as an independent variable has a significant impact on the improving health services as a dependent variable, as shown by the (F) test, as its value was (23.300), noting that the coefficient of determination (R²) was Its value was (38) and the regression coefficient (B) had a value of (0.382) and at a significance level of (0.001) less than (0.05). This means that information and communication technology as an independent variable explains and explains (38%) of the changes occurring in the dependent variable. This means (62%) of the variables are due to other variables that are not shown in the research model from the point of view of the research sample, and this means accepting the first sub-hypothesis, which states: "There is a significant relationship of influence between physical equipment and the quality of health services."

H- The impact of software on the improving health services

Table (7) The impact of software on the improving health services from the point of view of the research sample

Improving health services						Variables
R	R2	F		B		
		F	Sign	B	Sign	
From the point of view of the research sample						
0.711	.50	38.890	0.000	0.478	0.000	Software

It is clear from Table (7) that information and communication technology (software) as an independent variable has a significant impact on the improving health services as a dependent variable, as shown by the (F) test, as its value was (38.890), noting that the coefficient of determination (R²) was Its value is (0.50) and the regression coefficient (B) was valued at (0.478) and at a significance level (0.000) less than (0.05). This means that information and communication technology as an independent variable explains and explains (50%) of the changes occurring in the dependent variable. This means that (50%) of the variables are due to other variables that are not shown in the research model from the point of view of the research sample. This means accepting the second sub-hypothesis, which states, "There is a significant relationship of influence between software and the improving health services."

G - The impact of databases on the improving health services

Table (8) The impact of databases on the improving health services from the point of view of the research sample

Improving health services						Variables
R	R2	F		B		
		F	Sign	B	Sign	
From the point of view of the research sample						
0.745	.55	47.398	0.000	0.402	0.000	Database

It is clear from Table (8) that information and communication technology (databases) as an independent variable has a significant impact on improving of health services as a dependent variable, as shown by the (F) test, as its value was (47.398), noting that the coefficient of determination (R2) was Its value was (0.55) and the regression coefficient (B) had a value of (0.402) and at a significance level of (0.000) less than (0.05). This means that information and communication technology as an independent variable explains and explains (55%) of the changes occurring in the dependent variable. This means (45%) of the variables are due to other variables that are not shown in the research model from the point of view of the research sample. This means accepting the third sub-hypothesis, which states: “There is a significant influence relationship between databases and the improving health services.”

D- The impact of communication networks on the improving health services

Table (9) The impact of communication networks on improving health services from the point of view of the research sample

Improving health services						Variables
R	R2	F		B		
		F	Sign	B	Sign	
From the point of view of the research sample						
0.731	.53	43.576	0.000	0.449	0.000	communication networks

It is clear from Table (9) that information and communication technology (communication networks) as an independent variable has a significant impact on the quality of health services as a dependent variable, as shown by the (F) test, as its value was (43.576), noting that the coefficient of determination (R2) was Its value was (0.53) and the regression coefficient (B) had a value of (0.449) and at a significance level of (0.000) less than (0.05). This means that information and communication technology as an independent variable explains and explains (53%) of the changes occurring in the dependent variable. This means (47%) of the variables are due to other variables that are not shown in the research model from the point of view of the research sample. This means accepting the fourth sub-hypothesis, which states: “There is a significant relationship of influence between communication networks and the quality of health services.”

I- The impact of the human resource on the quality of health services

Table (10) The impact of the human resource on the quality of health services from the point of view of the research sample

Improving health services						Variables
R	R2	F		B		
		F	Sign	B	Sign	
From the point of view of the research sample						
0.752	.56	49.585	0.000	0.529	0.000	human resource

It is clear from Table (10) that information and communication technology (human resource) as an independent variable has a significant impact on the quality of health services as a dependent variable, as shown by the (F) test, as its value was (49.585), noting that the coefficient of determination (R2) was its value was (0.56) and the regression coefficient (B) had a value of (0.529) and at a significance level of (0.000) less than (0.05). This means that information and communication technology as an independent variable explains and explains (56%) of the changes occurring in the dependent variable. This means (44%) of the variables are due to other variables that are not shown in the research model from the point of view of the research sample. This means accepting the fifth sub-hypothesis, which states: "There is a significant influence relationship between the human resource and the quality of health services."

After analyzing the questionnaire data using the statistical program - SPSS, we found that there is a statistically significant relationship between information and communication technology as an independent variable on the one hand and the quality of health services as a dependent variable on the other hand, as there is a positive autocorrelation between information and communication technology and the quality of health services, and this is sufficient, To confirm and explain the relationship between the independent and dependent variables. It was also shown through the study of the one-way analysis of variance (ANOVA) test that there is a significant significant effect between the variables of the study, which are mainly represented in information and communication technology and the quality of health services in the studied community.

Conclusions

1. Through statistical analysis of the research sample in the international hospital and the international hospital affiliated with the private sector, it appears that there is an awareness of the improving health service provided in hospitals.
2. The hospital's interest in working on using appropriate software to analyze, classify, and summarize data to prepare the information it requires at the present time.
3. The hospital's interest in using databases, recording all patient information on a daily basis, and providing the Internet in order to provide information in real time.
4. It has been shown that there is a correlation between information technology and the improving health services, as information technology has a significant impact on the dimensions of health quality. This indicates that investment in information and communication technology components contributes to a high level of the health service provided.
5. Hospitals' interest in the improving health service and working to reach a high level of quality. This was clearly evident through the research sample's answers to questions related to the improving health service provided.

Recommendations

1. Developing the electronic communication system between the various hospital departments and thinking about alternative solutions in the event of a breakdown.
2. Developing the capabilities and skills of all employees by having health institutions conduct training courses and study days on various information technology applications in the hospital .
3. The necessity of coordination between private sector hospitals and foreign hospitals that use health service quality systems in order to exchange experiences in the field of health service quality.
4. It is necessary to include laws and regulations that control the use of this technology in order to maintain the confidentiality and security of information.
5. Activating communication between citizens and health institutions through developing their websites.

Sources

1. Chubakumzuk Jamir & Moameren Pongen ,” The role of information and communication technologies in improving teaching and learning processes in higher education: Bridging the gaps”. RESEARCH REVIEW International Journal of Multidisciplinary 2021; 6(4):37-45 ,2021.
- 2.Yasser Abd. Djawad & Sutarsi Suhaeb,“ROLE OF INFORMATION TECHNOLOGY IN HEALTH SECTOR TO IMPROVE HEALTH CARE IN INDONESIA”, INTERNATIONAL CONFERENCE ADRI - 5 ,2017.
- 3.Abdul Hadi, K., Zidan and Hadi, Manar, Haitham,”The Contribution of Information and Communication Technology in Crisis Management: An Exploratory Study of the Views of a Sample of Individuals at the Central Bank of Iraq – Baghdad”, The Journal of AL-dananeer , Vol.1, Issue 13, 407 – 430,2018.
4. Ogungbade, Aderonke CLN & Abdul, oluwatobi Mr,“Information and Communication Technology Applications and use in Medical Records and Information Management in Selected Hospitals in Ijebu Ode Local Government Area, Ogun State”, Library Philosophy and Practice (e-journal). 7034,2022.
5. Dr. Qassim N. AL-Mahwey & Hydar R. Sayah , “The Impact of Information and Communication Technology on the Technical Quality of Health Services "A Study at Al-Shatrah General Hospital – Dhi- Qar, Iraq", Volume 20 Issue 5 Version 1.0 Year 2020.
6. Saleem, Farrukh and Salim,Naomie, “Assessing the effects of information and communication technologies on organizational development: business values perspectives”, Information Technology for Development , 26: 1, 54-88 ,2020.
7. Musleh, Attia, “ The Quality of the Services offered by the Hospitals in the City of Qalqilya from the Perspective of the Staff and Patients”, Journal of Al-Quds Open University for Humanities and Social Studies, Vol. 2, No. 27, 11- 48,2017.
- 8.DR MARGARET CHAN ,“The Contribution of Family Medicine to Improving Health Systems”, CRC Press is an imprint of the Taylor & Francis Group, an informa business,2020.
- 9.Chimango Nyasulu & Winner D. Chawinga ,” The role of information and communication technologies in the delivery of health services in rural communities: Experiences from Malawi” , South African Journal of Information Management ,2018.
10. Al Jazari, Safa Mand Muhammad, Ali Ghobash and Shetit, Bushra Abdullah,” Measurement and Assessment of Health Services Quality Application Study in AL-Faiha General Hospital –Basrah”, Managerial Studies Journal, Vol.4, Issue 7, 1-59,2011.
11. Al-Zubaidi, Ghani, Dahham, Tanai and Al-Shujairy, Faten, Abbas Khalil,” Evaluation of Quality of Health Service in Primary Health Care Centers / Case Study in Family Medicine Centers in Baghdad”, journal of Economics And Administrative Sciences, Vol. 24, Issue 106, 23 – 41,2018.
12. Gargvanshi, Prasenjit, and Kumar, Rajesh,” Role of information and communication technology (ICT) in improving service quality and customer loyalty in telecom industry”, Journal of Information and Computational Science, Vol. 13, Issue 1, 1- 7,2020.
13. Hammadi, Majed, Ibrahim, and Hamad, Amer, Ali, and Hussein, Wissam, Ali,”Information and communication technology and its impact on the quality of service of the tourism sector and hotel an analytical study in selected hotels in the Iraqi capital Baghdad”, Journal of Accounting and Financial Studies, Vol. 13, Issue 45,139 – 152,2018.

14. . Sittig, Dean, F., and Singh, Hardeep,” A new sociotechnical model for studying health information technology in complex adaptive healthcare systems”, Qual Saf Health Care, Springer, Cham, 59-80,2015.
15. Yassir, Ali, Hameed and Dakhil, Ali, Fatah ,” Information Technology Services in Thi-Qar Province Analysis Study”, Univesity of Thi-Qar Journal, Vol. 11, Issue 4, 1-10,2016.