

Role of Information System in Achieving Competitive Advantage

دور نظام المعلومات في تحقيق الميزة التنافسية

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Abstract

The competitive excellence of any institution with a clear image in its external environment is primarily dependent on its intrinsic features in its internal resources, and the strengths it acquires that competing institutions lack. One of the most important of these resources is the information system on which it relies, which is a symbol of excellence.

Keywords: Information system, Partnership, Competitive advantage, Business enterprises.

ملخص :

إن التميز التنافسي لأي مؤسسة لها صورة واضحة في محيطها الخارجي يكون مرهون بالدرجة الأولى بما تملكه من سمات جوهرية في مواردها الداخلية، وما تكتسبه من نقاط قوة تفتقدها المؤسسات المنافسة لها، ومن أهم هذه الموارد نظام المعلومات الذي تعتمد عليه والذي يعد رمزا للتميز.

الكلمات المفتاحية : نظام المعلومات، الشراكة، الميزة التنافسية، مؤسسات الأعمال.

Introduction:

Within the framework of environmental and competitive pressures, all business enterprises face problems and complexities during the process of searching for sources through which they can achieve profits in the competitive field, and achieve competitive advantages, by outperforming the capabilities of competitors, adapting to the escalating dynamism of the competitive environments in which they operate, and optimizing competitive capabilities, in a way that ensures achieving competitive excellence, and achieving continuity within the framework of distinct levels.

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On this basis, it was necessary to find a strategy appropriate to the conditions and developments of the market, and the information system is one of the most important foundations of the adopted strategy.

Accordingly, this study was divided into the following axes:

- The first axis: Concepts about information systems
- The second axis: What is competitive advantage
- The third axis: the relationship of the information system in achieving competitive advantage

Axis One: Concepts about Information Systems

As a result of the multiplicity and increase of institutions, the urgent need to use the system and information in an appropriate manner emerged, for their important role in the various activities of the institution.

The use of information requires multiple processes of collection, classification and analysis, as well as the presentation, dissemination and communication of the resulting information to its users.

- Definition of Systems

Although systems existed before the existence of man, the use of this concept in the fields of science was only since 1939, so the concept of systems played an important role in modern science. This occupied the thinking of scientists and specialists in general and its impact was reflected among management scientists in particular, where the methods of systems are considered for them an essential and effective tool to overcome some of the problems and difficulties facing them, " The system is a group or combination of things associated with some regular or reciprocal interactions to perform a certain function" (Muhammad Al-Saeed Khashabah, 1992)

- Also known as " a group of parts that interact and integrate with each other and with their environment to achieve a specific goal or goals "

Based on the definition of the system, it is possible to identify its constituent elements, which are :

1- Inputs: Inputs represent the resources necessary for the system to be able to carry out the various activities to achieve the underlined objectives. Inputs include many heterogeneous elements such as materials, energy, information

and machines. Inputs are considered outputs of other systems, whether those systems exist in the system environment or subsystems within the system itself.

2- Operations (Conversion) : Operations mean converting inputs into outputs, and the conversion process may be a machine, a human, or a machine and a human .

3 Outputs: It is the result of the process of converting inputs into outputs. These outputs may be a good, service or information. Outputs are the tool through which the performance of the system and its ability to achieve its objectives are verified.

4 . Feedback: Feedback is the corrective tool for outputs. It is any tool to achieve control over the performance of the system. Feedback can be divided into two types: corrective feedback intended to return things to their correct position, and developmental feedback that works to improve the performance of the system or change objectives .

5 Relationships: Represents the means by which subsystems are linked to each other, and also the system is linked to its environment.

6- System environment: That is , the system does not exist in isolation from other systems. Its presence in the environment allows it to attract its inputs from it and also throws its outputs to it. Therefore, the lack of interaction between the system and its environment leads to the failure of the system and its destruction .

7- System Limits: The limits of the system are represented in the membrane that surrounds it and separates it from its environment. It is not fixed because it depends on the objectives of the system and the degree of its complexity .
(Ibrahim Sultan, 2000)

Definition of information systems

There are many and different definitions of information systems, including the following :

- Information systems are "a set of elements (means, software or individuals) that allow the possession, processing, storage and transmission of information."
(Karish Saliha, 2000)

Types of Information Systems

Among the most important types of information systems are the following :
(Sonia Muhammad Al-Bakri and Ibrahim Sultan , 2002)

- **Production information system:** The **production** function is concerned with converting a set of inputs into a set of outputs in the form of goods and services. For example, in an industrial system such as the automotive industry, the production function converts a set of inputs represented by the available resources of labor and capital into final products in the form of cars .

The production information form consists of the following components:

- * Resource needs
- * Transformative processes (actual conversion to products and services) .
- * Industrial Engineering (works in close contact with marketing when designing the product) .
- * Shipping and receiving (customers and suppliers) .
- * Procurement
- * Quality control

- **Marketing information system:** Since 1950, the marketing function began to increase and grow in importance. In some institutions, the marketing function includes inventory management and physical distribution of finished products.

The Marketing Information Form consists of the following components:

- * Marketing research (market study).
- * Pricing (set the correct price) .

Promote their activities

- * Sales management (success or failure of marketing attributed to the power of salesmen) .

- **Finance Information System:**The Finance Information System includes accounting functions. The main components of this system are :

- * Budget (is a control tool for all financial resources) .
- * Cost Accounting
- * Fund management (the purpose is to ensure that funds are available to meet the financial obligations of the organization and at the same time regulate the return on funds available for investment) .
- * Financial Accounting

* Collection

* Accounts receivable (considered a logical extension of collection).

Supplier accounts payable

- **Personnel Information System:** The Personnel Information System did not receive appropriate attention. This may be due to the fact that personnel applications are usually routine, such as recordkeeping activities. Another reason is that unless the number of employees is large, personnel records are easy to maintain manually .

The personnel information form consists of the following components:

* Labor relations (represents overlap with trade unions and other labor organizations) .

* Personnel Affairs (maintaining personnel records) .

*Training (considered an unspecified activity and must be determined according to a specific budget).

* Salaries and wages .

- **Accounting information system:** It is a systematic information system. It includes characteristics that originate from the nature of accounting, which relate to the economic impact of events that affect the activities of the project .

The accounting information system accepts economic data resulting from external events. Most of these elements of the data are expressed in a financial form such as the amount of sales to the customer, but they eventually turn into quantitative data such as the total amount reimbursed to the customer .

On the output side, the accounting information system produces documents, lists and other output information whose content is expressed financially. This information helps in decision-making .

Information Systems Jobs

There are four main functions described as follows: (Sayed Saber Taalab, 2011)

- **The function of the media :** It is the function of obtaining data and includes identifying all the necessary data, whether inside or outside the institution, in light of the needs of the administrative levels in the institution and summarized as follows :

A- Senior management: Senior management needs the information necessary to determine the general objectives and policies of the institution, and to develop strategic plans that extend for several years .

B- Executive Management: The executive management is responsible for developing short-term plans and determining the necessary procedures for their implementation, and then it needs the following information:

- ❖ Information on the market for the distribution of products and the market for materials used in production .
- ❖ Information on the actual distribution market for the products and the targeted distribution.
- ❖ Information on labor costs and stock levels...etc.

– **Processing Function:** Data processing is a disparate set of processes that allows inputs to be changed into outputs:

(a) Preparation of instructions for data operation: These instructions shall be determined in the light of the following considerations:

- ❖ Usage : Defines the nature of the use of information and then the method of data processing.
- ❖ Specialized expertise: Specialists are involved in the development of instructions and operating programs necessary for the preparation of the required reports.
- ❖ Information technology: Identify the technology and technical procedures used .

B- Collecting, analyzing and summarizing data : This function includes evaluating the data to ensure its validity and suitability for the purpose for which it is used, and the data is run with the aim of preparing the information .

- **Storage function:** It is also called the classification of information in files, where it keeps all the information obtained, in a way that is easy to refer to when needed, according to the available technology.

- **Communication function:** The vital function in information systems is to communicate information to its end-user, and this may require its transfer from the place of processing to the place of use using several means :

A- Extracting information according to the needs of its users : After running the data, the outputs that achieve the goal are extracted, and after saving a copy of all the information, a copy of it is prepared to be sent to the persons concerned with it .

B- Communicating information to its users : The information has no value if it is not used, so it must be communicated in the required form, and in a timely manner. The communication function in information systems is not limited to

merely communicating information, but there must be double communication in order to ensure an understanding of the required information. Communication can be in several forms, such as verbal, visible on a computer screen, and documentary .

Information System Objectives

The objectives of putting information systems in the organization are: (Nuri Munir, 2012)

- * a useful piece of information.
- * Provide an accurate description of the organization .
- * Facilitate estimation .
- * Clarify the necessary decisions to be taken .
- * Extract deviations between estimates and achievements, and the possibility of identifying their causes and reducing them .
- * Allows for the development of corrective actions that are useful for the organization's movement.
- * Alerts the organization before the error occurs (predictive system).
- * Helps managers and staff identify problems, develop products and create new products.

The second axis: What is competitive advantage

Excellence in competition is shown by the competitive advantage that the organization obtains, and leads to a preference for its products or services in the markets . What is important in this case is the development of competitive advantage by the institution, especially in the event that it is easily imitated by competitors.

Competitive advantage

Through previous studies, it appears that the basic concept of competitive advantage dates back to " Chamberlain 1939" and then to "Saznik 1959", which linked advantage to ability. Then, there was a development in this concept when " Chandler " and " Hoover " described competitive advantage as the unique situation that the institution develops against its competitors through the allocation of resources. Then, " Porter" and "Day " in 1984 and 1985, respectively, developed the conceptual formulation of competitive advantage,

where they considered that "it is the goal of the strategy, that is, as a dependent variable that is not used within the strategy, given that superior performance is linked to competitive advantage"(Hussein Al-Zughbi, 2003).

- Competitive advantage arises mainly from the value that an institution has been able to create for its customers so that it can take the form of lower prices relative to the prices of competitors with equal benefits, or by providing individual benefits in the product that consciously compensate for the price increase imposed "(Michael porter , 2000).

- Competitive advantage is also defined as "the advantage or element of excellence of the organization that it achieves by adopting a certain competitive strategy, whether it is related to the strategy of cost leadership (achieving the lowest cost advantage) or the strategy of excellence and thus achieving the highest quality strategy"(Nabil Mohammed Al-Morsi, 2003).

- It is also defined as " everything that belongs to the institution without other institutions and that gives added value to customers in a way that exceeds or differs from what competitors offer in the market, so that the institution can provide a range of benefits more than competitors, or provide the same benefits at a lower price"(Talaat Asaad Abdel Hamid, 1999).

Through all these definitions, we can say that the institution has a competitive advantage, if it has the ability to create value for its customers by adopting a smart and effective competitive strategy that confirms its distinction from its competitors, and enables it to confront them, increase its market share, and achieve profits that ensure its survival and continuity .

– Competitive advantage

The importance of competitive advantage is represented in the following elements (Nabil Morsi Khalil), 1998:

- 1- Creating value for customers that meets their needs and ensures their loyalty, and supports and improves the reputation and image of the institution in their minds.

- 2- Achieving strategic excellence from competitors in goods and services provided to customers with the possibility of excellence in resources, competencies and strategies adopted in a highly competitive environment.

- 3- Achieving a market share for the institution as well as high profitability to stay and continue in the market .

So, competitive advantage is that strategic concept that reflects the good and continuous competitive position of an institution vis-à-vis its competitors, so that it manifests itself in the form of providing products with unique characteristics with which the customer is willing to pay more or provide products that are no less valuable than the products of competitors and at lower prices. In this sense, the development of competitive advantage is a strategic goal that economic institutions seek to achieve through the outstanding performance of internal resources, and strategic competencies within the various systems, strategies, activities and operations of the institution, which leads to reducing costs and improving quality, thus ensuring customer loyalty, market leadership, and maximizing profits in the long term .

– Conditions for Competitive Advantage Effectiveness

In order for the competitive advantage to be effective, it must be (Tayeb Daoudi and Murad Mahboub, 2007):

- 1- Decisive, that is, it gives precedence and superiority over competitors .
- 2-It can be defended, especially from imitating competitors .
- 3-Continuity, that is, the possibility of its continuation over time .

These three conditions guarantee competitive advantage solidity, because these conditions are linked to each other, being decisive is linked to its continuity and the condition of continuity is linked to the condition that it can be defended from imitating competitors throughout their life cycle

The third axis: the relationship of the information system in achieving competitive advantage

At present, institutions are characterized by lack of customization to be familiar with most of the activities and functions on which they are based, and the reason for this is due to information systems. In this axis, the focus will be on how to achieve the competitive advantage of the institution through its application of the information system, as follows: (Bouasila Fatima Al-Zahra, 2014)

1. The role of the productive information system in achieving competitive advantage

The production information system has helped to develop some of the elements that contributed to achieving competitive advantages for the organization, including:

- **Devices and machines:** This system contributed to the use of robots in the production process, as the latter works on the basis of an information program that provides the necessary information to carry out production operations, through its adoption of the production planning process and quality control.
- The production information system contributed to reducing costs, thus helping the producer to provide high quality products at the same time as a consumer-friendly price.
- Helping the institution to upgrade its products.
- **Organization:** The production information system contributed to increasing the flexibility of the degree of organization, as it developed methods of organizing the production process, and this is evident in the introduction of the production process by extended flows, as the latter received a great resonance, especially in the methods of following up production controlled by demand.
- **Product design:** The production information system was able to perform the process of product design and make it more flexible thanks to information technology that allowed the development of an automated system that is usually linked to the design through the computer that contains special design programs.

2. Role of the Accounting Information System in Achieving Competitive Advantage

The application of the accounting information system in any organization is of great importance, and the application of the accounting information system includes:

- Performing the work from the first time and correctly and well.
- Doing thousands of calculations in a short time.
- Reducing costs and raising production efficiencies.
- Following up on customer requests, negotiating with them and following up on after-sales services.
- Preparing sales invoices, counting reports, preparing reports on sales and implementing the necessary accounting procedures
- Follow up the inventory of materials and study its costs.
- Studying production costs and production duration, and preparing the necessary reports and accounting procedures.

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- Follow up liquidity in the institution and study the possibilities of financing, and the financial situation.

3. The Role of the Marketing Information System in Achieving Competitive Advantage

The marketing information system is considered as the bridge that connects the institution to the external environment, which makes it able to adapt to various developments, and it also offers many advantages to the institution, through the following:

- Getting to Know your Competition
- Knowledge of the areas of research and development of competitors .
- Distribution channels used by competitors.
- Their new products
- The quality and degree of threats posed by the competitor.
- Determining the competitor's share in the market.
- Knowing the development of consumer needs and desires.
- Knowing and identifying new products.
- Knowledge of competitor development research.

4. Role of the People Management Information System in Achieving Competitive Advantage

Today, the human resource has become the most important resource in the institution, so the latter must give it all the importance it can to reach the extraction of pivotal competencies that help it gain competitive advantages.

Among the most important functions of human resources management to use the human element as a basis for discrimination are the following:

- Attracting and forming an efficient workforce, while identifying the necessary needs.
- Continuously train and develop the workforce to increase their capabilities and skills.
- Reward and compensate individuals for their effort and work.

The People Management Information System contributes to the development of the competitive advantage of the organization through:

- Selecting workers who have the ability to innovate, develop and perform well in their tasks.
- Preparing workers to deal with modern technology for production and operations.
- Developing loyalty and belonging to the organization through improving the work environment.
- Increasing productivity by developing the ability to work and enhancing the desire for it.
- Achieving and maintaining the satisfaction of customers and employees, and then developing a good reputation for the institution and society.

Conclusion

Through the above, it can be said that the institution that has a competitive advantage creates superiority over its competitors by penetrating the market through the adoption of different strategies and information systems that enable it to achieve balance in the internal and external environment of the institution, and provide the goods and services that customers need through internal data of resources and competencies and make the best use of them. This gives it a competitive advantage that must be taken into account by knowing the most important external changes to maintain this advantage and important position in the market.

The information system relied on in the institution is one of the most important internal technologies that affect the performance of the institution, as it is an important tool that helps to make decisions for various functions, through the information it contains, and therefore the information system is a strong contributor to obtaining, maintaining and protecting a higher level of competitive advantage for the institution.

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