

## The Impact of Determinants of the Success and Failure of the Application of Information Systems in Libyan Petroleum Companies

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### ABSTRACT

The research aims to study the extent of the impact of the use and application of information systems on petroleum companies in Libya, as well as monitoring the current situation of these devices by highlighting the most important problems they face, and the most important obstacles that prevent the optimal use of information systems. These problems faced by oil companies in Libya are represented in the belief that there is no urgent need to apply information systems, lack of coordination, waste of money and effort, and incomplete communication and information infrastructure. The success or failure of information systems and the material component affects the success or failure of information systems and the support of senior management affects the success or failure of information systems. By surveying the views of the beneficiaries of the information outputs of the system and their suitability to their needs to ensure their use of the system and their conviction in it.

### INTRODUCTION

Information is one of the strategic resources in any administrative body, where it is not possible to perform many basic operations or take any decision without relying on information, and information in administrative bodies is an investment that can be strategically exploited to obtain a competitive advantage. Accordingly, the administrative bodies have come to view information systems as an area in which they can create opportunities or add value to them (Clegg et al., 1997).

There is no doubt that it is necessary to realize the enormous impact of the successive developments in technology and information systems on the petroleum companies in Libya and its reflection on the urban activities of the petroleum organizations. Many of the ways these devices perform their work and the means to achieve their goals will change and this will be accompanied by a change in many of the prevailing organizational beliefs. It has become imperative in light of information technology and systems that the petroleum companies in Libya rediscover themselves, decline the evaluation of their services, focus on the service applicant, organizational structure, and use technology. The success of these devices will depend more than before on understanding the nature of change and anticipating technology and using it in a way that employs its advantages (Mohamed et al., 2012). Building information systems in petroleum companies in Libya has become an urgent and inevitable necessity, as it has become a new source of strength for those administrative bodies that contribute to improving the efficiency and effectiveness of performance. Accordingly, the petroleum organizations must draw up policies and strategies to develop their information resources and stimulate the process of utilizing infor-

mation systems, with the aim of developing and developing these devices in line with the developments taking place, in order to achieve more effective growth in government services. Failure to initiate timely and effective activity in this field will have serious consequences related to the ability of the petroleum organizations to provide effective support for the economic and social development of the petroleum companies in Libya (Mami et al., 2021).

The application process begins with the thought of establishing the system and ends with the transformation of the new system into an integrated part of the organization's operations. The application of the system involves a change in the existing arrangements for the operation of information, and therefore it can be considered a behavioral phenomenon rather than a technological phenomenon.

## **DEFINE INFORMATION SYSTEMS**

Information systems are defined as systems that consist of a group of people, data records, and some manual and non-manual operations, and these systems generally deal with data and information for each system, and it can also be defined as a set of elements that overlap to collect, process, store and distribute information on a subject Systematically, in order to support the organization, control it, analyze it, and form a clear current and future perception of the subject under discussion. Information systems are a set of programs that are used to archive, manage and organize data, and process it with certain procedures established according to the work-flow mechanism in the organization, in order to obtain the final outputs. created to serve its business (Mohamed et al., 2012).

## **THE HISTORY OF THE INCEPTION OF INFORMATION SYSTEMS**

The emergence of information science as one of the branches of computer science, in order to try to assimilate and understand the philosophy of information technology management within organizations and institutions of all kinds, and then developed to become a field in itself in management, as it is an important focus of research in management studies, and it is noteworthy that information systems are studied in major universities and trade schools around the world. Information systems, along with information technology, financial resources, raw materials, and machines, are one of the five basic resources available to enterprise managers, and the position of the head of the information department has been created in many companies, which is equivalent in importance to many other positions such as the CEO, head of the finance department, and the head of operations, head of technology, etc. The development of information systems, use, and management of the technical structure of information in the organization, and therefore companies, shifted from relying on production to relying on knowledge in the information age that followed the industrial age, and thus competition in the market has become on process and innovation rather than competition on products and production (Ahmad and Elhuni, 2014). The focus has also shifted to the production process and the services accompanying it, and thus the workers, their experiences and their innovations have become one of the most important assets of the company in our time, and in order for the owner of the enterprise to be able to compete in the market, he or she must have a strong information technology base for the ability to innovate and develop. In the fields of work in information systems, management information systems, strategic planning for information systems, and information systems development in general.

## **PROBLEM STATEMENT**

How do we maximize the strengths of the information systems application system and take advantage of external opportunities to obtain the best hardware and software on the one hand and minimize the weaknesses in them by reducing the cost of implementing the system and creating the factors that help its success while avoiding external threats that cause the loss of the value of using information systems. The problem can be formulated in the question: Are there reasons for the success or failure of information systems in petroleum companies in Libya? This question can be divided into several questions: Does the human factor affect the success or failure of information systems? Does the physical factor affect the success or failure of information systems? Does senior management support affect the success or failure of information systems?

## **RESEARCH HYPOTHESIS**

The basic hypothesis is that there are no reasons for the success or failure of information systems in petroleum companies in Libya.

Thus, it can be divided into several hypotheses as follows:

- The human factor does not affect the success or failure of information systems
- The physical element does not affect the success or failure of information systems
- Senior management support does not affect the success or failure of information systems

## DEFINITION OF THE APPLICATION

There are many definitions of the application, but a narrow definition of the application of information systems refers to one of the stages of developing and building the system, during which the transition to the use of the new system takes place. According to this view, the application process begins with the emergence of the first idea of the system and ends with the transformation of using the system into a routine process within the organization (Altriki and Alarafee, 2020). The last definition confirms that the application is an extended process as it is of a behavioral nature because it involves bringing about a change in the behavior of operating information among users and also leads to a change in the balances of power resulting from the existing distribution of information resources.

## APPLICATION PROCESS

Many researchers have tried to explain the application process as a kind of organizational change (Kivijärvi and Zmud, 1993). The application process is divided into three stages, namely, breaking the deadlock, changing, and re-coherence. In the first stage, potential users are prepared to receive the system by increasing their awareness of the need for the system to be in place to improve their performance and that of the organization. The stage of breaking the deadlock coincides with the stages of the feasibility study, analysis, and design of the system. As for the change phase, the user tends to adopt a new behavior pattern, and that coincides with the process of switching to the actual use of the system.

Finally, the stage of re-coherence, where the new system turns into an integrated part of the organization, and this is linked to the acceptance of the system and the emergence of clear improvements in the performance of employees and the organization due to its use.

In addition to attempts to explain the application process, many researchers have been interested in building description models, determinants of the success of information systems application (Clegg et al., 1997).

## WHAT IS MEANT BY APPLICATION SUCCESS

The success of the application of information systems refers to the degree to which the information system achieves its goal from the point of view of its users. The cost/benefit analysis is one of the objective measures of the success of information systems, and it is based on comparing the cost of applying and operating the system with the returns resulting from its use, which is reflected in improving the performance of the organization as a whole. Some researchers have tried to develop measures based on the cost/benefit approach to measure success, but the difficulty of using these measures prompted researchers to move towards other, more measurable indicators. It is possible to review what is available from studies of differentiation between three groups of measures: measures of system performance, measures of the degree of use of system outputs, and measures of the degree of satisfaction with the various aspects of the system. The results of many previous studies confirmed the existence of a positive correlation between the level of system performance and both the degree of satisfaction and the degree of use. The degree of use refers to how much users consume the outputs of the information system. And many researchers believe that the degree of voluntary use is more honest in expressing the success of the application than forced use. The use is the tool through which the system affects the performance of decision makers and the performance of the organization as a whole. Meaning that the system must be used to become effective, but the extent to which the result is positive or negative depends on the characteristics of the system itself. As for satisfaction with the system, it refers to its ability to provide users with information needs, which can be reflected in the improvement in the level of performance resulting from the use of that information in making decisions.

Some researchers have classified system performance indicators in previous studies into measures of the system's impact on the performance of users, and measures of the system's impact on the performance of the system as a whole. The first group includes factors such as the time of decision-making and the improvement in the ability to analyze problems. As for measuring the impact of the system on the organization, it was based on indicators such as cost savings, labor reduction, etc. Some of these measures provide quantitative or monetary indicators of improvement in performance, while others are quantitative and depend on the users' personal judgment.

## DETERMINANTS OF THE SUCCESS OF THE APPLICATION OF INFORMATION SYSTEMS

Much information systems research has been concerned with studying the determinants of success/failure of information systems and these factors can be categorized into organizational factors, environmental factors, personal/individual factors, and technological factors.

Organizational factors include variables such as: the degree of senior management support for the system, the degree of organizational maturity of information systems, and the degree of users' participation in building and developing the system.

Environmental factors include variables such as the degree of change and complexity of the work environment.

Individual factors include variables such as age, training level, occupational level, and decision-making style.

As for the technological factors, they include variables such as the degree of technical complexity of the system and ease of use.

We will discuss in more detail a number of those variables, the importance of which became clear in determining the success of information systems, namely:

- (1) User participation.
- (2) Supporting the higher management of the system.
- (3) Personal factors such as age, occupational level, level of training.
- (4) Characteristics of decisions and the work environment.

## THE ULTIMATE BENEFICIARIES AND USERS OF THE SYSTEM

These constitute an important factor in the success or failure of any information system. The ultimate beneficiaries are the ones who will rely on the new computerized system to carry out their work and procedures that they used to do manually, perhaps for long periods of time. As for the users, they are the ones who will provide data and information to the developers, designers, and implementers of the new system. These people in the system may lead to its failure, as they may not provide the required information in a timely manner and they may help obstruct, complicate or impede the implementation process, and transmit negative opinions, ideas, and impressions to higher management, which negatively affects the implementation process. Design and implementation in addition to their training and removal of fear factors of losing work after new technological developments in the organization.

The most important technical and technical obstacles facing the process of optimal use of computer technology in the petroleum organizations in Libya can be summarized in the Arab organizations as follows: The difficulty of choosing the appropriate devices due to the large number of different types and systems, and the lack of clear bases for comparison between them, in addition to the rapid development of these machines. The matter is further complicated by the intensity of competition in the computer market, which makes the choice difficult. Sometimes some types and systems may impose themselves on the market, contrary to what the user wants to obtain. Problems include those related to the operation of equipment, such as malfunctions, speed of repair, and preventive maintenance operations, and the responsibility of the supplier companies and their commitment to implement the various undertakings, as well as the problems resulting from the irregularity of the electric current and other problems related to working conditions such as humidity, heat, and others. The high speed of aging electronic computers, which in most cases leads to major changes in existing systems, as this requires financial resources and a large period of time, which leads to the difficulty of conducting a correct evaluation or a real study of the feasibility or other important decisions are also not followed. This can only be done by conducting a feasibility study from a technical and economic point of view, which ultimately leads to a mismatch between the available capabilities and the actual needs.

## RESULTS

Based on the foregoing, it is clear that: There are reasons for the success and failure of information systems in petroleum companies in Libya. This can be divided into several results as follows:

- The human factor affects the success or failure of information systems
- The physical element affects the success or failure of information systems
- Top management support affects the success or failure of information systems

## RECOMMENDATIONS AND SUGGESTIONS

(1) The need for organizations to measure the level of success of the management information system that they own and the extent to which it achieves its set goals and on a periodic basis by surveying the views of the beneficiaries of the information outputs of the system and their suitability to their needs to ensure the extent of their use of the system and their conviction in it

(2) The need to develop management concepts in the field of information system for the beneficiaries in the organizations in question, whether for managers in the upper management or middle management, or those who were dealing with the information system, through awareness programs and enrolling them in training courses through which this aspect can be enriched and strengthened.

(3) The need for organizations to realize the importance of the information system in the performance of their work and to achieve success and distinction for these organizations, and this is considered to be the achievement of competitive advantage with all its elements (Mami et al., 2021).

(4) The need for managers in organizations to pay attention to aspects related to achieving competitive advantage in more modern ways and methods, by activating their material, intellectual and informational capabilities.

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