The use of Artificial Intelligence Systems as a Tool to differentiate in Quality and Competitiveness: Field Study of the Hospital Sector in Khartoum State

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ABSTRACT
In this paper, we describe the use of techniques artificial intelligence in the treatment of diseases.

General Terms
Artificial Intelligence , Expert System

Keywords
Artificial Intelligence, Intelligent System, Expert System)

1. INTRODUCTION
In any society, hospitals represent the cornerstone of health care and development and the fight against infectious and non-communicable diseases. Hospitals are an essential core of the health services economy.

It is widely believed that hospitals are still dealing with modern information systems, especially artificial intelligence systems. Although artificial intelligence enables an enterprise to perform efficiently and efficiently, it contributes to the preparation of reports and the provision of required databases, which means improving the quality of decisions and services based on this data , The proportion of artificial intelligence systems used in hospitals is limited. This may be due to a number of reasons, the most important of which is the view of senior management and hospital administrators on the application of the artificial intelligence system that these systems are considered additional costs, In addition to his term as a complex process and it requires high skills.

The inability of some hospital administrators to benefit from artificial intelligence places the organization in a competitive position, not a pioneer. The subject of industrial intelligence is one of the topics to be considered. It is important to contribute to the success of health projects of all kinds and develop them within an integrated administrative program. This study deals with the dimensions of information systems technology affecting the formation of the dimensions of the digital organization and the definition of the digital organization behind the application of artificial intelligence as the intellectual mind of the digital organization serves decision-maker in decision-making in high quality. This study focuses on the importance of industry and decision-making in hospitals based on intelligence applications In order to improve the quality of services.

2. IMPORTANCE
Hospitals in all types and fields have a prominent and effective role in health care and the economic progress of their role in providing health services, in addition to their importance in health and social development. Artificial intelligence represents an effective role in the decision-making process which improves the quality of hospital services.

3. THE STUDY PROBLEM
The rapid changes in technology require medical professionals to keep pace with these developments so that they can raise their level of service. Therefore, we need to develop and research in the field of modern technology systems, especially artificial intelligence systems, although these systems are expensive but necessary Hospitals have a key role in putting the hospital in the leading role and it is becoming increasingly important in a rapidly changing competitive environment.

The problem of the study is that some hospitals and small clinics still use the manual system in the preservation of files, which led to the lack of access to data and information ready for the appropriate doctor and management alike, which leads to the following:

1 - Lack of ability to plan well since the information is not available in a timely manner and in the appropriate form in addition to the difficulty of retrieval and treatment.

2 - lack of access to hospitals to the standards of quality and comprehensive, which enable them to measure the level of general performance.

3. Weak competitiveness.

Artificial intelligence is one of the few systems used in hospitals, which leads to a decrease in the quality of medical services and increased costs and waiting hours in hospitals. Thus, the problem of research lies in answering several questions, including:

• How well artificial intelligence is used in hospitals

• The role of artificial intelligence in the development of hospital performance

• The role and effectiveness of artificial intelligence in supporting hospitals to respond positively to the environmental influences and variables surrounding the institution.

4. OBJECTIVES
The study aims to achieve the following objectives:

1- Definition of hospitals and their importance in health, economic and social development

2 - Identification of artificial intelligence used in hospitals

3- Identifying obstacles to the use of artificial intelligence in hospitals and its causes.

4. The relationship between industrial intelligence and the quality of medical services.

5 - Adapting artificial intelligence to solve some of the problems faced by hospitals.

6 - Employ artificial intelligence to upgrade hospitals in terms of competitive quality.

7- The extent of the senior management's belief in hospitals in supporting the use of artificial intelligence.

Study hypotheses:

1 - There is an inverse relationship between the acceptance of senior management of applications of artificial intelligence and the age group of the manager.

2 - There is a relationship between the acceptance of the senior management of the applications of artificial intelligence and the scientific qualification of the Director

3 - There is a direct relationship between the integration of information between departments and the effectiveness of decision-making

4 - There is a direct relationship between the use of artificial intelligence applications and improve the quality of decisions

5. There is a direct relationship between the use of artificial intelligence applications and discrimination in services

6. There is a positive relationship between the use of electronic services and excellence in the provision of medical services

7. There is a positive relationship between making decisions based on the needs of patients and their satisfaction with the electronic medical services provided to them

5. METHODOLOGY
The study follows two approaches:

1 - The analytical descriptive approach, which depends on the knowledge of Arabic and Western references and previous research in this field.

2 – Practical approach, which depends on the design of the components and applied one of the languages of artificial intelligence and then analyze their data to reach the conclusions and recommendations for the subject of study.

The Study sample

A sample of hospitals will be selected to determine the extent of the use and obstacles of application and the impact of industrial intelligence systems in these hospitals. The sample will be based on three major hospitals in Khartoum state. In the administration, doctors and patients, in order to identify the extent to which industrial intelligence in these hospitals is applied by applying the entities at these levels.

Study limits:

The idea of artificial intelligence will be applied to three hospitals in Khartoum state

- Time limits: six months

- Spatial boundaries: Khartoum state

Data collection tools:

The data will be collected by means of the office tools, which are access to foreign and Arabic references as well as internet research sites and experts at each of the predefined levels. Intelligent database will be designed and distributed to hospitals and applied to the use of artificial intelligence.

6. PREVIOUS STUDIES
6.1 First study: study (King Hammam Mohammed Osman 2015) entitled

"Building Intelligent Medical System to Treat Depression"

The purpose of this research is to design and develop an advanced computer system based on artificial intelligence technology and expert systems. The computer is used to provide the optimal solution in a manner that simulates the way of thinking of the expert human "specialist doctor" as well as to identify depressive conditions as quickly as the specialist.

The tool was used to draw the knowledge of the specialist doctor through interviews and meetings between the researcher and the doctor concerned, and was built in the language of the language Visual Basic because of its ease of use and speed of performance.

It has been concluded that the system can diagnose the depressive condition of the patient and describe the appropriate drug .

6.2 The Second study: study (Gadullah Hamed Gad Allah Adam 2014) entitled

"Building an Expert System for the Diagnosis of Internal Diseases" .

Building an expert system for the diagnosis of internal diseases .

The aim of this research is to build an expert system that diagnoses and analyzes internal diseases (gastrointestinal diseases, chest diseases, respiratory diseases and endocrine diseases) by introducing the symptoms of the patient and giving appropriate treatment.

A knowledge base containing the facts and laws of internal diseases was designed using the visual prolog language, and a user interface and subprogrammes were designed to supplement the system of diagnosis of internal diseases.

The program is designed to receive the complaint of the patient and then the program to create a list of all possible diseases based on the symptoms entered and then compare the symptoms entered with the main symptoms of each disease and exclude diseases that do not meet the condition, and then the program displays the disease in the page as the result of diagnosis with the presentation of the recipe Treatment, depending on age, weight and permanent disease, if any.

The system can not determine the type of disease with less than three symptoms.

6.3 The Third study: a study (Maryam Amin Taha 2016) entitled:

"Building an expert system to diagnose stomach germ"

The aim of this study is to design an expert system to detect stomach germs at Royal Care Hospital, where stomach germ

is spread all over the world and is carried by about half of the world's population.

The deductive approach was used to formulate the hypotheses and structure of the research using the method of case study, collection, classification, presentation, analysis and interpretation of the study data for the laboratory section of the hospital using a computer system in the language of Oracle. The system produces the required reports periodically and in a high quality and more accurate. This saves time and effort when searching for a file and saving files for as long as possible.

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