THE EFFECTS OF MANAGEMENT INFORMATION SYSTEMS ON QUALITY OF HEALTH SERVICES: AN EMPIRICAL ANALYSIS IN HOSPITALS IN SALAH AL-DIN

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THESIS APPROVAL PAGE

I certify that in my opinion the thesis submitted by Arkan Talib RASHID titled "THE EFFECTS OF MANAGEMENT INFORMATION SYSTEMS ON QUALITY OF HEALTH SERVICES: AN EMPIRICAL ANALYSIS IN HOSPITALS IN SALAH AL-DIN" is fully adequate in scope and in quality as a thesis for the degree of Master of Science.

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DECLARATION

I hereby declare that this thesis is the result of my own work and all information included has been obtained and expounded in accordance with the academic rules and ethical policy specified by the institute. Besides, I declare that all the statements, results, materials, not original to this thesis have been cited and referenced literally.

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FOREWORD

First of all, I thank God Almighty, who bestowed upon me the blessing of knowledge and gave me in it. I would like to extend my thanks and appreciation to everyone who helped me in accomplishing this work, especially the supervising professor, Dr. Serhan Gurkan, for his valuable guidance and advice, in addition to his valuable ideas and comments while writing my letter, which he also spared me. I express my appreciation and thanks to everyone who helped me and made an effort with me and saved me time. I ask God to protect and take care of them all.

ABSTRACT

The effect of information management systems on service quality is a frequently studied subject in the literature. With the Covid 19 pandemic process, health services have started to be prioritized all over the world. This study aims to show the effects of the management information system in achieving the quality of health service in hospitals in Salah al-Din Governorate - in the Republic of Iraq.

The research problem determined in accordance with the purpose of the research was analyzed using multiple regression analysis. The data used in the study was collected by survey. 194 employees who work as managerial or medical personnel participated in the research. The research results confirmed that the usage level of management information systems had positive effects on health services quality.

Keywords: Management Information System, Health Services Quality, Management, Hospital, Iraq.

ÖZ

Bilgi yönetim sistemlerinin hizmet kalitesi üzerindeki etkisi literatürde sıkça çalışılan bir konudur. Covid 19 pandemi süreci ile sağlık hizmetleri, tüm dünyada öncelikli konuma gelmiştir. Bu çalışma, Irak Cumhuriyeti'nde Salah al-Din Valiliği'ndeki hastanelerde sağlık hizmeti kalitesinin sağlanmasında yönetim bilgi sisteminin etkilerini ortaya koymayı amaçlamaktadır.

Araştırmada kullanılan veriler anket yoluyla toplanmıştır. Araştırmaya idari veya sağlık görevlisi olarak çalışan toplam 194 çalışan katılmıştır. Belirlenen araştırma problemi, araştırmanın amacına göre çoklu regresyon analizi kullanılarak analiz edilmiştir.Araştırma sonuçları, yönetim bilgi sistemlerinin kullanım düzeyinin sağlık hizmetlerinin kalitesi üzerinde olumlu etkileri olduğunu doğrulamıştır.

Anahtar Kelimeler:Yönetim Bilgi Sistemi, Sağlık Hizmet Kalitesi, Yönetim, Hastane, Irak.

ARŞİV KAYIT BİLGİLERİ

Tezin Adı	Yönetim Bilgi Sistemlerinin Sağlık Hizmetleri Kalitesi Üzerindeki Etkisi: Salah Al-Din Bölgesindeki Hastaneler Üzerine Ampirik Bir Uygulama
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Tezin Danışmanı	Doç. Dr. Serhan GÜRKAN
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ABBREVIATIONS

M.I.S **:** Management Information Systems

A.M. A : American Marketing Association

AQC : American Quality Control

TRM : Total relationship management

A.I.S :Accounting Information Systems

SQH :Service Quality in Health

R^2 : R Square

LSD : Least Significant Difference

ANOVA : Analysis of Variance

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SUBJECT OF THE STUDY

The literature review shows that management information systems have positive effects on services quality. In the light of this information, the subject of the study is to determine if the usage level of management information systems impacts the perception of health services quality.

PURPOSE AND IMPORTANCE OF THE RESEARCH

The literature review shows that management information systems have positive effects on services quality. However, limited research studies in the health sector could be found. This study focuses on the health sector, one of the most critical sectors for humanity, especially after the Covid 19 pandemic. It is thought that this study would contribute to the literature and fill the void in the literature.

In addition to this, we can't find any study focused on Hospitals in Iraq. Therefore, this study could also be seen as essential for Iraqi researchers and practitioners.

RESEARCH PROBLEM AND HYPOTHESIS

The main research problem is "Does the usage level of management information system affectthe quality of health services?"Regarding the research problem, hypothesis 1 was determined.

H1: The management information system has a statistically significant effect on the quality of health services.

10 additional hypotheses were added to the research to support a better understanding of the situation. The other hypothesis of the study is as follows:

H2: The employees' perception of management information systems level differs according to gender.

H3: The employees' perception of health services quality differs according to gender.

H4: The employees' perception of management information systems level differs according to age.

H5: The employees' perception of health services quality differs according to age.

H6: The employees' perception of management information systems level differs according to education.

H7: The employees' perception of health services quality differs according to education.

H8: The employees' perception of management information systems level differs according to experience.

H9: The employees' perception of health services quality differs according to experience.

H10: The employees' perception of management information systems level differs according to the job position.

H11: The employees' perception of health services quality differs according to the job position.

RESEARCH DATA

The research was carried out on employees working in hospitals in Salah al-Din Governorate / Iraq. The population for this study consisted of individuals working as a manager or medical officials in three hospitals in Salah al-Din Governorate / Iraq Tuz Khurmatu General Hospital, Dijla Hospital for Medical Rehabilitation, Salah El-Din and Salah El Din General Hospital.

Research data were obtained through an online questionnaire prepared for the purpose. The population size of the three hospitals was 254. The questionnaire form was designed online and shared with employees on several platforms to obtain an adequate sample size in Covid-19 days. All participants completed the survey anonymously and voluntarily. Totally 200 employees of 254 participated in the research. Among the 200 participants, six were excluded because of excessive missing data. The participation percentage of the questionnaire is approximately % 77.

SCOPE AND LIMITATION / DIFFICULTIES

Because of the Covid 19 pandemic, contacting employees was challenging. In addition to this, most hospitals didn't join the survey, so the data gathered for analysis was limited, with 194 employees from three hospitals in Salah Al-Din. The results of this study must be evaluated under a limitation of the study. It means that the results of this study are valid for only these hospitals and the date of the survey.

CHAPTER ONE:MANAGEMENT INFORMATION SYSTEMS

1.1 Information System

Many of the most popular information systems result from technological advances brought about by the modern digital revolution. Technology has penetrated every information system and made significant progress with the introduction of new elements.

Information systems are a network of components that meet and help design a valuable and valuable information system. This system has a unique goal that all components strive to achieve in the best way. The components work together to change data into useful information, make decisions and enhance work.

Information systems consist of:

Physical components: Each information system must include tangible physical components, where individuals worldwide have several types of devices, such as computers, mobile phones, tablets, and wearable.

Software components, Information systems may contain a variety of programs ranging from the operating system to computers and various devices, and help to manage these devices, files, and other programs, as well as programs and applications of several types that specialize in carrying out a specific task, a common way to deal with information systems such as table programs and processor words, Accounting, design software, etc., and software operations that govern the system and help implement various software tasks.

Databases, most information systems are systems for customized domain-based information delivery from databases to users; databases are essential in these systems, collecting interconnected, structured, and protected data from avoiding unauthorized manipulation.

Human components, experienced individuals, should be an essential part of every information system, whatever it may be. The method includes the persons responsible for operating the devices in the design, such as administrators, programmers, data creators, database administrators, information security, and other responsibilities (Abdul Razzaq, 2009: 18).

All employees must be trained to make the most of the capabilities of the information system. Examples of databases include employee records, product records,

bank customer data, and corporate financial statements. As we note, these data are renewable, so there are databases for archived data, or this may be within the same primary database. The case is in larger systems, where companies have large computers and large servers that carry their data along with some specialized devices such as surveillance cameras, scanners, etc. Thus the physical components of information systems may be information input devices such as keyboards, cameras, and possibly output or display devices such as screens. Data storage devices such as magnetic disks and communication devices between system parts and devices responsible for internet connectivity have been developed to reduce cost and increase efficiency for one device to do more than one task. The information system comprises three parts: outputs, operational processes, and analysis, which convert inputs into outputs based on rules. The following key elements make up the system's components (AbdEl, Razzaq, 2009: 19).

First, there are inputs. It's a set of terms and information that describes the events and assets that come into the system.

Second, there's treatment. The system's technical aspect consists of a series of calculations and logical processes on inputs for output access.

Third, there are outputs. They represent the information that system users benefit from the results that the system works to access.

Fourth, there is censorship. It's a set of procedures and rules for investigating and ensuring that the outcomes are consistent with pre-determined goals and plans.

Fifth, Reverse feeding aims to provide a guidance tool for the system's activities and to evaluate its results and objectives if they are flawed. It can be shown.

The components of the system and their relationship to each other are presented in the following form.

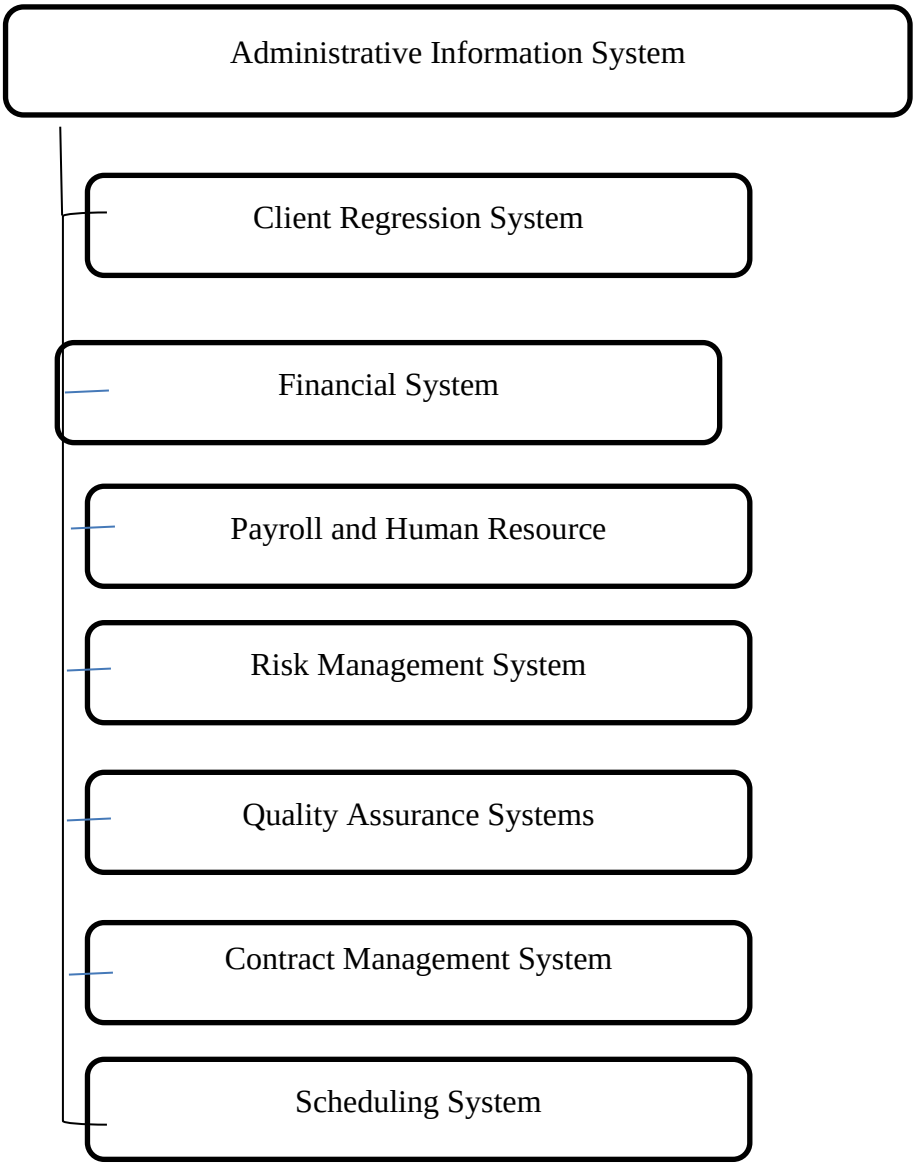

Figure 1. Administrative Information System

1.2 Concepts of Management Information Systems

Information systems have evolved into a critical and strategic factor and resource for any organization seeking to establish and maintain its rules.

It is a primary motivation for achieving profits, maintaining these organizations' positions, and imposing themselves on their surroundings. Information systems use information and communication technology to store, retrieve, analyze, display promptly, and broadcast data for decision-making, solving problems, and control. An information system is defined as a collection of components, procedures, personnel, and equipment. Software and databases and known information systems

such as an integrated system of human resources and mechanism in the facility to process data received through the project and beyond, to provide, are manually or mechanically functioning to produce specific information. Broadcast to the beneficiary (Grab, 2017:13).

The management information system and the management data framework are coordinated to give past, present, and projection data matching internal activity and external knowledge. Supports the planning, control, and operational element's correlation is by processing standardized data in the legitimate period to aid the dynamic cycle (Kennevan, 1970: 21)

Writers and researchers differed in the definition of an administrative information system. Although the term has been in use since the 1960s, there is no agreement on its definition. The available descriptions often reflect the writers' interests, academic backgrounds, and the angle they each perceive. Therefore, most books on the information system deal with system analysis, file design, and other technical matters related to the automatic calculator (Al-Hussein Ahmad 1994, p. 35) It is a collection of components, procedures, people, and devices intended to produce specific information. This system is not considered an information system unless it aims to serve at least one aspect of the administrative process, especially the managerial decision-making process (Ghurab &Hegazy 1998: 78).

It is a group of individuals, groups, and sub-procedures to provide management with all the information it needs from sufficient information on accurate activities to accomplish the administrative functions of planning, organizing, leading, controlling, and implementing. Semi-structural decisions efficiently and effectively (Yassin Saad Ghalib 1998: 58)

To understand the management information systems, we should talk about the genesis of information systems. Institutions have developed information systems to monitor the large amount of data they need and generate. The goal of these systems is to create a collection of resources that make the process of gathering, processing, and disseminating data to different partners and collaborators easier; these systems first emerged in the 1960s to make them fully automatic, with the widespread use of automated media technologies, where informatics became a way for individuals to rapidly and accurately process information, store large amounts of data in low-cost locations discs, CDs, DVDs, and produce high-quality documents.

The position of Director of Information Systems first emerged in the organizational framework of organizations at the beginning of the 1980s, and it has since been renamed Director of Informatics. Because his role was unclear at the time, two major questions loom over the function of information systems: (I) what are some of the ways you use informatics to gain a competitive advantage? And (II) how can we ensure that our investments are consistent with the institution's overall strategy?

Despite this qualitative progress, the problem of knowledge sharing remained a problem, with paper continuing to be used as a medium, demonstrating that traditional information systems are complicated and slow to meet the institution's changing needs; as a result, the urgent need to provide information by integrating informatics, audiovisual means, and wireless communications arose, allowing units to improve connectivity and share all types of information regardless of the path that separates them.

During that time, the Industrial Revolution and a new generation of managers arose with modern ideas and methods. It must rely on informatics to thrive because the environment has changed from an agricultural economy to a commercial one. Over the years, a lot has changed in different ways, and a long time has passed since the 1960s and 1970s. The 1980s came first, then the 1990s, and finally, to this day (Rabhi, 2008: 56).

Information is a resource of the organization's mission through which quality and outstanding performance are achieved to the organization's success, and all this information needs good management, planning, organization, and oversight to be well utilized.

To accomplish the previous paragraph, the information management process must be carried out systematically and represents an administrative information system, which has evolved into one of the most important systems available in organizations for conducting various tasks. To accomplish this, the information management process must be carried out systematically. It must be represented by an administrative information system, which has become one of the most important systems to have available in organizations to conduct various events, but its composition does not have unity in achieving this; it ought to have some features that make it a profitable system and thus can be used more optimally in various organizational aspects (Fayez, 2013: 53).

The M.I.S. framework and functions are interrelated components that work side by side to collect, process, and archive publication data. Author James O. Hicks 2003 describes the data business system as an official personal computer. A framework that collects, stores, manages, and reports information from various sources to give the data that is expected to deal with the path towards stability in options and J.W. Wilkinson nod, who discussed working systems for computers, referred to five tasks or exercises: a variety of information; Data collection, processing, and data management. Control, and security of information and obsolescence of data. Information is converted from various sources through these activities by preparing information into useful data for the user. Management data systems and physical parts include equipment, programming, data sets, systems, and manpower. Written by James O. Hicks Jr (2003) Record by James O.Hicks, Jr (2003), a standard computing system is a formal system as it is collected and defined through a few cycles, reports and information from various sources to give the basic and necessary data to obtain critical management options. Not every data system is fully coordinated, organized and formal like data received from other informal sources. The data framework should be based on computer information, regularly collected and clarified through manipulation processing, although the manual data framework has become less viable. It does the work at a much lower cost—diagram 1. By James O. Hicks, Jr (2003) reflects the P.C. framework in six sections: Inputs and Processes, Information Documentation, Productivity, People and Equipment. All frameworks, including computer business systems, and computer frameworks, consist of inputs, processes, and outputs; how contributions to productivity change are determined by board statements C.E.O. statements. Activities can be divided into computer projects, methods, computer programs executed from computers, and strategies that people complete (James O.Hicks, Jr 2003 3rd)

The most important characteristics that must be available in a modern management system, which serve as criteria for judging an information system's efficiency and productivity, are summarized below. The documentary information system, for example, must integrate all of its components, and it must be derived from it (Hayali, 2006: 37).

The system's utilitarian direction: The practical direction of the system is the goal or objectives for which it was created, established, and designed, for example, an

information system may be arranged to support and assist research and development in and within a specific scientific field confine of a specific institution. In research and development, the information system can provide associated data and information to help users meet their information needs in support of administrative frameworks in supervision and implementation.

User involvement in development: An information system can only be created and developed with the help of the people who use it. It should not be limited to a specific period in terms of type, level of detail, and timing of reports, and to achieve participation in the development of the system, but it should be. Subject to constant and constant review considerations to ensure that it conforms to the specifications specified to him. Participation in a committee or council representing the institution's senior management sectors may be based on the principle of prioritizing implementation, supervision, oversight, and management.

Integration: Integration, also known as interdependence, is an important feature of any information system. Integration and coordination of utilitarian applied information systems to present and produce information that can be recognized and perceived in an appropriate and supportive way for the organization, and the concept of integration is related to the concept of the complementary or complementary unit because, without a communication system between parts, it is not possible to create a complementary unit, so integration refers to a comprehensive view of all aspects of the organization, And I became one.

1.3 Importance of Management Information Systems

For e-business management, e-communications, e-commerce, and e-government projects, various information systems and tools have become the technical foundation. Furthermore, it is a significant driver of global economic growth and development. It directly affects the formation of culture in current human social systems as part of what is known as "cosmic education" or "globalization. On the other hand, innovation in information technology is a combination of three tracks of computer systems. Communication networks and technological knowledge represent a broad starting point in the various capabilities, components, and elements used for storing and processing data, retrieving and distributing information, and their role in securing the required knowledge.

On the other hand, information technology differs from information systems. The latter is a computerized service that uses information technology and invests in its various capabilities to assist the organization, with its various joints and levels, in its tasks, and activities to meet its needs. To obtain information necessary for decision-making and other tasks. Integrating information technology and the organization's activities is accomplished through information systems of various generations and patterns to achieve specific objectives, and make the necessary changes in functions and processes (Amir, 2019: 34).

On the other hand, information technology, which comprises a group of computer systems with their physical, and software components, and communications, including telecommunications and long-range networks, have become important. Methods of organizing the competitiveness of an existing business organized in an increasingly intense arena. It has become global competition, and ownership of knowledge and information technology. More important than financial possessions. Those who take it and knowledge technology corner have developed services, products, manufacturing and marketing processes, cost reduction, and quality improvement. In today's organizations, information technology assists presidents and stakeholders in the assembly, processing, storage, transportation, and retrieval of data and information that they have access to or can obtain a view, and even rely on as a significant source of opportunity in the local and globally competitive market.

The ability, and assistance of the organization in making and making the required decisions is also linked to information. The director who controls the information available in his information system and resorts to harnessing its outputs in favor of his decisions, as is customary, is an effective and successful manager. Because of these developments, the rapid development of computer systems in building a broad information base will force senior management or summit management to identify ways to invest their potential and future expectations, resulting in additional renewed and creative responsibilities.

On the other hand, information systems have evolved through several stages over some time, starting with scientific management theory, which depends on gathering information about business activities, research, analysis, and innovation to discover optimal ways to manage the business to increase productivity, then focus on applying the scientific approach and relying on planning processes. Finally, there is a

focus on applying the scientific method, relying on strategic planning processes, focusing on applying the scientific method, and focusing on applying the scientific method.

Because of the significant increase in the volume and flow of information, there is a growing need to consider the technological aspect of administrative, technical, and productive work in various administrative organizations around the world. Due to its impact on the speed of performance and organization, it has been revealed. The spread of computer systems began to work through their enormous ability to enter and process data and information, and their ability to advanced storage, and preservation, as well as appropriate information retrieval, and modern technology at the forefront of computer systems various types (Amir, 2019: 29).

1.4 Accounting Information Systems

Most of the information is generated from operations whose economic unit operations may have an accounting characteristic. Failure to be accounted for, for example, delivery location and delivery time, is a non-accounting feature. However, product code and the amount of accounting input are necessary by computerizing accounting information systems. These systems were isolated from other information systems, and used as practical reinforcement of those systems. Today, accounting information systems are more powerful, reliable, flexible, and economical through software and hardware to meet accounting and operational needs. It can be said that accounting systems are now more. According to the provisions, linked and integrated with the rest of the information systems of the economic unit, the benefit of this trend is that accountants now have easy access to non-accounting data that they used to verify accounting information, in addition to enabling accountants to view comprehensive financial reports (Ibrahim, 2009:33).

Accounting is the technique of processing information obtained from public accounting and other sources and analyzing it to arrive at the organization's managers' results in light of decisions related to its activity. It also allows studying and observation. Cost-effectiveness and determining the organization's effectiveness allow oversight of responsibilities at the implementation or department levels. Analytical accounting is an essential tool for operating organizations. They are the applications of cost and principles of cost calculations: the methods and techniques of science and the

art of verification, control, and control of costs, determining the amount of profitability, and providing information for administrative decision-making (Ismail, 2006: 23).

Advantages of accounting information systems could be listed as follow (Muhammad, 2004: 21).Man-made accounting information systems.

The goal of accounting information systems and their use in the workflow is arrangement, planning, and decision-making. Accounting information systems are the backbone of the organization within the organization, accounting information systems provide management with real information, Information systems are flexible as they are constantly reviewed, functional and changed.

1.4.1. Financial Information Systems

Khamen Nouri defined financial information systems as "databases that contain integrated information about them. Complete the variables related to financial issues and from various sources (internal and external) and use. To assist the decision-maker in making effective and efficient decisions. From the definitions mentioned above, it can be said that financial information systems are one of the subsystems. Abdel Nasser pointed out that financial information systems are databases that contained integrated information related to financial issues and various internal and external sources used to assist the decision-maker in making practical and effective decisions(Abdel, 2012:07)

A management information system is a group of financial resources that interact with each other. They collect data related to financial activities from their internal and external sources and process them to convert them into financial information.

Beneficial to the enterprise, to take advantage of the financial decision-making centre's and to meet its needs promptly (Khamen Nuri Kaka Maha Al-Attar, 2019: 7) Financial information systems are one of the most important and comprehensive subsystems of comprehensive management information systems. They extend to activity and provide valuable information to managers at all levels of management. Financial information systems interfere with and interact with other management information systems, such as Marketing, Production, and HR - Sabah systems (Rahima, 2011:186)

1.4.2. Marketing Information Systems

It is an interconnected structure of individuals, devices, and the consequent procedures and methodology. It aims to produce and generate a flow of information gathered from internal and external sources to be used as a basis for decision-making specific areas of marketing. Ali Falah Al Zoubi, Marketing Department, A Strategic Applied Perspective, Amman: Dar Al-Yizouri for Publishing and Scientific Distribution, 2009 p. 183. Authored by Farid El Naggar says: “The marketing information system includes the complex interaction between specialists and the machines used to ensure the collection, analysis and flow of marketing information from internal and external sources necessary to make marketing decisions under various conditions complete, incomplete, unavailable, to serve marketing managers companies that provide goods or services from the present or the future (Farid Al-Najjar, 1998: 162).

The information system plays an important role in raising the efficiency of financial and economic implementation. Organizations in business sectors are very competitive by presenting important data to various—official administrative levels. Achieving advertising interaction generally depends on marketing and promotional data. The Marketing Department requested a work and completion system in all components of this system. Marketing data system for the definition.

Estimate and anticipate marketing opportunities, as well as market sectors. A marketing information system consists of people, facilities, and integrated procedures used to provide them. Provide accurate and accurate information management about the environmental proposal, which helps to seize opportunities and build marketing strategies and plans. Kotler understands that a Marketing Information System presentation is a complex organization made up of interrelated relationships Between people, machines, and strategies to give a series of structured statements, depending on the interior design and

Often the external resources of the organization have been coordinated to develop enhanced marketing decisions. Despite the reality, there are numbers and definitions for

(Kotler Alexandria, 2002. part 3,)

Internal records: are data that are collected in the form of a database about the day-to-day operations of the companies. Drug production (under a study), and include

data records necessary to obtain information on the scale Current transactions in deals, sales, cost, inventory, a cash flow, etc.

Marketing intelligence: is how executives can stay in touch with new information about the conditions for emerging competitors.

Market research: It is the method of gathering information on the motives of discrimination. Settling specific issues with organizations are promoting departments, and ad openings. It's tidy and continuous supervision of work to ensure effectiveness in managing these issues and opportunities. Marketing information systems work has been planned appropriately to take care of many data problems facing the organization, such as some unacceptable data, in some unacceptable areas, unacceptable time, not having the right type of data, in the right area, at the ideal time.

The marketing information system can support mediators in their dynamic proposition by abandoning internal communication and an operational link between departments or divisions. Additionally, a capacity is buildable. Responding to a dynamic organizational system environment and allows for the most effective and coordinated care Store information. Terrence V. O 'Brien, Denise (D. Schoenbachler and Geoffrey 1995 Vol.12, No.5, pp 16- 36).

1.4.3.Components of Management Information Systems

The organization's various activities necessitate constant, and continuous decision-making based on various information, which is entirely in the form of data converted into information that supports and rationalizes decision-making in accordance with a system. In linguistic terms, information refers to science and knowledge and everything a person knows about a case or an accident. In terms of terminology, information refers to data that has been intentionally arranged and designed to serve as a basis for decision-making. Or data that has been analyzed for a specific purpose to assist in making a decision (Hamdi ,2011:55)

1.5 Data Information

However, before you define the information, you must distinguish it from the data. Data is a non-stressed collection of facts in the form of numbers, words, or symbols that have no relation to one another; it has no real meaning and has no impact on the behavior of those who receive tithe data may be in the form of ordinary numbers, percentages, geometric shapes, signals, or symbols multiple by users. It is

collected from various official and informal sources, both internal and external, oral and written. It may not be helpful in its original form until after it has been analyzed, interpreted, and turned into information. Data are unprocessed raw materials and facts that have no value in their current state (Wais, 2013: 50) .

Unless it is transformed into understandable, and valuable information, we can say that data is part of the information because it has been processed and transformed into a meaningful form. Data that has been classified, and regulated in a way that allows it to be used and utilized, data processing. Data, which can be a number, is used as a foundation for decision-making, calculations, or measurements. When this data is turned on, the working hours of every company employee can turn into information, which is data that is run or useful data that inform some people about things they didn't know (Butiba,2012: 36; Fayez, 2013: 45).

The organization requires a wide range of information, which can be divided into the following categories:

Marketing, commercial, financial, social, and technical information are all types of information, categorized by purpose, internal organization and environmental dimensions macroeconomic and partial economies, political and tax information, institutional information, technological and legal information, Segmentation based on what the organization hopes to achieve the goals of the organization. In the form of information provided by the holder: paper information, media information, posters, etc.

According to organizations, the need for information is numerous, their administrative levels, and their staff. This need depends on the end-user of the information, which means that information classification varies from user to user. But, in general, it can be classified using one of the following criteria: Standard for information sources: Information can be internal, external, or both. It is the first to collect a particular problem: the information provided for the first time to a specific group or individual; what a person collected for the first time may be similar to what the facility had collected in the past. Secondary data is gathered and stored to retrieve it, and managers frequently require this type of data to solve problems. Naturally, we can consult vast files in the government and various agencies for data on population, consumption, production, and markets. And so on (Madfuni, 2016: 95; Fayez, 2013: 46).

CHAPTER TWO:QUALITY OF HEALTH SERVICES

2.1 Concept of quality

Interpretations varied in defining quality despite everyone's conviction of its importance and effective role in achieving a competitive position for a product or service in the market, as it is a global concept. Its implications differ according to society's views writings on this topic. The issue is discrimination and discrimination. Some see it as the absence of defects in the industry or service and related to the product's characteristics or price (Al-Tamimi, 2008: 13).

Defining quality is the degree to which the requirements expected or agreed upon by the user of the service are met.

She must also know the characteristics of his community for a product or service that satisfies the customer's needs, whether the customer is the direct recipient of the service or the original user of the product, service, or both (Al-Fatlawi, 2008: 25).

It was also known as the complete follow-up to the consumer's needs, with the least internal. It is also known as the concept of meeting or exceeding consumer expectations (Al-Wadi, 2010: 19).

Figure 2. The Concept of Quality

The definitions cited by researchers and those interested in the subject of quality have varied, and we address below the most important concerns:

"Intangible activity that is primarily aimed at satisfying the wishes and requirements of customers, so that this activity is not related by selling another commodity or service" (Walid, 2011:44).

"A service is a collection of unstructured activities that typically result in contact between the customer, processes, human resources, property, and systems that are delivered in response to the customer's needs(Qassas, 2011: 41).

It is described as follows by the (A.M.A.) American Marketing Association of Services "Intangible goods have been exchanged many times directly with the commodity. The consumer is not transported or held, and he or she is killed almost immediately. Since services are often difficult to describe or understand, they are often misunderstood. It seems that they exist at the same time buy it.

Same time consumed, and it is made up of intangible components, creating an unbreakable syndrome to be shattered (Marziq, 2010: 4).

The American National Standards Institute and the American Society for Quality Control (AQC) also know they are Characteristics of goods and services to meet specific needs

Separated from the presenter, often requiring significant consumer involvement, where ownership is not transferred, and no title or characteristic is assigned(Gamble, 2013: 16)

It is defined as any action or performance that can be performed by one party to another and is intangible; its substance is intangible. It does not result in any ownership, and its products may be related to normal production. The difference raises the intangible aspect of the health service that is not achieved through labor and demand from another side not necessarily related to natural production (Al-Bakri, 2010: 56).

There are several indications in general. This classification also applies to health services and has been classified. In terms of reliability: there are services based on tangible goods such as analysis, radiation. Etc.

There are services based on the human element, such as psychotherapy, diagnosis of the disease. Etc.

In terms of attendance: it is necessary to attend a beneficiary of health services and the health service provider, for example, surgeries, blood withdrawal. Etc. In terms of the type of need: some services saturate one need, such as a person's examination at the doctor's office: Some services saturate a package of benefits such as hospital stays, overnight delivery, food, examination, and monitoring.

Permanent patient for care. Etc. In terms of service providers' objectives: there are profit-making goals such as private hospitals and non-profit targets: For public institutions where the objectives of private hospitals differ from government hospitals where the marketing program. etc (Nassima, 2011:36).

Quality objectives from the customer's point of view:

The customer has desires and expectations for the product or service he receives in: efficient products or services that fulfil the purpose for which the customer bought them, trust, availability of guarantee on the service, ease of obtaining it, and availability of communication channels between the customer and the institution, company or service provider (Dahmane, 2015:28). Objectives from a service provider's point of view:

Achieving the customer's desires, meeting their demands, continuous improvement of quality and management systems, and achieving the institution's ability to compete and survive, in addition to improving employees 'products and capabilities. Increasing services with the required specifications (Adel, 2012:122).

2.2 Concept of Health Service Quality

It has been classified as a health service or medical care.

The curative or hospital services provided by a member of the medical team to one or more individuals or community members, such as treating the patient's doctor, whether in a private clinic, outpatient clinic, government hospital, nursing, or managing the care provided by the nurse to the patient, or the diagnostic laboratory analyzes provided in the laboratory to a person or More, but to avoid getting caught, take the following precautions. Saeed, PhD. thesis, p.1.

"The extent to which existing health outcomes are achieved and how consistent they are with professional principles" is a measure of service quality.

The Joint US Accreditation Committee defines high-quality healthcare institutions as follows: "- the degree of compliance with existing and agreed-upon standards to help determine a good level of practice and determine the expected outcomes of service, treatment, or prognosis, that is, quality under cognitive conditions in the peak period A It means the degree of achievement of results and the decrease in undesirable outcomes. Pasternak and Bevy defined health service quality as everything that has to do with consumers and their commitment to its quality (Raafat, 2011.20).

The health service is defined as: "A set of functions that satisfy the associated humanitarian needs to stay and continue directly, and linked to other functions of society such as economic, educational, social and others indirectly so that it gives the patient the ability to adapt environmentally by providing support for its environmental, sensory and psychological capabilities to enable it to achieve the required performance(Dredi, 2014:16).

2.2.1 Quality of Health Services

Quality of health services. Includes the following components: The quality of health service is viewed from the following angles: Patient: defined as compassionate and respectful treatment provided by the hospital. Doctor: Putting the most advanced knowledge, science, and medical skills at the patient's service. Owners: To obtain the best employees and the best facilities to provide service to customers. Hospital: administration: to provide the best services according to the latest scientific and professional developments, and to govern them health practice ethics, expertise and quality, health service provided ideal interaction with the patient and the administration, and adherence to standards and ethics that govern health professions (Dalal, 2013:45).

Defining quality is the degree to which the requirements expected or agreed upon by the user of the service are met (Zahara, 2018, 44).

Quality of health services: Health institutions are experiencing some changes, the most important of which is the cost of health care, and the increasing dependence on it in terms of modern technology medical, evolving and rapidly changing, despite pressing external factors and licensing and accreditation to allocate costs and improve quality. These institutions are also witnessing a noticeable change in the behavior of beneficiaries of health services, in light of all the changes, and the expanded interest in ways and approaches to raise the efficiency of health institutions and improve the quality of services provided (Regional Committee for the Eastern Mediterranean (2000 October 4-1).

What are health services, and how effective are they? The service institution is one of the most important institutions of our time, and it has taken on a significant role in our daily lives. Health institutions are the most important because they provide a wide range of essential and related health services to protect people's health. Due to the

diversity of services in use, in addition to being complex to distinguish between whether they are tangible or intangible and because their interaction with tangible goods has many implications, we will focus on services during this research from the perspective of the concept, characteristics, foundations and elements of the service system where we deal with the concept of quality (Walled, 2011, 44).

The concept of health service - a service center specialized in providing an integrated service, a range of specialties, medical, and non-medical professions, services, medicines and materials organized in a specific pattern to serve current and potential patients and meet their needs. And maintain the health institution (Alaa Nabil Abdul Razzaq: Baghdad, Iraq, Issue 90. 2011, p. 287)

The foundation works to improve health.

Good health forums are not the only purpose and are divided into two parts: to achieve the best level of health. Good love is one of the differences between individuals in managing their access to health justice.

The extent to which current health results are achieved and their compatibility with professional principles (Rahima: 2009/2010:28)

In the second section, the WHO definition can be presented as the most comprehensive. The health institution was previously defined as: “An integral part of the health system and its function is to provide health care to the whole community, whether preventive or preventive (Al-Sharif, 2007/2008: 5).

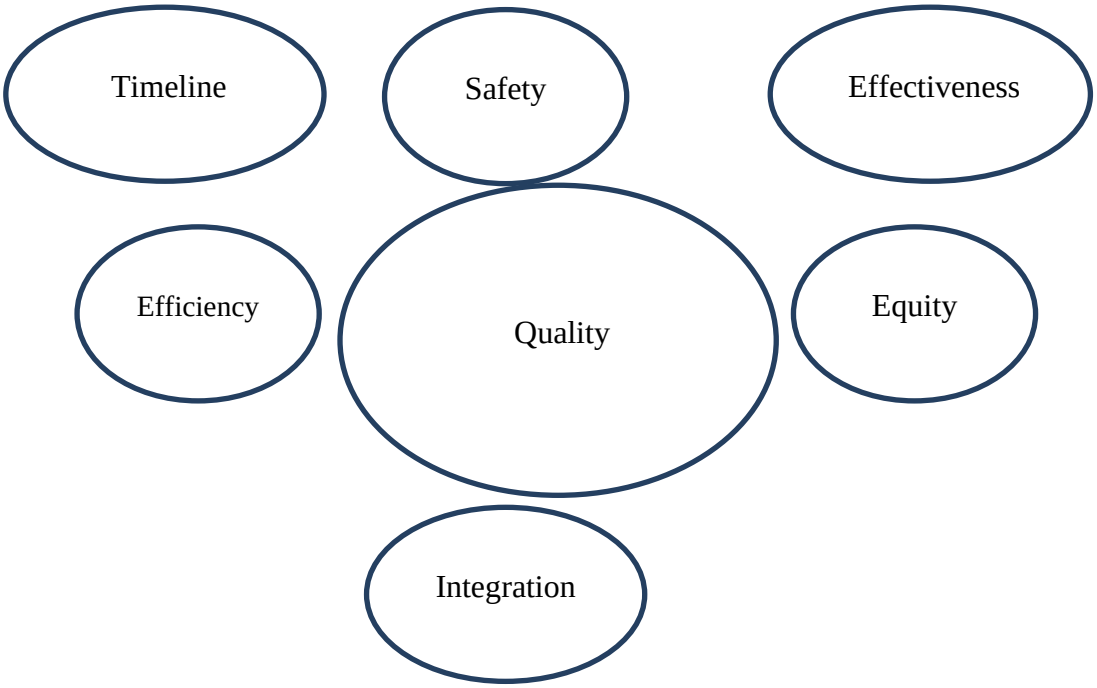

Figure 3. Quality of Health Services

Source https://www.who.int/servicedeliverysafety/areas/qhc/quality-uhc/en/

2.2.2 Elements of Quality of Health Services

The effectiveness of care the degree to which health procedures are carried out as intended. That is, care extends life expectancy by allowing patients to cope with functional illness and maintaining a constant sense of well-being and happiness.

Appropriateness: Choosing health procedures that are right for the patient's situation. Acceptance: The acceptance of the patient and the community for using a certain health measure. Access: an example is waiting lists to obtain Appointments, whether in outpatient, orthodontic, or surgical operations. Equity: the extent to which health care is available to those who need it and that there is no difference between the possibility of obtaining it among groups of society for unhealthy reasons. Efficiency: Optimal use of resources and costs while taking into account the needs of others and patients (Al-Bakri, 2005: 199).

2.2.3 Dimensions of Quality Health Services

The first dimension: Reliability: Criteria you evaluate: Accuracy of records approved by the hospital administration. The correctness of the financial statements. Accurate appointments in the medical procedures.

The second dimension: speed of response and customer assistance -Criteria you evaluate: Provide immediate treatment services. In response to external emergency calls. Workaround time clocks as ambulances arrive in a short period of time. The operating room is completely ready for all cases.

The third dimension: trust and safety (Assurance)Evaluating criteria: The reputation and position of the hospital are high. Outstanding skill and knowledge of the doctors and nursing staff. Personnel traits of workers as medical treatment of patients.

The Fourth Dimension: Personal Care and Concern - Evaluating criteria: Personal attention to the patient. Listening fully to the patient's complaint. Meeting the needs of the patient in a spirit of friendliness and kindness. The nurse acts as the affectionate mother of the patient. Looking at the patient, he is always right.

Fifth dimension: tangible material aspects - Evaluating criteria: Tools used in diagnosis and treatment. The external appearance of the service providers. -Convenient waiting and reception places. Like the doctor's office is clean and has a specialized appearance. The quality of food provided to patients in the hospital (Suwaidan and Barwari, 2008: 233).

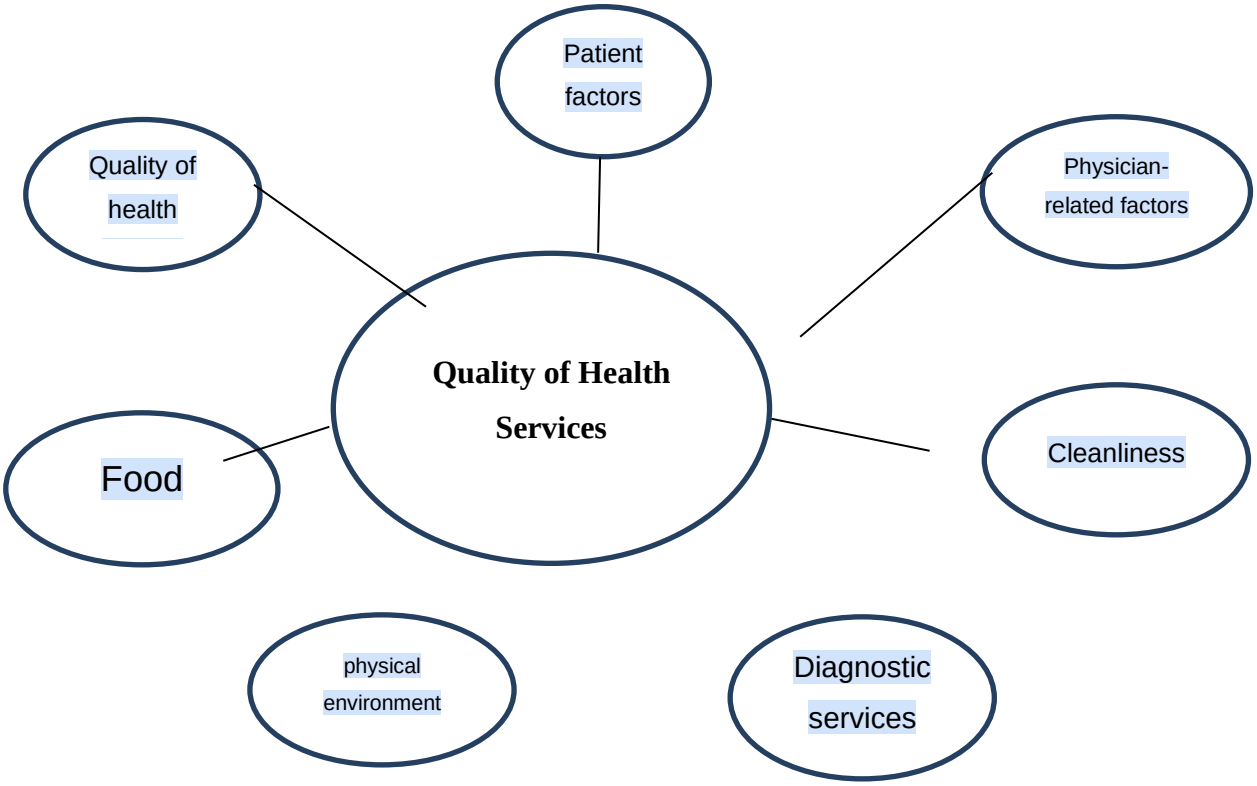

Figure 4. Factors Influencing of Quality of Health Services

Source: Researcher

2.3 Factors influencing of Health Services Quality

There are many factors that influence patient satisfaction and thus influence it. There are the following factors:

The behavior of service providers: Patients assess the quality of service provided through the behavior of doctors and nurses and that the effort exerted is directed towards physician assistants and support personnel (Dhyana & Venkatesh 2015: 55).

The effort is directed towards physician assistants and support personnel.

By using manners and politeness in responding to their inquiries, patient clients' prompt response to their requests, implementation, and others impacts the quality of health service (Pride & Ferrell, 2000: 336).

The physical environment: the moment the patient sees the hospital building, outpatient clinics, inpatient rooms, surgery halls, reception halls, etc. Between the quality of physical facilities and the quality of health service (Miranda, 2010: 21). Diagnostic services: delays and inaccuracies in the results of diagnostic services, laboratory analyzes, x-rays, etc., leads to dissatisfaction with patients, which affects the level of quality of health services. Food: the food served if it is important to the sick. Hygiene: Hygiene has a greater impact on the quality of hospitals through patients' expectations towards cleanliness of the environment, hand washing techniques, and everything is an essential element in achieving the quality of health services (Dhyana & Venkatesh, 2015:56).

Factors related to patients (patient demographic or social variables, patient cooperation, and disease severity. Factors related to the doctor (demographic and social variables of the doctor, knowledge, skills, motivation, and satisfaction of the doctors(Mosadeghrad, 2014: 213).

2.4 Quality Measurement Methods

Measuring the quality of services: Conducting many tests and studies to measure the quality of service, and one of the most important attempts that have been made in this field is what Berry and his colleagues achieved through their tests and studies that began in 1963 and continue to this day, and through which they did so. In this study, service quality can be measured regardless of the physical distance, which

makes the process of measuring it an important issue that is difficult to compare with physical goods, but it is not possible to establish fixed standards for measuring service quality and generalize them to all service institutions under the special circumstances of each institution and this does not prevent the existence of standards A common service quality of a similar service organization (Yousry Al-Sayyid Youssef 2002 pg. 40)

The methods for measuring quality are Section one: direct and indirect measurement of the quality of health services It is not easy to measure service quality by direct measurement, but the quality is measured by social changes society and the extent of the health level according to the following scenario: Direct measurement method: the actual output of the service is measured. Indirect measurement method: the quality of service is measured against the results modified patterns: that is, at the standard rates determined by the regulations determined by the executive authorities supervising health institutions during the development of the plan. Local comparison: that is, with similar health institutions. Historical comparison: with previous years. National comparison: that is, performance rates at the national level. International comparison: that is, the performance rates of countries that have the same conditions as the country in which the institution is located health (Sahar Ahmad Karji Al-Azzawi and others 2009: 133).

The second method: the traditional way to measure the quality of health services

It includes three types of scales: Structural scales

Healthcare standards relate to the individuals and facilities provided in the provision and delivery of the service and how they are organized. Therefore, the dimensions of organized structural measures, personnel and facilities available in a health institution include work measures and operational procedures.

The concept of processes refers to the succession of work steps to provide or access the health service, which leads to reaching the results (outputs), and all methods related to the evaluation procedures depend on the issuance of acceptable standards for the quality of care: Outcome measures

Reflects net changes in health status as a health care product: the third method is modern metrics for measuring the quality of health services according to this method. The focus is not only on quality and its control in specific aspects of the

output, processes or structure only, but in the entire health institution, and the quality of the health service can be measured by studying and determining the expectations of patients who benefit from health services. Develop specific, announced and studied specifications at each level of the health institution, as a main tool for designing services that are in line with the expectations of patients and those who visit health institutions. Regularly evaluate actual performance to determine how well the service meets the aspirations and expectations of health service applicants (Debboun Abdel Qader, 2012 - p.: 220.219)

2.5. Dimensions and criteria for judging the quality of improving the health service.

And this health service quality can be presented in the following elements:

Technical competence: in the sense of caring and caring for all administrators and cadres working in the institution.

Ease of access to services: meaning that there are no physical, social, or geographic obstacles that could be found obstructing access to the requested service.

Effectiveness: its extent is measured by dividing the outputs by the inputs to see whether the applied procedure or the service provided gave the desired results.

The relationship between individuals working in the institution: should inspire confidence, respect, and credibility.

Adequacy: using materials, providing the best, and achieving the most significant benefit at the lowest cost.

Continuity: Because what is good may not be good after a year, improving and developing quality must be a continuous process (Dalal, 2013:46, 47).

The dimensions of quality are:

Confidence in the performance of the service: It expresses the degree of confidence in the service provider and the extent of his credibility and commitment to his promises.

This trust is affected by the reputation of the service provider.

The personal content of the service provider is the desire of the service provider to give the customer enough opportunity to speak and convey his point of view without exhausting the understanding of customers 'desires and covering up their necessities.

Credibility: It means the availability of a high degree of trust with service providers and includes the institution's reputation, the name of the institution, and the personal characteristics of the service providers (Hamed, 2016: 39).

The physical capabilities of the hospital:

This dimension is measured through the client's evaluation of the hospital's buildings, equipment and devices, and other financial capabilities and facilities.

The hospital's location and appearance from inside and outside in terms of the availability of parking spaces, the appearance of doctors, technicians, administrators, and workers, methods, and tools of communication, and sources of information from which clients obtain the necessary information.

Communication: the use of information by the sender for a purpose. Communication «by the sender to deliver it to the mind of the other party, which is the recipient to influence the dimensional response that focuses on its delivery to the mind of the other party, which is the recipient to cause a response in achieving quality.

Response: Contributes to the improvement and development of the health service process 4 Response: It refers to the speed of service providers 'response to the beneficiary's needs. The rapid and high response is not limited to the elements of the external environment but should focus on responding to the requirements of the internal environment as well:

Provide immediate remedial services. In response to the appeals of the external emergency (Kahila, 2009:.9).

Understanding customers: This is achieved by focusing on understanding the beneficiary and realizing his needs, as he may be ignorant of the beneficiary

Factual and current health and future needs, and only influenced by the desire of friends and family, highlight the institution's role in influencing the patient's health.

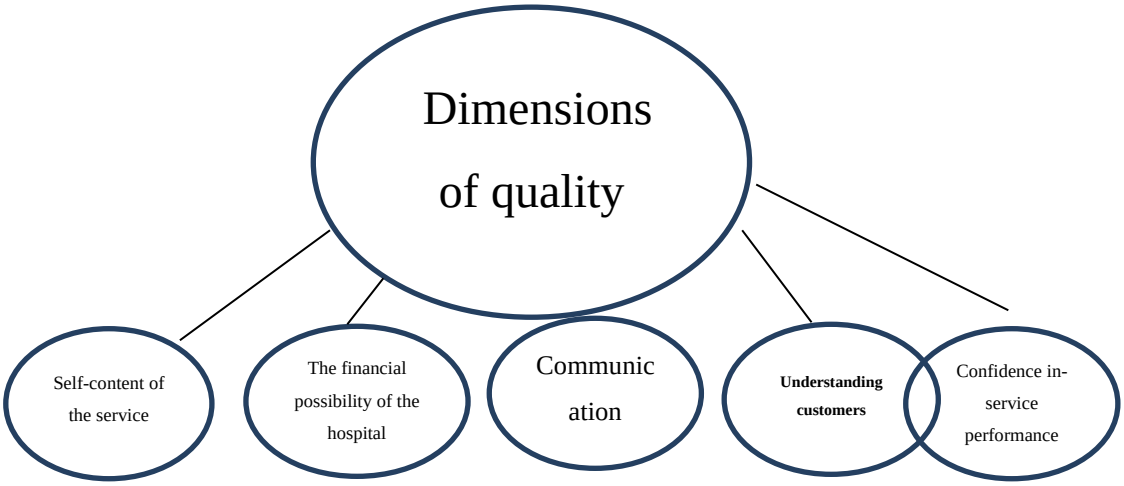

Figure 5. Dimensions of Quality

Source: https://almerja.com/reading.php?idm=107159

2.6. Measuring the quality of health services and their stages:

Healthcare quality analysis means treatment, quality, and evaluation.

Measuring the quality of health services has become an urgent necessity, but when choosing measurements.

It must be taken into account the purpose of the measurement, the types of measurements, and the types of variables that we will measure. There are two methods for measuring the quality of health services, the first described as traditional and the second modern. The traditional method includes three types of scales (Dalal, 2013:48)

structural measures (structure measurements):

The health care measures linked to individuals and facilities

Introduction to the provision and provision of services and how they are organized. Therefore, the dimensions of the structural measures include:

Organization, personnel, and facilities available in the hospital.

Measures of procedures:

It is also called process measures, and the concept of operations denotes the sequence of work steps to provide or reach the health service, which leads to the achievement of results. For example, in cases of the disease, measuring patients 'kidneys clearance procedures or patients' waiting time.

It is difficult to improve the nature and type of quality of anything unless there is an approach to determining its quality and quality; as he pointed out, it is a set of salient points and requirements that fall within the assumed evaluation and re-globalization. When measuring quality, a mathematical relationship must be found between job and quality. The highest quality can be calculated through several arithmetic operations with many mathematical equations, including activities, health, and population, linked to many of the following indicators.

Healthy indicators.

Life indicators.

Population indicators.

With these markers, the nature and quality of health services can be assessed and monitored, including:

- Ceaseless assessment of marks from doctors, nursing staff, heads, administrators, experts, and technicians, taking into account the scientific and logical capabilities to ensure the use of qualified workers to provide a large degree of health departments' services (Adel, 2012 123)

Health Service Quality Components

Four important components in achieving service quality in health institutions; The basis for their success is:

General personnel: (in the field of health)

Health personnel who work on studying and practicing professional skills in medical and communication and pay attention to patients' problems, understand them and solve them professionally in the interest of patients.

Efficient procedures:

They are the level of bureaucracy and waiting times in the hospital before a patient is admitted to the consultation clinic, the speed of completion of laboratory analyses, and the issuance of decisions about complaints and time provided for each patient, and schedules for reviews.

Individuals working (in the areas of non-health) cadres are unhealthy. They work on studying and practicing unhealthy craft skills, kindness, consideration, patient attention, and solving their problems professionally.

Hospital infrastructure: It includes devices, equipment, hospital buildings, and car parks (Miranda, 2010: 21, 46).

CHAPTER THREE:AN EMPIRICAL ANALYSIS IN HOSPITALS IN SALAH AL-DIN

This research aims to examine the effects of management information systems on the quality of health services. Deals with the aim of the research, an empirical analysis is made in Hospitals in Salah Al-Din to determine how management information systems affect the quality of health services.

3.1. Literature Review

Previous research is considered one of the most important foundations that studies focus on developing an intellectual model. After reviewing some previous cognitive studies, I realized that preferring to focus on the technical aspect of the management information system, its impact or role, or on the fact of using the system, the management was implemented without relying on the components of systems management information.

In terms of the subject of the study, as far as we know, there are no direct studies for the role of the components of the management information system in achieving the quality of health care. Still, some studies focus on the information system and the quality of the health service separately.

This topic was chosen because it enables me to easily present what was obtained from the previous studies related to the subject of the study by focusing on the most important objectives, conclusions, and recommendations of these studies and comparing the previous study with the current one.

Ensour, 2014, The impact of management information systems (MIS)technologies on the Quality of services provided at the University of Tabuk, Objectives of the study Analyze and measure the impact of the use of management information systems on the quality of services provided by the university.

Recommendations. The study's findings assist policymakers in adopting information technology as a strategy for improving the quality of Organizations that offer resources.

This study aimed to assess the impact of management information systems (MIS) techniques on the quality of services rendered by the University of Tabuk's employees. To achieve the study's objectives, two questionnaires, At the University of Tabuk in the Kingdom of Saudi Arabia were created and distributed to a random

sample of (426) employees. The data from the questionnaire was analyzed by using the Statistical Package for Social Sciences (SPSS, V.16). The study has implemented the examiner and quantifies the effect of management information systems technology on the quality of services rendered by the University of Tabuk Similarities with our research.

The study was conducted in a service facility, and a questionnaire was used to collect samples.

Berwick, 1989, The current healthcare quality movement has origins in various fields, including medicine and other sectors. Medication has always used a watchdog strategy to maintain standards, relying on government licensing, professional credentials, internal audits, and, more recently, external inspections to fix problems and maintain quality control.

Other industries have adopted a different philosophy over the past 50 years: training employees to prevent problems, strengthening organizational systems, continually improving performance and patient safety and satisfaction.

Badri, Attia, &Ustadi, 2008, thought that patients and their pleasure were the most important considerations in the planning, execution, and assessment of service delivery and that satisfying patient requirements and developing healthcare standards were critical to achieving high quality.

Saila, 2008, Effective communication was recognized as the most important factor in patient satisfaction. In areas where malpractice lawsuits against healthcare practitioners are widespread, care providers have routinely completed informed consent. Informed consent is becoming equally crucial, where medical scheme patients are now on savings plans and are thus more accountable with the funds allocated. As a result, with patients making educated decisions about their health, clear communication between the care provider and the patient becomes critical.

Zineldin, 1998, 2000, 2000b, 2004, Total relationship management (TRM), according to, emphasizes the importance of quality and customer/patient service, as well as the impact of the external environment on business rules and performance, relationships, and networks, communications and interactions with various actors, collaborators, and employees in various departments/functions.

Brown, 1991, In services, quality is particularly challenging to define, describe, and assess. While quality control standards have long been in place for tangible

commodities, few have been in place for services. In essence, quality is determined by imprecise individual characteristics such as customer and provider views, expectations, and experiences and, in some situations, other parties such as suppliers.

Al-Mahasna, 2005, the study talks about the impact of the efficiency of information systems on the effectiveness of the decision-making process, a field study in the Jordanian Customs Department. The study's main objectives are to analyze the impact of management information systems on the effectiveness of decision-making. The most prominent conclusions of this study There is a statistically significant effect of the efficiency of management information systems on the effectiveness of the decision-making process, among the most important recommendations. Create an atmosphere of effective participation between the workers in these programs and their users for development and follow-up.

In terms of comparing the study with ours, the study was implemented in the Customs Department. The study examined the effect of system efficiency on decision-making. Similarities with our study the study was conducted in a service establishment, and a questionnaire was used to collect samples. It has been proven that there is a statistically significant relationship between information systems and their components.

Hashem, 2013, The impact of the efficiency of information systems on improving the effectiveness and decision-making process in the International Bank of Yemen. The main objectives of the study. Knowing the efficiency of management information systems in improving the effectiveness of the decision-making process.The most prominent conclusions:

The effect of the information systems efficiency on decision-making effectiveness was examined with variable degrees according to the administrative levels. Recommendations. Providing the necessary support and facilities to individuals and encouraging them to use the system, with an emphasis on knowledge of software instead of focusing on how to use it.

The study was applied in banks, and the study examined the effect of system efficiency on decision-making. Similarities with our study were conducted in a service organization, and the study proved that the efficiency of information systems through its components.

Victor, al et, 2013, The Assessment of Perceived Service Quality of Public Health Care Services in Romania Using the SERVQUAL. The main objectives of the study. Application of SERVQUAL model in public health care services in Romania. The most prominent conclusions.

The largest gap was inferred for the tangibility dimension, followed by the response and reliability dimensions. Recommendations. Doing continuous work to match patient expectations and perceptions and understanding healthcare in a competitive market is very important.

The study took the public health service and not specific hospitals, and the questionnaire was distributed via the Internet. Similarities with our study. Similar to the current study only in its study of the quality of health services.

Sumathi, 2012, Service Quality in Health Care Centers: An Empirical Study
The study's main objective is to find out about the expectations of patients for the quality of service in health care centers with the knowledge of the impact of service on the overall performance of health centers.

The most prominent conclusions: Service quality factors are important in health centers, including the doctor’s behavior and the operational performance environment. Recommendations. One of the recommendations of this study is to improve all service quality factors while formulating appropriate strategies to enhance patient satisfaction. Comparing the study with our study Perceived quality of health services in healthcare centers with the use of doctors study the behavior and performance to measure quality—similarities with our study. A study relied on a questionnaire to collect samples.

Al damur, 2012,The impact of the quality of health services in the degree of loyalty to patients at the University of the Jordan Hospital.The main objectives of the study.Know the reality of the quality of health services in the hospital after highlighting the quality of health services provided to patients' loyalty.

The most prominent conclusions: The low level of quality of health services in the hospital and the quality of health services have an impact on the loyalty of patients. Recommendations. We are constantly working on continuous improvement of the quality of the health services provided and using modern marketing mechanisms and tools to deal with the patient. The study relied on the quality of health services as an independent variable, with a field study conducted in only one hospital.

Similarities with our study the study was based on a questionnaire in data collection, which highlights the importance of the quality of health services; the study used the same dimensions of service quality in the current study.

Sunhee 2002Sunhee Study, This test was entitled "Evaluation of Factors Affecting Continuous Application of Quality Improvement.

Experience in Korean health institutions." The study aimed to verify quality and evaluate the continuous application of quality improvement in Korean hospitals and identify the factors affecting it. The degree of quality was estimated through the continuous application of quality improvement through the National Malcolm Baldrige Award criteria.

Elements that were associated with the level of Continuous use of quality improvement and includes four components for this application, which are cultural, technical, strategic, and structural for hospitals separately, and among the most important findings of this study are several factors, the most important of which are: High-quality production system capable of accurate and correct information. Similarities with our study were conducted in health institutions as well.

Kaja Study, Kaja 2006 This study is titled "Quality improvement in the Estonian health system - assessment of progress using an international tool. This study aims to assess the quality of the system of health institutions in Estonia using the work and the tool. The World Health Organization provided an assessment.

In this test, the researchers evaluated the quality of health care. Using the self-assessment questionnaire proposed by the World Health Organization for Europe as a framework for assessing quality activities, several dimensions have been used to evaluate national quality activities, which are four dimensions: policy, organizations, methods, and sources. The results showed the positive and negative points of the Estonian health system and proven techniques for improving the quality of health services in Estonia, where it was found that enhancing the coordination interaction of quality control is a key factor in developing similarities with our study. The study relied on a questionnaire in sample collection and Improvement in the health system.

Al-Shurafa 2004 is a field study entitled "Evaluation of the information systems used in the Ministry of Health in the Gaza Strip.

This study aimed to evaluate the information systems in the Ministry of Health by evaluating the computerized systems and identifying the various factors that affect their use from their users and uses. The analysis of the researchers. The descriptive approach was a cross-sectional survey of all users of computerized information systems, and the study sample included (156) users distributed over four health institutions that have computerized work procedures.

The researcher designed a questionnaire that included personal data others deal with basic information systems topics, such as the need for the system, data entry method, and training. The study showed that 74% of computerized information systems users have positive attitudes towards these systems and that these trends were similar among all studied systems

77.8%for the computerized health insurance system is the best approach, followed by the hospital system with 75.6%, followed by the clinical system with 71.4%, and the curative system with 71.4%. 71.4% for the trends of systems users by assessment items, the best trends were the need for a computerized system (84%), followed by a data entry mechanism. 81% hence ease of searching and retrieving information (80%), trends about the system in general (77.5%), and ease and clarity of reports As for their opinions about the user interface (74%), and the ease of the user interface (73%).

The performance ratio of the equipment used in the process was 71.5%. As for the trends related to training on the use of the system, it reached 71%, as for the technical support of the system, it reached 69.5%, and finally, the efficiency of technical support for equipment reached 60%, and the results were lower.

The results also showed the trends of academic degree holders. It is better than others in all evaluation elements. The positive trend around these systems is generally less With the age of the users of those systems directly. The researcher came out with several recommendations, the most important of which are: Attention to developing the technical support mechanism for each of the devices, equipment, and systems used and working on Determining the training needs of users, especially new ones, and working to provide resources to fill the Needs of devices, equipment, and expertise—ensuring the participation of users of computerized systems when developed.

Sewar Al-Dahabstudy : (2005)A field study entitled "Evaluation of the health information management system in health centers in Khartoum This study aimed to assess the current status of the information system to establish a database For for the flow of information in order to contribute to improving health services.

The researcher used the descriptive method to complete this study; an evaluation framework was developed that consists of a questionnaire focusing on the extent of the health staff's experience and knowledge of managing the information system. The study reached the following results:

More than 94% of the statistical staff were statistical technicians, and that more than 75% of them received short training in statistics in general. As more than the majority of them record the required information and write the reports, more than 80% of the monthly reports do Prepare by statistical technicians and sent to the health team presidency. While only 1.4% of reports are sent directly to the concerned department of the Ministry of Health in Khartoum State The study showed that some doctors cannot take advantage of health information due to insufficient Training and that the use of information at the level of the surveyed centre's is very limited, as the study showed In 93% of the surveyed centre's there is no computer unit, and that more than 64% of the managers Medical practitioners are general practitioners, and more than 82% of these physicians have not received training in medical systems information or how the information is used.

The researcher concluded from this study that the current problem, the health information system, does not lie in the lack of information, but the main problem is the lack of Use of private information at the lowest level.

The researcher called for the following recommendations: Providing appropriate training for statisticians and medical managers on Employing and using data at the current level, and developing an information system by introducing a system Computer (programming and networking) is an important department in data processing and information management, and the establishment of the unified information supply system This study was similar to the study (Al-Shurafa, 2004) entitled Assessment of the information systems used. In the Ministry of Health in the Gaza Strip “in providing appropriate training, developing systems and engaging their users.” when developing.

Study for "Mesbah Abdul Hadi Hassan Al-Dweik,2010 A study entitled "Computerized health information systems and their impact on administrative and medical decisions" study Applied to the European Gaza Hospital.

The study aimed to determine the geographical location The processes of making these antiquities in the European Gaza Hospital, and identifying the differences between these antiquities on the Compared to medical decisions, the study also aimed at reality Use of health information systems Administrative and medical work, as well as aimed at revealing the most important obstacles and problems that limit the challenge Their effectiveness and identification of the most important types of these systems in terms of use In this study,

The descriptive-analytical method was used, and a questionnaire consisting of (83) items was designed to cover the variables of the study, and the study population consists of (187) male and female decision-makers.

The stratified sampling method consisting of (140) items representing 75% of the study population was used, and the data were processed using the statistical package for social sciences SPSS where arithmetic means, standard deviations, analysis of statistical variance, and Pearson correlation coefficient were calculated.

The study concluded a set of results, the most important of which are: The number of administrative and medical sample members reached And those who use computerized health information systems in their work (121) out of (128) individuals That is, by 94.5%, which is an indicator of the high rate of use of computerized health information systems in me The European Gaza Hospital, in descending order of the types of computerized information systems used in The European Gaza Hospital is as follows:

Functional Information Systems, Office Automation Systems and Document Management Decision support systems, senior management information systems, messaging systems, and in the last place came systems Knowledge bases and expert systems, the study showed that the computerized health information system used Currently, in the European Gaza Hospital, he is making a good impact on the areas of medical and administrative work As well as on medical and administrative decisions, and there are differences between the levels of influence of the information system Computerized health on administrative decisions compared to medical decisions and the differences in favor of administrative decisions The study also showed that there

are obstacles that limit the effectiveness of the health information system, the most important of which are: Weak required financial funds, lack of adequate training, lack of vision towards the necessity,

Comprehensive planning for e-health applications The study recommended strengthening the strategic vision towards the need for comprehensive and long-term planning For e-health applications, placing e-health at the top of the national priorities And the need to work on building an integrated electronic health system at the national level, and Rabat Hospitals with each other through computerized health information systems, getting rid of The paper health file will gradually be implemented, and the electronic health record system will be implemented, and courses will be held Training for all employees and focus on maintaining these courses.

This study was similar to the study (Al-Shurafa, 2004) entitled Assessment of the information systems used in the Ministry of Health in the Gaza Strip" in that it emphasized the impact of information regulation on decision-making Administrative and the need for the participation of users of the systems. And the need to provide financial credits and sources that work to meet the needs of the equipment. The equipment and expertise required for information systems. And with the study (Sewar Al-Dahab, 2005) entitled "Evaluation of the health information management system in health centers. In Khartoum, it is necessary to hold training courses for all systems employees and users and focus on them.

Al-Sharbaji study 2001 The World Health Organization - Regional Office for the Eastern Mediterranean conducted a survey entitled Health and Medical Informatics in the Eastern Mediterranean Region, the aim of this study was to evaluate the Development of health information systems in ministries of health in countries of the Region.

The descriptive method was used in this study, a questionnaire containing 26 items was distributed, and the study population consisted of 20 Eighteen countries that responded to the study (90%). The study reached results, the most important of which are: Eight mentioned Of the countries (44%) that have an effective health information system, while ten countries (65%) say they have an effective health information system. In the process of planning to build a health information system, eight countries (44%) reported that they had prepared a plan, eight countries (44%) reported that they are in the process of developing a national health information and telecommunication

systems Planning to prepare this plan, and other countries (12%) reported that there was no plan for that. Regarding the local information network (LAN), thirteen countries (72%) reported that they have a network Local information network, while other countries (11%) reported that they are planning a local information network Three other countries (17%) reported that they do not have any local information network,

The study indicated that there are varying degrees among the studied countries regarding the applied uses of the systems health information, and the number of professional workers in the field of information technology does not exceed.

Six hundred seven workers distributed among the ministries of health in 20 countries, which is a minimal number, as for Obstacles to developing health information systems in the Eastern Mediterranean. The most significant obstacles were the following Lack of full awareness of the impact of information technology on the field of health care, lack of long-term future vision, lack of affordability, lack of experience in the systems field Health information, weak basic infrastructure for health information systems, and the absence of a framework Legal, legislative and constitutional.

The study recommended the preparation of plans for the introduction of information systems health institutions, and the allocation of financial and human resources at the regional levels and national to provide adequate support for plans for health information systems, and recommended countries of the Region Implementation of awareness campaigns targeting health workers about the importance of health information, as well as Recommended that member states invest in human resources in the field of information technology, as Recommended the development of a model infrastructure for electronic health records to be taken into account when Its design is to apply international standards, abide by confidentiality, ensure patients' rights, and consider all aspects Legal.

3.2. Methodology

In this section, hypotheses and research model, population and sample, data collection method, measures, and analysis method are mentioned, respectively.

3.2.1. Hypotheses and Research Model

This study was conducted to understand further the effects of management information systems on the quality of health services. According to this information, the main research problem is *"Does the usage level of management information system affect the quality of health services?"*

Regarding the research problem, one hypothesis was tested in this study.

H1: The management information system has a statistically significant effect on the quality of health services.

The research model is as in Figure 6.

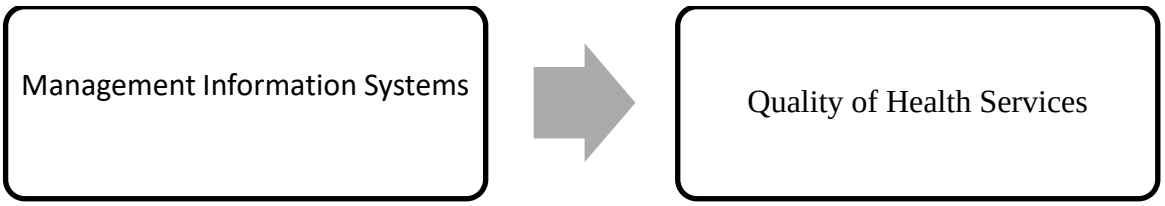

Figure 6. The Research Model

In addition to the main hypotheses, it was examined whether differences in perceived level of management information systems and health services quality according to demographic characteristics. The hypotheses tested for this purpose are as follows.

H2: The employees' perception of management information systems level differs according to gender.

H3: The employees' perception of health services quality differs according to gender.

H4: The employees' perception of management information systems level differs according to age.

H5: The employees' perception of health services quality differs according to age.

H6: The employees' perception of management information systems level differs according to education.

H7: The employees' perception of health services quality differs according to education.

H8: The employees' perception of management information systems level differs according to experience.

H9: The employees' perception of health services quality differs according to experience.

H10: The employees' perception of management information systems level differs according to the job position.

H11: The employees' perception of health services quality differs according to the job position.

3.2.2. Population and Sample

The research was carried out on employees working in hospitals in Salah al-Din Governorate / Iraq. The population for this study consisted of individuals working as a manager or medical officials in three hospitals in Salah al-Din Governorate / Iraq:Tuz Khurmatu General Hospital, Dijla Hospital for Medical Rehabilitation, Salah El-Din and Salah El Din General Hospital.

Because of the Covid 19 days, the research population was limited to three hospitals. Other hospitals didn't want to join the survey—the population size of the three hospitals was254. The questionnaire form was prepared online and shared with employees on several platforms to obtain an adequate sample size in Covid-19 days; All participants completed the survey anonymously and voluntarily. Totally 200 employees of 254 participated in the research. Among the 200 participants, 6 were excluded because of excessive missing data. The participation percentage of the questionnaire is approximately % 77.

3.2.3. Data Collection Method

Research data were obtained through an online questionnaire prepared in accordance with the purpose. The questionnaire form consists of three parts. In the first part, there were questions about the demographic information of participants. The second part of the survey included questions about the usage level of management information systems in the hospital where participants work. In the third part of the survey, there were questions to measure the evaluation of the participant's health service quality.

A 5-point Likert scale is used to rate all scales (5=strongly disagree, 4=disagree, 3= neither agree nor disagree, 2=agree, 1=strongly agree).

3.2.4. Data Analysis Method

Several methods of data analysis were used to address the research questions. Firstly, the reliability of the scales was tested. Secondly, descriptive statistics such as means, and standard deviations were calculated to provide further information about the scales used in the study. Finally, the hypothesis was tested by multiple regression analyses.

Measure intended validity is its ability to measure the object to be measured accurately. Mathematically equal the square root of the coefficient of stability. To estimate the sincerity of the scale has been the questionnaire after the completion of the initial preparation of some of the arbitrators' academics professors at the university in this area to identify their opinions regarding the appropriateness of the questionnaire from the scientific point of view to achieve the objectives of the research, as well as to identify their views on the extent and clarity of drafting the questionnaire items. In the light of observations, arbitrators have been rebuilding the questionnaire to take final form.

It is intended to measure reliability statically the internal consistency between its words, which means the scale's stability and not to contradict itself. The scale gives the same results if it is measured at the same times in a row. There are several methods for calculating the scale's reliability, such as a method - retest and balanced tests between tests Parallelism and Midterm Hash Division Method - Halfway and Cronbach Alpha (0.898 = 89.8%).The higher the reliability coefficient value per share, the higher the constancy, and the closer to zero, the less stable Cranach's method and the derivative equations.

It depends on calculating the correlations between the signs of the stability groups. We have divided the test into several parts equal to the number of sections.

The Cronbach Mathematical Equation formed as follows

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

N = Number of items

C.bar = Average internal contrast between elements

V.bar = Average total variance of elements

Re-application of the instrument in similar circumstances means that we get the same results, the value of Alpha Cronbach always ranges from (0-1), the value of Alpha Cronbach, which is equivalent to 60% of the lowest acceptable value to judge the search tool or the questionnaire honestly. The higher the alpha coefficient, the greater the degree of consistency and truthfulness between the questionnaires.

3.3. Results

The results in this section are presented in five parts. In these parts, the findings relating to the sample demographics, descriptive statistics, validity and reliability analyses, and test of hypotheses are discussed, respectively.

3.3.1. Sample Demographics

The sample of this research was 194 employees who work in three hospitals in Salah al-Din Governorate / Iraq. Demographics results include gender, age groups, academic qualification, job title, and employees' length of experience.

(A) Gender:

The following table shows the percentages and the number of participants according to their genders.

Table 1. Distribution of Participants' Gender

Variables	Categories	Samples	Percentage
Gender	Male	113	58.3 %
	Female	81	41.7 %
	TOTAL	194	

According to Table 1, the number of male participants in the questionnaire reached (113), and the number of females participants (81) and the percentage of male participation reached (% 94) the percentage of females' participation (% 41). This finding indicates that more (males) have predicted the impact of the components of information systems on health quality.

(B) Age:

The following table shows the age differences for participating in the survey.

Table 2. Distribution of Participants' Age

Variables	Categories	Samples	Percentage
Age	20	4	2.06%
	20-29	55	28.35%
	30 -39	69	35.56%
	40 -49	51	26.28%
	Over 50	15	7.73%
	TOTAL	194	

The number of samples participating in the questionnaire from 20 years old and over was (4) samples with a percentage of (2.06%). In contrast, the samples of participation in the age groups between (20-29) years amounted to (55) samples amounted to (28.35%), while the number of participation samples in the age groups between (39-30) years amounted to (69) samples amounted to (28.35%). The participants in the age groups (30-39) years (69) samples with a percentage of (35.56%).The number of participants in the age groups (40-49) years was about (51) samples with a participation rate of (26.28%) in the questionnaire. As for the last category participating in the questionnaire, their ages ranged between more than (50) years and amounted to (15) samples, and the participation rate was (7.73%).

(C) The level of education:

Table 3 shows the education level of participants.

Table 3. Distribution of Participants' Education Level

Variables	Categories	Samples	Percentage
Education	Post-graduate	8	4.1%
	Bachelor's Degree	114	58.8%
	Under-graduate	72	37.1%
	TOTAL	194	

The participants of the survey were classified into three groups due to their educational level. The groups are post-graduate, bachelor's degree, and under-graduate. According to table 3, (8) participants had post-graduate; (114) participants had bachelor's degrees, and (72) participants had under-graduate education levels.

(D) Duration of the experience

Table 4 shows the duration of participants' job experiences.

Table 4. Distribution of Participants' Experiences

Variables	Categories	Samples	Percentage
Experiences	1-5	58	29.9 %
	6-10	37	19.1 %
	11-15	46	23.7 %
	16-20	18	9.3 %
	More than 20	35	18.0 %
	TOTAL	194	

We find that the level of experience enhances the percentage of awareness of programs and technology and the ability to understand, as the access rate according to the questionnaire reached (58) a sample of people with experience between (1-5) years at a rate of (43%), The number of participants from other levels (6-10) years was (37) samples, with a participation rate of (19%). The number of samples at the level of work experience reached between (11-15) years 46 samples, at a rate of (23%). While the number of samples participating in the questionnaire that was conducted in three hospitals in Salah al-Din Governorate, with experience ranging between (16-20) years in work, (18) samples with a participation rate of (9%). As for the last category of participants with experience, which ranges from more than 20 years, the number of samples participating in the questionnaire was (35) samples with a participation rate of (18%).

(E) Job Position

Two types of employees which were medical personnel and management personnel, joined the survey. Table 5 shows the distribution of medical and management personnel.

Table 5. Distribution of Participants' Job Position

Variables	Categories	Samples	Percentage
Job Position	Management	83	42.8 %
	Medical	111	57.2 %
	TOTAL	194	

The participants of the survey were classified into two groups due to their jobposition. The groups are management employees and medical employees.

According to table 4, (83) participants were management employees; (111) participants were medical employees.

3.3.2. Descriptive Statistics

Descriptive statistics, which include a preliminary analysis, should be given before hypothesis tests. Table 5 shows the minimum, maximum, mean, std. deviation, skewness, and kurtosis. In the questionnaire form, 1 represents "Strongly Agree" and 5 represents "Absolutely disagree."

Table 6. Descriptive Statistics

Items	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
Managerial Information Systems			***1.71***	***0.56***	***0.05***	***-0.51***
Question 1	4	1	1.91	0.61	0.59	1.76
Question 2	4	1	1.85	0.56	0.67	3.16
Question 3	3	1	1.92	0.58	0.01	-.03
Question 4	4	1	2.04	0.80	0.64	.23
Question 5	4	1	1.89	0.83	0.84	.39
Question 6	4	1	2.10	0.80	0.58	.11
Question 7	5	1	2.01	0.78	0.94	1.75
Question 8	5	1	1.91	0.83	1.20	2.26
Question 9	5	1	2.11	0.81	0.84	1.17
Question 10	5	1	2.10	0.92	0.93	0.88
Quality of Health Services			***1.49***	***0.58***	***0.74***	***-0.42***
Question 1	4	1	1.64	0.67	1.17	2.40
Question 2	3	1	1.68	0.55	0.06	-0.64
Question 3	5	1	1.96	0.93	1.20	1.43
Question 4	5	1	1.97	0.88	1.34	2.63
Question 5	5	1	2.17	0.85	0.67	0.53
Question 6	5	1	1.83	0.73	1.29	3.52
Question 7	5	1	1.92	0.94	1.18	1.38
Question 8	5	1	1.95	0.96	1.16	1.27
Question 9	5	1	1.83	0.93	1.56	2.79
Question 10	5	1	1.56	0.79	2.00	5.65

Note: Questions can be seen from questionary form written in appendices.

According to Table 6, the overall usage level of management information system perception of the participants is very high (Mean=1.71). The item with the lowest mean regarding the usage level of management information system is "Are management information system employees quick to adapt to the changes?" (Mean=2.11), and the item with the highest mean is "The data will help identify problems and find solutions to them." (Mean=1.85).

According to Table 6, the participants' overall health services quality perception is very high (Mean=1.49). The item with the lowest mean regarding the health services quality is “The hospital adopts the database system in its work.” (Mean=2.17), and the item with the highest mean is “Hospital staff behavior increases patient confidence.” (Mean=1.56).

3.3.3. Reliability Analysis

Cronbach's alpha is used to calculate reliability coefficients for survey tools that use Likert scale response groups, whether triangular, pentagonal, or heptagonal, where Cronbach's alpha estimates the reliability of the tool's responses (questionnaire) assessed by subjects referring to tool stability. Cronbach's alpha ranges from zero to one, with higher values indicating that the items measure the same dimension. In contrast, if Cronbach's alpha is low (near 0), then some or all the elements do not count in the same size. There can also be negative numbers. A negative number indicates something is wrong with the data. Acceptable Cronbach's alpha values of 0.70 and above are good.

Cronbach's alpha also displays how well a set of points score in the given items for the expected score in the entire domain, even if that domain is heterogeneous. Cronbach's alpha is related to factor analysis, as Cronbach's alpha increases with the average correlation between the elements. Hence, animprovement tends to identify features that have correlations of similar size with most other aspects.

Table 7. Results of Reliability Analyses

Construct	Number of Items	Cronbach’s alfa (α)
Management Information System (m)	10	0.985
Quality of Health Services (q)	10	0.982

Table 7 shows that the scales' reliability values (α) are above the threshold value of 0,70 – means the scales used to collect data are reliable to obtain accurate data. In other words, the reliability of the scales was ensured. Table 8 and Table 9 show the total statics for management information systems and quality of health services, respectively.

Table 8. Results of Item Total Statics – Management Information Systems

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
m1	17.974	43.797	.922	.984
m2	18.036	44.677	.880	.986
m3	17.963	44.325	.906	.985
m4	17.845	41.064	.967	.982
m5	17.994	41.166	.917	.984
m6	17.788	41.079	.959	.983
m7	17.876	41.321	.963	.982
m8	17.979	41.077	.928	.984
m9	17.778	41.034	.957	.983
m10	17.788	39.608	.959	.983

Table 9. Results of Item Total Statics – Quality of Health Services

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
q1	16.917	51.475	.894	.981
q2	16.886	53.210	.869	.983
q3	16.597	47.392	.955	.979
q4	16.587	48.119	.950	.979
q5	16.391	49.359	.878	.981
q6	16.732	50.332	.930	.980
q7	16.644	47.515	.944	.980
q8	16.613	46.829	.969	.979
q9	16.732	47.410	.956	.979
q10	17.000	50.176	.871	.982

3.3.4. Tests of Hypotheses

This study was conducted to understand further the effects of management information systems on the quality of health services. According to this information, the main hypothesis was determined as “H1: The management information system has a statistically significant effect on the quality of health services.” Multiple regression analysis was used to test the main hypothesis of the research.

The secondary purpose of the study is to determine whether the perception of management information system level and health services quality of employees differs according to demographic characteristics. Multiple t-tests or analyses of variance (ANOVA) were used to assess the effect of demographic variables.

3.3.4.1 Regression Analysis Results

The findings of the regression analyses carried out to determine the effect of management information systems on the quality of health services are presented in Table 10.

Table 10. Results of Regression Analyses

Variables	**Dependent Variables**	
	Quality of Health Services	
Control Variables	**Coefficients (β)**	**Significance Value (p)**
Constant	0.673*	0.004
Gender	0.199*	0.000
Age	0.053***	0.055
Education	0.096***	0.065
Experience	0.074*	0.000
Job Position	0.103	0.074
Independent Variable		
Management Information System	**0.658***	**0.000**
F Value	55.629*	0.000
R^2	0.801	
Adjusted R^2	0.629	
Durbin-Watson	0.176	

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

The regression analysis results show that management information systems had a statistically significant effect on the quality of health services (H1: β=0.658, p<0.01). It means that the H1 hypothesis was confirmed. The coefficient of the management information system variable was a positive number. It means that the management information system level of the hospital had a positive effect on the quality of health services.

In addition to this result, some control variables, which are gender (β=0.199, p<0.01), age (β=0.053, p<0.10), education (β=0.096, p<0.10), and experience(β=0.074, p<0.01) also hadastatistically significant effect on the quality of health

services.Contrary, regression analysis results show that job position didn't have any statistically significant impact on the quality of health services.

The R^2 value of the research model was calculated as 0.801 (%80), and the calculated adjusted R^2 value was 0.629 (%62.9). F value of regression analysis was calculated as 55.629 and found statistically significant.

3.3.4.2 Multiple t-tests and Analysis of Variance (ANOVA) Results

In this research, Multiple t-tests and Analysis of Variance (ANOVA) were used to analyze the sub-hypothesis of research. The results were presented separately in terms of demographic variables.

(A) Gender

In the survey form, there were male and female options for gender. At the analysis process, 1 represented male and 2 represented female option. Two hypotheses (H2 and H3) were created for gender in this research.

Hypothesis 2 predicted that the management information systems level perception of employees differs according to gender.

Hypothesis 3 predicted that the health services quality perception of employees differs according to gender.

To examine the statistical difference between the scale means for gender, a t-test was used. The results of the t-test for gender are presented in Table 11.

Table 11. Table 11. t-Test Results for Gender

Variable	Gender	Mean	SD	t-value	p value
Management Information System	Male *(n=113)*	1.74	0.62	0.783	0.435
	Female *(n=81)*	1.68	0.47		
Quality of Health Services	Male *(n=113)*	1.61	0.63	3.76*	0.000
	Female *(n=81)*	1.30	0.46		

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

As Table 11 shows, no significant differences were found in the responses of females and males regarding their reported perceptions of management information system level. However, significant differences were found in the responses of females and males regarding their reported perceptions of health service quality. In the view of Table 10, it can be said that H2 was not supported; on the contrary,H3 was confirmed.

(B) Age

In the survey form, there were 5 options for age which were under 20 years old, 20-29 years old, 30-39 years old, 40-49 years old, and 50 years old and over. At the analysis process, 1 represented under 20 years old, 2 represented 20-29 years old, 3 represented 30-39 years old, 4 represented 40-49 years old, and 5 represented 50 years old and over option.

The number of samples participating in the questionnaire from under 20 years was (4) samples, while the samples of participation in the age groups between 20-29 years were (55) samples, while the number of participation samples in the age groups between 30-39 years amounted to (69) samples. The participants in the age groups 30-39 years (69) samples and the number of participants in the age groups 40-49 years were (51) samples in the questionnaire. As for the last category participating in the questionnaire, their ages ranged between more than 50 years were (15) samples.

Two hypotheses (H4 and H5) were created for gender in this research.

Hypothesis 4 predicted that the perceived level of management information systems employees differs according to age.

Hypothesis 5 predicted that the health services quality perception of employees differs according to age.

To examine the statistical difference between the scale means for gender, an ANOVA test was used. The results of ANOVA for gender were presented in Table 12.

Table 12. ANOVA Results for Age

Variable	Age	Mean	SD	F test	p value
Management Information System	Under 20 years *(n=4)*	1.000	0.000	4.263*	.003
	20-29 years *(n=55)*	1.563	0.500		
	30-39 years *(n=69)*	1.797	0.502		
	40-49 years *(n=51)*	1.862	0.663		
	50 years and older *(n=15)*	1.600	0.507		
Quality of Health Services	Under 20 years *(n=4)*	1.000	0.000	5.684*	0.000
	20-29 years *(n=55)*	1.345	0.479		
	30-39 years *(n=69)*	1.594	0.523		
	40-49 years *(n=51)*	1.666	0.739		
	50 years and older *(n=15)*	1.066	0.258		

Note: *p<0.01; **p<0.05; ***p<0.10; N=194.

As is shown in Table 12, significant differences were found regarding both perceptions of management information systems and health services quality. In other words, there were significant differences in the scores on the management information

systems between the groups, and there were significant differences in the scores on the health services quality between the groups. Therefore, it can be said that hypothesis 4 and hypothesis 5 were both supported.

Post hoc (LSD) shows us that which groups' answers differ. So that, post hoc (LSD) test results were given separately for management information systems and health services quality.

Table 13. Post Hoc (LSD) Test Results for Age – Management Information Systems

Dependent Variable	Age (A)	Age (B)	Mean Difference (A – B)	Std. Error	Sig.
Management Information System	Under 20	20 - 29	**-.563****	.282	.048
		30 - 39	**-.797***	.280	.005
		40 - 49	**-.862***	.283	.003
		50 and Over	**-.600*****	.307	.052
	20 - 29	Under 20	**.563****	.282	.048
		30 - 39	**-.233****	.098	.019
		40 - 49	**-.299***	.106	.005
		50 and Over	-.036	.159	.819
	30 - 39	Under 20	**.797***	.280	.005
		20 - 29	**.233****	.098	.019
		40 - 49	-.065	.100	.516
		50 and Over	.197	.155	.207
	40 - 49	Under 20	**.862***	.283	.003
		20 - 29	**.299***	.106	.005
		30 - 39	.065	.100	.516
		50 and Over	.262	.160	.103
	50 and Over	Under 20	**.600*****	.307	.052
		20 - 29	.036	.159	.819
		30 - 39	-.197	.155	.207
		40 - 49	-.262	.160	.103

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

In Table 13, bold written numbers under the mean difference column show statistically significant differences between the groups. With the view of this information, post-hoc (LSD) test results show that there were statistically significant

differences between the groups with the under 20 (Mean: 1.000) and the groups of 20-29 (Mean: 1.563), 30-39 (Mean: 1.797), 40-49 (Mean: 1.862) and 50 and over ((Mean: 1.600).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 20-29 (Mean: 1.563) and the groups of under 20 (Mean: 1.000), 30-39 (Mean: 1.797), 40-49 (Mean: 1.862).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 30-39 (Mean: 1.797) and the groups under 20 (Mean: 1.000), 20-29 (Mean: 1.563).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 40-49 (Mean: 1.862) and the groups under 20 (Mean: 1.000), 20-29 (Mean: 1.563).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 50 and over (Mean: 1.600) and the group under 20 (Mean: 1.000).

Table 14. Post Hoc (LSD) Test Results for Age – Health Services Quality

Dependent Variable	Age (A)	Age (B)	Mean Difference (A – B)	Std. Error	Sig.
Health Services Quality	Under 20	20 - 29	-.345	.290	.235
		30 - 39	**-.594****	.287	.041
		40 - 49	**-.666****	.290	.023
		50 and Over	-.066	.315	.833
	20 - 29	Under 20	.345	.290	.235
		30 - 39	**-.248****	.101	.015
		40 - 49	**-.321***	.108	.004
		50 and Over	**.278*****	.163	.089
	30 - 39	Under 20	**.594****	.288	.041
		20 - 29	**.248****	.101	.015
		40 - 49	-.072	.103	.485
		50 and Over	**.527***	.159	.001
	40 - 49	Under 20	**.666****	.290	.023
		20 - 29	**.321***	.108	.004
		30 - 39	.072	.103	.485
		50 and Over	**.600***	.164	.000
	50 and Over	Under 20	.066	.315	.833
		20 - 29	-.278	.163	.089
		30 - 39	**-.527***	.159	.001
		40 - 49	**-.600***	.164	.000

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

In Table 14, bold written numbers under the mean difference column show a statistically significant difference between the groups. With the view of this information, post-hoc (LSD) test results show that there were statistically significant differences between the groups under 20 (Mean: 1.000) and the groups of 30-39 (Mean: 1.594) and 40-49 (Mean: 1.666).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 20-29 (Mean: 1.563) and the groups of 30-39 (Mean: 1.594), 40-49 (Mean: 1.666), and 50 and over (Mean: 1.066).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 30-39 (Mean: 1.797) and the groups of under 20 (Mean: 1.000), 20-29 (Mean: 1.345), and 50 and over (Mean: 1.066).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 40-49 (Mean: 1.862) and the groups of under 20 (Mean: 1.000), 20-29 (Mean: 1.345) and 50 and over (Mean: 1.066).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 50 and over (Mean: 1.600) and the group of 30-39 (Mean: 1.594) and 40-49 (Mean: 1.666).

(C) Education

In the survey form, there were 3 options for education level: Post-graduate, Bachelor's Degree, and undergraduate. At the analysis process, 1 represented post-graduate, 2 represented bachelor's degree, 3 represented under-graduate option.

The number of samples participating in the questionnaire form with post-graduate was (8); bachelor's degree was (114) and under-graduate was (72).

Two hypotheses (H6 and H7) were created for gender in this research.

Hypothesis 6 predicted that the perceived level of management information systems employees differs according to education level.

Hypothesis 7 predicted that the health services quality perception of employees differs according to education level.

To examine the statistical difference between the scale means for gender, an ANOVA test was used. The results of ANOVA for gender were presented in Table 15.

Table 15. ANOVA Results for Education Level

Variable	Age	Mean	SD	F test	p value
Management Information System	Post-graduate *(n=8)*	1.875	.353	15.288*	0.000
	Bachelor's Degree *(n=114)*	1.877	.550		
	Under-graduate *(n=72)*	1.444	.500		
Quality of Health Services	Post-graduate *(n=8)*	1.750	.462	21.010*	0.000
	Bachelor's Degree *(n=114)*	1.675	.616		
	Under-graduate *(n=72)*	1.166	.375		

Note: *p<0.01; **p<0.05; ***p<0.10; N=194.

As is shown in Table 15, significant differences were found regarding both perceptions of management information systems and health services quality for education level. In other words, there were significant differences in the scores on the management information systems between the groups, and there were significant

differences in the scores on the health services quality between the groups. Therefore, it can be said that hypothesis 6 and hypothesis 7 were both supported.

Post hoc (LSD) shows us that which groups' answers differ. So that, post hoc (LSD) test results were given separately for management information systems and health services quality.

Table 16. Post Hoc (LSD) Test Results for Education – Management Information Systems

Dependent Variable	Education (A)	Education (B)	Mean Difference (A – B)	Std. Error	Sig.
Management Information System	Post-graduate	Bachelor's Degree	-,002	,192	,991
		Under-graduate	**,430****	,196	,029
	Bachelor's Degree	Post-graduate	,002	,192	,991
		Under-graduate	**,432***	,079	,000
	Under-graduate	Post-graduate	**-,430****	,196	,029
		Bachelor's Degree	**-,432***	,079	,000

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

In Table 16, bold written numbers under the mean difference column show a statistically significant difference between the groups. With the view of this information, post-hoc (LSD) test results show that there were statistically significant differences between the groups with the post-graduate (Mean: 1.875) and the groups of under-graduates (Mean: 1.444).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the bachelor's degree (Mean: 1.877) and the groups of under-graduates (Mean: 1.444).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the under-graduates (Mean: 1.444) and the groups of post-graduates (Mean: 1.875) and bachelor's degree (Mean: 1.877).

Table 17. Post Hoc (LSD) Test Results for Education – Health Services Quality

Dependent Variable	Education (A)	Education (B)	Mean Difference (A – B)	Std. Error	Sig.
Health Services Quality	Post-graduate	Bachelor's Degree	.074	.195	.703
		Under-graduate	**.583***	.199	.004
	Bachelor's Degree	Post-graduate	-.074	.195	.703
		Under-graduate	**.508***	.080	.000
	Under-graduate	Post-graduate	**-.583***	.199	.004
		Bachelor's Degree	**-.508***	.080	.000

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

In Table 17, bold written numbers under the mean difference column show a statistically significant difference between the groups. With the view of this information, post-hoc (LSD) test results show that there were statistically significant differences between the groups with the post-graduate (Mean: 1.750) and the groups of under-graduates (Mean: 1.166).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the bachelor's degree (Mean: 1.675) and the groups of under-graduates (Mean: 1.166).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the under-graduates (Mean: 1.166) and the groups of post-graduates (Mean: 1.750) and bachelor's degree (Mean: 1.675).

(D) Experiences

In survey form, there were 5 options for experiences which were 1-5 years, 6-10 years, 11-15 years, 16-20 years, and over 20 years. At the analysis process, 1 represented 1-5 years, 2 represented 6-10 years, 3 represented 11-15 years, 4 represented 16-20 years, and 5 represented over 20 years option.

It was found that the level of experience enhances the percentage of awareness of programs and technology and the ability to understand, as the access rate according to the questionnaire reached (58) a sample of people with experience between (1-5) years at a rate of (43%), The number of participants from other levels (6-10) years was

(37) samples, with a participation rate of (19%). The number of samples at the level of work experience reached between (11-15) years 46 samples, at a rate of (23%). While the number of samples participating in the questionnaire that was conducted in three hospitals in Salah al-Din Governorate, with experience ranging between (16-20) years in work, (18) samples with a participation rate of (9%). As for the last category of participants with experience, which ranges from more than 20 years, the number of samples participating in the questionnaire was (35) samples with a participation rate of (18%).

Two hypotheses (H8 and H9) were created for gender in this research.

Hypothesis 8 predicted that the perceived level of management information systems employees differs according to experiences.

Hypothesis 9 predicted that the health services quality perception of employees differs according to experiences.

To examine the statistical difference between the scale means for gender, an ANOVA test was used. The results of ANOVA for gender were presented in Table 18.

Table 18. ANOVA Results for Experiences

Variable	Age	Mean	SD	F test	p value
Management Information System	1- 5 years *(n=58)*	1.362	.484	24.979	.000
	6 - 10 years *(n=37)*	1.864	.346		
	11 - 15 years *(n=46)*	2.021	.332		
	16 – 20 years *(n=18)*	1.166	.383		
	Over 20 *(n=35)*	2.028	.663		
Quality of Health Services	1- 5 years *(n=58)*	1.000	.000	45.101	.000
	6 - 10 years *(n=37)*	1.864	.346		
	11 - 15 years *(n=46)*	1.630	.531		
	16 – 20 years *(n=18)*	1.000	.000		
	Over 20 *(n=35)*	1.971	.706		

Note: *p<0.01; **p<0.05; ***p<0.10; N=194.

As is shown in Table 18, significant differences were found regarding both perceptions of management information systems and health services quality. In other words, there were significant differences in the scores on the management information systems between the groups, and there were significant differences in the scores on the health services quality between the groups. Therefore, it can be said that hypothesis 8 and hypothesis 9 were both supported.

Post hoc (LSD) shows us that which groups' answers differ. So that, post hoc (LSD) test results were given separately for management information systems and health services quality.

Table 19. Post Hoc (LSD) Test Results for Experience – Management Information Systems

Dependent Variable	Experience (A)	Experience (B)	Mean Difference (A – B)	Std. Error	Sig.
Management Information System	1 - 5	6 - 10	**-.502***	.097	.000
		11 – 15	**-.659***	.091	.000
		16 – 20	.195	.124	.118
		Over 20	**-.666***	.098	.000
	6 - 10	1 - 5	**.502***	.097	.000
		11 - 15	-.156	.101	.125
		16 - 20	**.698***	.132	.000
		Over 20	-.163	.108	.134
	11 - 15	1 - 5	**.659***	.091	.000
		6 - 10	.156	.101	.125
		16 - 20	**.855***	.128	.000
		Over 20	-.006	.103	.947
	16 - 20	1 - 5	-.195	.124	.118
		6 - 10	**-.698***	.132	.000
		11 - 15	**-.855***	.128	.000
		Over 20	**-.861***	.133	.000
	Over 20	1 - 5	**.666***	.098	.000
		6 - 10	.163	.108	.134
		11 - 15	.006	.103	.947
		16 - 20	**.861***	.133	.000

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

In Table 19, bold written numbers under the mean difference column show a statistically significant difference between the groups. With the view of this information, post-hoc (LSD) test results show that there were statistically significant differences between the groups with the 1 – 5 years (Mean: 1.362) and the groups of 6-10 years (Mean: 1.864), 11-15 years (Mean: 1.021) and over 20 years (Mean: 2.028).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 6-10 years (Mean: 1.864) and the groups of 1 – 5 years (Mean: 1.362) and 16-20 years (Mean: 1.166).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 11-15 years (Mean: 2.021) and the groups of 1 – 5 years (Mean: 1.362) and 16-20 years (Mean: 1.166).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 16-20 years (Mean: 1.166) and the groups of 6-10 years (Mean: 1.864), 11-15 years (Mean: 2.021) and over 20 years (Mean: 2.028).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups over 20 years (Mean: 2.028) and the group of 1 – 5 years (Mean: 1.362) and 16-20 years (Mean: 1.166).

Table 20. Post Hoc (LSD) Test Results for Experience – Health Services Quality

Dependent Variable	Experience (A)	Experience (B)	Mean Difference (A – B)	Std. Error	Sig.
Management Information System	1 - 5	6 - 10	**-.864***	.089	.000
		11 – 15	**-.630***	.083	.000
		16 – 20	.000	.114	1.000
		Over 20	**-.971***	.090	.000
	6 - 10	1 - 5	**.864***	.089	.000
		11 - 15	**.234****	.093	.013
		16 - 20	**.864***	.121	.000
		Over 20	-.106	.100	.288
	11 - 15	1 - 5	**.630***	.083	.000
		6 - 10	**-.234****	.093	.013
		16 - 20	**.630***	.117	.000
		Over 20	**-.340***	.095	.000
	16 - 20	1 - 5	.000	.114	1.000
		6 - 10	**-.864***	.121	.000
		11 - 15	**-.630***	.117	.000
		Over 20	**-.971***	.123	.000
	Over 20	1 - 5	**.971***	.090	.000
		6 - 10	.106	.100	.288
		11 - 15	**.340***	.095	.000
		16 - 20	**.971***	.123	.000

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

In Table 20, bold written numbers under the mean difference column show a statistically significant difference between the groups. With the view of this information, post-hoc (LSD) test results show that there were statistically significant

differences between the groups with the 1 – 5 years (Mean: 1.000) and the groups of 6-10 years (Mean: 1.864), 11-15 years (Mean: 1.630) and over 20 years (Mean: 1.971).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 6-10 years (Mean: 1.864) and the groups of 1 – 5 years (Mean: 1.000), 11-15 years (Mean: 1.630) and 16-20 years (Mean: 1.000).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 11-15 years (Mean: 1.630) and the groups of 1 – 5 years (Mean: 1.000), 6-10 years (Mean: 1.864), 16-20 years (Mean: 1.000), over 20 years (Mean: 1.971).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with the 16-20 years (Mean: 1.000) and the groups of 6-10 years (Mean: 1.864), 11-15 years (Mean: 1.630), and over 20 years (Mean: 1.971).

Post-hoc (LSD) test results also show that there were statistically significant differences between the groups with over 20 years (Mean: 1.971) and the group of 1 – 5 years (Mean: 1.000), 11-15 years (Mean: 1.630), 16-20 years (Mean: 1.000).

(E) Job Position

In the survey form, there were managerial and medical options for job positions. At the analysis process, 1 represented managerial employees, and 2 described medical employees' choices. Two hypotheses (H10 and H11) were created for job positions in this research.

Hypothesis 10 predicted that the management information systems level perception of employees differs according to the job position.

Hypothesis 11 predicted that the health services quality perception of employees differs according to the job position.

To examine the statistical difference between the scale means for gender, a t-test was used. The results of the t-test for gender are presented in Table 21.

Table 21. t-Test Results for Job Position

Variable	Gender	Mean	SD	t-value	p value
Management Information System	Managerial *(n=83)*	1.554	.500	-3.646*	.000
	Medical *(n=111)*	1.837	.580		
Quality of Health Services	Managerial *(n=83)*	1.277	.450	-4.583*	.000
	Medical *(n=111)*	1.648	.627		

Note: *p<0.01; **p<0.05; ***p<0.10; N=194

As Table 21 shows, statistically significant differences were found in managerial and medical employees' responses regarding their reported perceptions of management information system level and health service quality. In the view of Table 20, it can be said that H10 and H11 were both confirmed.

3.3.5. Results of Hypotheses

The test and findings of the research hypothesis were given under the previous topic. In this topic, the results of the whole research hypothesis are shown in Table 21. The research hypothesis of this study is as follows:

H1: The management information system has a statistically significant effect on the quality of health services.

H2: The employees' perception of management information systems level differs according to gender.

H3: The employees' perception of health services quality differs according to gender.

H4: The employees' perception of management information systems level differs according to age.

H5: The employees' perception of health services quality differs according to age.

H6: The employees' perception of management information systems level differs according to education.

H7: The employees' perception of health services quality differs according to education.

H8: The employees' perception of management information systems level differs according to experience.

H9: The employees' perception of health services quality differs according to experience.

H10: The employees' perception of management information systems level differs according to job position.

H11: The employees' perception of health services quality differs according to the job position.

Table 22. Results of Hypothesis

Hypothesis	Result
H1: The management information system has a statistically significant effect on the quality of health services.	Confirmed
H2: The employees' perception of management information systems level differs according to gender.	Not Supported
H3: The employees' perception of health services quality differs according to gender.	Confirmed
H4: The employees' perception of management information systems level differs according to age.	Confirmed
H5: The employees' perception of health services quality differs according to age.	Confirmed
H6: The employees' perception of management information systems level differs according to education.	Confirmed
H7: The employees' perception of health services quality differs according to education.	Confirmed
H8: The employees' perception of management information systems level differs according to experience.	Confirmed
H9: The employees' perception of health services quality differs according to experience.	Confirmed
H10: The employees' perception of management information systems level differs according to job position.	Confirmed
H11: The employees' perception of health services quality differs according to the job position	Confirmed

According to Table 21, which shows all research results as a whole, all research hypotheses were confirmed except hypothesis 2.

CONCLUSION

The components of management information systems and the quality of health services are among the essential main functions in modern management be\ause of their importance in health care. Therefore, information and the use of programs, devices, and technology have become the necessity of the times that cannot be avoided to obtain the best service for citizens and the country. Information, whether medical or administrative, is a valuable resource. The health institution should use it to improve its services by gathering it promptly, processing it, and then putting it to good use in terms of activating Medical and administrative registration systems from the retention of disease data, personal pathological and therapeutic data. The hospital information system contributes to the realization of many benefits for service beneficiaries and health professionals.

Management information systems are lacking in the public sector than the private sector. Hospitals in the private sect\ are more in quality for their services. The reason is the availability of requirements and components of management information systems, including programs, devices, and others. Among the components of management information systems are represented in their dimensions: hardware, software, people, data, and information quality. The literature reviews show that the usage level of management information technology affects the health services quality of hospitals. In the light of this view, the main research problem of this study was determined as “If usage level of management information system affects health services quality of hospitals which are in Salah Al-Din / Iraq or not.” In addition to the main research problem, there were 11 research hypotheses determined and tested in this research.

The research was conducted in three government hospitals in Salah al-Din Governorate –Iraq. A questionnaire was conducted on a group of administrative and medical employees to determine the relationship between the components of management information systems and the quality of health services in these hospitals. Two hundred questionnaires were distributed, and 194 questionnaires were valid for analysis.

The research consists of an introductory chapter, then two chapters for the theoretical side, and a chapter on previous studies. The fourth and final chapter includes the results and analyses reached by the researcher through the research.

The main hypothesis of research (H1) was tested by multiple regression analyses. In this research, Multiple t-tests and Analysis of Variance (ANOVA) were used to analyze the sub-hypothesis of research (H2 – H11).

The main hypothesis of the research, "The management information system has a statistically significant effect on the quality of health services." was confirmed by multiple regression analysis for this research data. It shows that if hospitals increase their usage level of management information systems, the hospital's health services quality would also increase dependently or vice versa. Based on this finding, it can be said that hospitals should invest in management information systems. Because as we know, health service quality makes a positive contribution to the profitability of the enterprise. This finding is consistent with Ensour 2014, Victor al et 2013, Sumathi 2012, and Al Damur 2012.

We also found that the perceived level of management information systems employees didn't differ according to gender. Both male and female participants had the same perception about the usage level of management information systems. On the contrary, we found that female participants had lower health services quality perception than male participants. This finding can be attributed to the fact that women have a more detailed structure.

According to ANOVA test results, we found that both the health services quality and perception usage level of employees' management information system differs due to age. The results showed that younger participants had a lower perception of health services quality and management information system usage than younger participants. Similar results were seen for experiences. The results showed that participants with high experiences had lower health services quality and management information system usage level perception than participants with low experiences. So that, it can be said that with experience, employees have more information about the job and evolves into a more detailed structure.

For education, ANOVA test results showed that under-graduated employees had higher health services quality and perception usage level of management information system than employees with bachelor's degree and post-graduate. We

thought that under-graduated employees could be low-level workers, so that it is difficult for them to understand the whole business process. Based on this argument, it can be said that if someone has a larger area of control, that person needs a management information system overly. In addition to this, the higher-educated person has a higher perception of quality.

Lastly, medical employees had a lower perception of health services and management information system usage than managerial employees. These results could depend on the fact that management information systems for medical are more expensive than managerial ones. So that, hospitals probably don’t have enough information systems for medical employees. The lack of medical information systems can cause poor health services quality perception for medical employees.

Depending on research results, we can recommend that:

- Developing the capabilities and skills of all hospital staff to apply the dimensions of health service quality to develop the health services provided by the hospital.
- Hospital management should adopt an approach to link the components of the management information system to the quality of the health service.
- Hospital management should raise its commitment to quality standards and embody it through the concepts of quality throughout hospitals. And set a strategic vision and clear goals for hospitals.
- Hospital management should provide services based on patients' expectations of health services.

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APPENDIX

QUESTIONNAIRE

T.C

KARABUK UNIVERSITY

Dear Mr./Miss/Mrs.

This questionnaire is a part of master Thesis titled:

The role of components of management information systems on achieving the quality of health services

Therefore. I am looking forward to receive your answers to questions listed in the attached questionnaire. The data/ information you are going to provide here will be treated and processed confidentially and will be used only for scientific Research.

Thank you very much for your time and co-operation

The Researcher--- Arkan Talib Rashid

Part 1

Personal Data

Please fill in your personal data. All information provided will be used only for scientific Research Purposes

Sex:

Male Female

Age

Under20 20-29 30-39 40-49 More than 50

Education Level

Under-Graduate Bachelor's Degree Post-graduate

Length of service Experience

1--5 ( ) 6--10 ( ) 11--15 ( ) 16--20 ( ) More than 20 years( )

Cares job

Administrative Health

Part 2

1. First. Questions about the independent variable of management information system components whose dimensions.

	Strongly Agree 1	Agree 2	Neutral 3	Disagree 4	Absolutely disagree 5
1. Data and speed cooperation in administrative processes is being done in hospitals.					
2. The data will help identify problems and find solutions to them.					
3- The data in the hospital will be updated continuously.					
4. Database prevents stored data recurrence .					
5. The hospital should update its equipment in devices and medical supplies used continuously.					
6. Is patient resting places and waiting places and doctors and employees to what extent suitable?					
7. Employees and managers. to what extent do they fit their mission with technical specialists?					
8. Do employees who work in the management information system specialize in their work?					
9. Are management information system employees quick to adapt to the changes?					
10. Do management information workers have a high ability to deal with available software and material supplies?					

2- Second: The dependent variable: Health services for quality (represented in their dimensions) are tangible.

	Strongly Agree 1	Agree 2	Neutral 3	Disagree 4	Absolutely disagree 5
1. Modern equipment has an impact on the quality of hospital services					
2. Quick response to providing care for patients when necessary has an impact on the quality of service					
3. The hospital seeks to solve the problem of patients					
4. Hospital staff have a response to patients' questions.					
5. The hospital adopts the database system in its work.					
6. Hospital management takes care of patients.					
7.Health workers have the information and knowledge needed to meet patients' needs.					
8.The staff work according to the needs of the hospitals.					
9.Take care of the patient in hospitals as much as possible and their needs.					
10. Hospital staff behavior increases patient confidence.					

Thanks very much for your co-operation…

CURRICULUM VITAE

Arkan Talib RASHID graduated from elementary and basic education in Salah al-Din. He completed his secondary education at Ibn Khaldoun High School. after which he completed the institute in 2010. after which he worked as an administrative employee in a health institution. and he started his bachelor's program in the Department of Business Administration at the University of Kirkuk in 2014. Then in 2019. a postgraduate student was accepted at Karabük University in Turkey

CONTACT INFORMATION

Address: Karabük University