مجلة التربوي
مجلة علمية محكمة تصدر عن كلية التربية
جامعة المرقب

العدد التاسع عشر
يوليو 2021م

هيئـــة تحريـر
مجلة التربوي

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– يرفق بالبحث تزكية لغوية وفق أنموذج معد .

– تعدل البحوث المقبولة وتصحح وفق ما يراه المحكمون .

– التزام الباحث بالضوابط التي وضعتها المجلة من عدد الصفحات ، ونوع الخط ورقمه ، والفترات الزمنية الممنوحة للتعديل ، وما يستجد من ضوابط تضعها المجلة مستقبلا .

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– البحوث المنشورة تعبر عن وجهة نظر أصحابها ، ولا تعبر عن وجهة نظر المجلة .

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Impact of Information Technology on Supply Chain management

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الملخص

تناولت الدراسة تأثير تكنولوجيا المعلومات على إدارة سلسلة التوريد ومن ثم مدى تأثير تكنولوجيا المعلومات في إدارة سلسلة التوريد. أما الجانب العملي فقد تناول دراسة ميدانية على الشركة الليبية للحديد والصلب لدراسة تأثير تكنولوجيا المعلومات على إدارة سلسلة التوريد وتم في هذا البحث فرض ثلاث فرضيات وكانت كالتالي:-

الفرضية الرئيسية: هناك تأثير ذو دلالة إحصائية لتكنولوجيا المعلومات على إدارة سلسلة التوريد

الفرضيات الفرعية:-

الفرضية الأولى: ارتفاع مستوى تطبيق تكنولوجيا المعلومات في الشركة الليبية للحديد والصلب

الفرضية الثانية: ارتفاع مستوى تطبيق إدارة سلسلة التوريد للشركة الليبية للحديد والصلب

بعد ذلك تم توزيع الاستبيان على أفراد المجموعة المستهدفة وجمعها وتحليلها مما أدى إلى الوصول إلى عدة نتائج أهمها:-

هناك ارتفاع في تطبيق تكنولوجيا المعلومات في الشركة الليبية للحديد والصلب.

ارتفاع مستوى تطبيق سلاسل التوريد الخاصة بالشركة الليبية للحديد والصلب.

توجد علاقة ارتباط موجبة ذات دلالة إحصائية بين تطبيق تكنولوجيا المعلومات وأثرها على سلاسل التوريد ، بنسبة 72.93٪ من التغير في مستوى تطبيق سلاسل التوريد نتيجة التغير في مستوى تطبيق تكنولوجيا المعلومات.

وبناء على النتائج تم اقتراح عدة توصيات أهمها:-

1- الاهتمام بمستوى تطبيق تقنية المعلومات من خلال:-

- تقليل اعتماد الشركة على وكلاء في شراء المواد الخام باستخدام تقنية المعلومات.

- تقليل اعتماد الشركة على الموزعين في بيع منتجاتها باستخدام تقنية المعلومات.

2- الاهتمام بمستوى تطبيق سلاسل التوريد من خلال:-

- ابتكار منتجات جديدة عالية الجودة باستخدام تكنولوجيا المعلومات.

- إشراك الموردين والعملاء في عملية تطوير المنتجات باستخدام تكنولوجيا المعلومات.

Summary

The study examined the impact of information technology on supply chain management, and then the extent of the impact of information technology on supply chain management. As for the practical side, it dealt with a field study on the Libyan Iron and Steel Company to study the impact of information technology on supply chain management.

In this research, three hypotheses were put forward:

Main hypothesis: There is a statistically significant effect of the level of IT application on the supply chain management level

Sub-hypotheses:

The first hypothesis: the high level of application of information technology in the Libyan Iron and Steel Company

The second hypothesis: the high level of supply chain management for the Libyan Iron and Steel Company

After that, the questionnaire was distributed to the members of the target group, collected and analyzed, which led to several results, the most important of which are:-

There is a rise in the application of information technology in the Libyan Iron and Steel Company.

The high level of application of the supply chains of the Libyan Iron and Steel Company.

There is a positive, statistically significant correlation between the level of application of information technology and the level of application of supply chains, with a percentage of 72.93% of the change in the level of application of supply chains as a result of the change

in the level of application of information technology. If the level of application of supply chains is affected only by the level of application of information technology.

Based on the results, several recommendations were proposed, the most important of which are:

1- Attention to the level of application of information technology through:-

Reducing the company's reliance on agents in purchasing raw materials using information technology.

Reducing the company's dependence on distributors to sell its products using information technology.

2- Attention to the level of supply chain application through:-

- Creating new, high-quality products using information technology.

Involve suppliers and customers in the product development process using information technology.

Introduction

Preface

The real challenge for business organizations in performing their operations and meeting their different commitments is the dramatic and rapid changes in economic and environmental conditions as well as the tremendous development in the world of communications and transportation (Burnes, 2000, p: 75) Business organizations face stiff competition from organizations similar to their own, so they seek to develop their various systems and processes and thus develop their products to counter this competition, especially as they are renewed and changed according to the environment and market conditions (Harayanan, 2001, p. 19). This gives the organizations the greatest burden in innovation and creativity and adopts the latest technology to obtain and exchange data and information because of its importance in facing competitors by studying the markets and consumer patterns of consumers and thus meeting the demand according to the wishes of consumers, as well as communication with the best suppliers.

With the ever-increasing complexity of the business environment, the intensifying competition after market opening and the transformation of the world into a small village; making business organizations aware of the importance of supply chains, one of the modern topics in business (Nair Anand, 2003, p: 3). Supply chains lead to the integration of different processes in the organization from the acquisition of raw materials and then their transformation into semi- finished goods and then into final products and even their supply and delivery to the end consumer (Chopra & Meindl, 2001, p: 5-8). Its importance lies in providing the organization with a competitive advantage that enables it to reduce its expenses and increase the quality of its products as a first stage by purchasing materials from suppliers at preferential prices based on building a network of relations with them.(Abdusattar Al Ali , 2001,p: 281-

279). It is reflected in raising the quality of products that lead to the satisfaction of the customer or the end consumer and is the essence of the competitive process and the most important element for the survival and sustainability of the organization. Information technology plays an important role in bringing about fundamental changes in the operations themselves, making them a key and essential part of these processes. It also enables organizations to open channels of communication with all of their stakeholders and gives them sufficient flexibility to adapt to developments in processes itself or the external environment, in addition to reducing the costs through control of the inventory and orders, and the organization of transport and shipping. All of this depends on the organization's ability to employ appropriate information technology and operations in a manner consistent with the surrounding environment.

Importance of study

The importance of the study stems from the importance of supply chains as a plan or strategy which aims at providing the various raw materials and vocabulary in the right time and place, in quantities required, to be manufactured and delivered to the final consumption centers, in addition to its importance in the rapid response of the consumer in terms of product quality, quality and low price For this commodity, which is the core strategies of the supply chain, a key part of the organization's operations management strategy and therefore the organization's strategy as a whole, and IT has become a strategic D works projects in various jurisdictions in light of intense competition environments and changing conditions.

The importance of linking information technology with the performance of supply chains and their role in regulating the acquisition, manufacture and promotion of raw materials, and the identification of information technology commensurate with the Organization's operations, are highlighted in order to increase the efficiency and effectiveness of supply chains.
The cement industry in Libya has been chosen because of its importance and significant contribution to supporting the national economy. This is an important incentive to identify the reality of each of the chains and information technology in Libyan Iron and Steel Company and to clarify the relationship and impact of technology in improving the supply chain performance of these companies.

The goals of study

The study aimed to achieve the following:

1. Explain the meaning and concept of supply chain management and its components as well as information technology.

2. To know the existence and use of information technology in Libyan Iron and Steel Company.

3. The impact of information technology in the management of supply chains in Libyan Iron and Steel Company.

4. To reach conclusions, and come up with recommendations that will identify the best ways of information technology that will improve the efficiency and effectiveness of supply chain performance in the Libyan Iron and Steel Company.

The problem of study and its components

The problem of the study lies in the weakness of the employment of business organizations for information technology and exploitation to serve and support their operations, as well as the inability to identify the most appropriate techniques for their operations and thus the supply chains. Measuring the relationship between IT and its role in improving supply chain performance, as well as its importance in enhancing the relationship between supply chain partners and FAO, is the essence of the study. This study is to demonstrate the accessibility of optimal application of supply chain performance through IT. The following questions summarize the elements of the study: (1) What is the availability of IT elements in Libyan Iron and Steel Company? (2) Is there a relationship to information technology, its characteristics and capabilities to improve the performance of supply chains in Libyan Iron and Steel Company? (3) What is the impact of information technology, its characteristics and capabilities on improving supply chain performance in Libyan Iron and Steel Company? (4) Does IT help Libyan Iron plants improve supply chain performance? (5) The extent to which managers in Libyan Iron and Steel Company recognize the importance of using information technology and its role in improving the performance of supply chains.

The hypotheses of the study

The hypotheses of the study are based on the following hypotheses:

Main hypothesis: There is a statistically significant impact of the level of IT application on the level of supply chain management
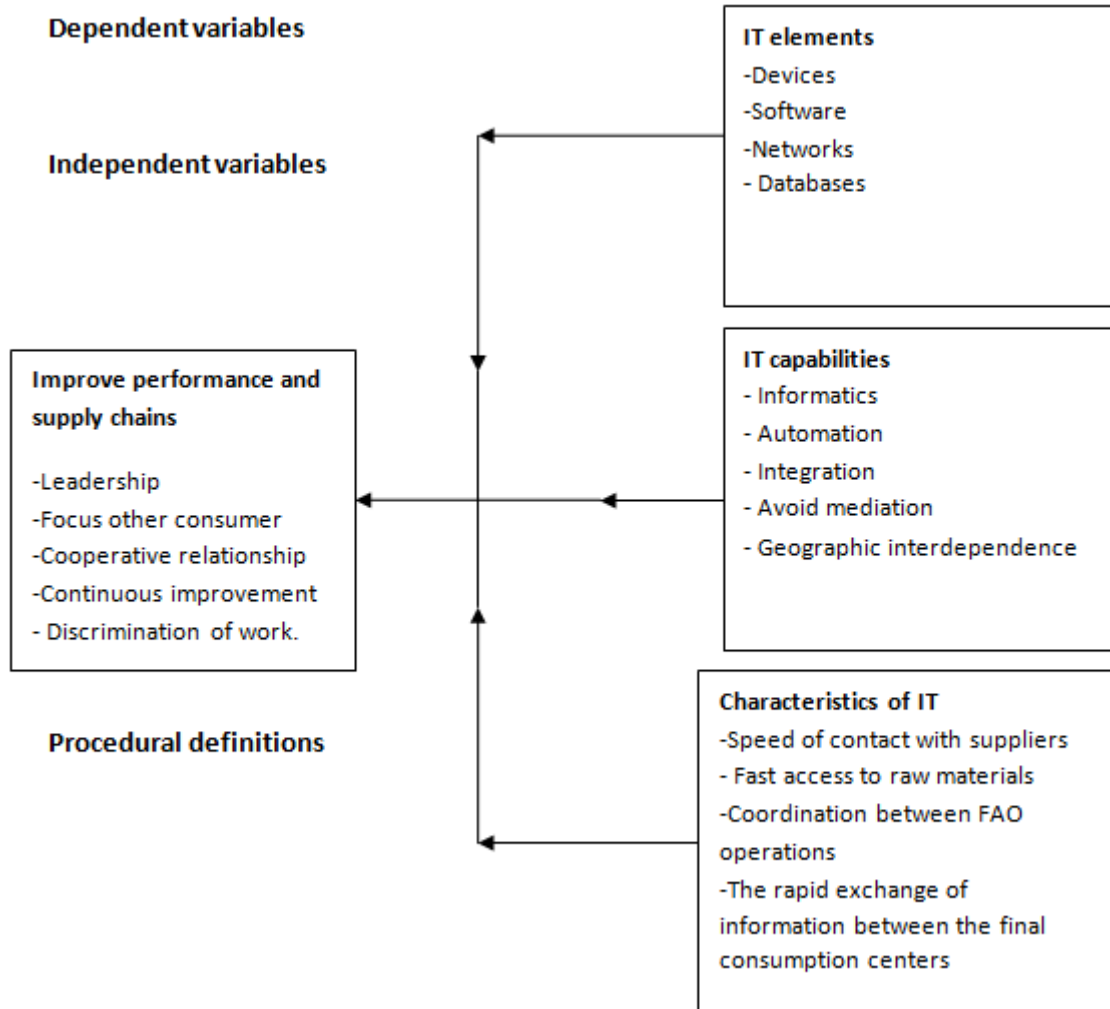
Sub- hypotheses:

The first hypothesis: There is an increase in the level of application of information technology in the Libyan Iron and Steel Company

The second hypothesis: There is a rise in the level of supply chain management of the Libyan Iron and Steel Company.

Figure (1) the model of the study

Dependent variables

Independent variables

IT elements
- Devices
- Software
- Networks
- Databases

Improve performance and supply chains

- Leadership
- Focus other consumer
- Cooperative relationship
- Continuous improvement
- Discrimination of work.

IT capabilities
- Informatics
- Automation
- Integration
- Avoid mediation
- Geographic interdependence

Procedural definitions

Characteristics of IT
- Speed of contact with suppliers
- Fast access to raw materials
- Coordination between FAO operations
- The rapid exchange of information between the final consumption centers

Including all direct and indirect stages in the implementation of customer requests, and these stages from the acquisition of raw materials in the process of manufacturing through the manufacture and then distribution, transport and storage until it reaches the final consumer.

B. Information Technologies (IT)

Equipment, software, communication networks, databases, methods and techniques used by Jordanian pharmaceutical companies to receive, store, process and analyze data from their suppliers in the supply chain and their internal divisions, the most important elements of which are:

(1)   Hardware: Computers and Hard Ware

Which are the various types of computer equipment and associated equipment used to receive, process, store and report data from all parts of the supply chain.

(2) Software: Soft Ware Programs

A set of systems that occupy devices, networks, and databases, making devices capable of performing the operations required and commensurate with the activities of the organization.

(3) Networks (Information Exchange): Information Networks

A system that connects computers to each other in order to facilitate the exchange of information and data between users of these devices within a single company or to connect with other networks (websites).

(4) Shared databases: Sharing Data Base

A set of data and information maintained by the organization that describes all its operations, activities and transactions carried out both within and outside the organization.

C. IT Capabilities Of Information Technology

These are the capabilities that arise from the ownership of information technology used in supply chain management, of which the most important elements are:

(1) Informatics Capabilities: Capabilities Of Information

The use of information technology to facilitate the process of obtaining different data on the elements of the supply chain to be analyzed and to benefit from the resulting information.

(2) Automation capabilities: Capabilities of Automation

Namely the use of electronic devices and equipment in the implementation of various processes within the elements of supply chains.

(3) Integration capabilities: Capabilities Of Integration

Including coordination of the various functions of the Organization's internal operations, as well as the opening of direct contact points with suppliers as well as final consumption centers.

(4) Prevention of mediation capabilities: Capabilities of Disintermediation

Namely the abandonment of mediation in the processes of physical supply and physical

distribution, ie avoidance of mediation with suppliers and the purchase of materials directly from them, as well as avoid mediation with customers by reducing reliance on distributors using information technology.

(5) Geocoding capabilities: Capabilities Of Geographical Linkage
Namely the coordination and strengthening of supply chain field operations, particularly those involving geographically dispersed areas such as transport operations, through their centralized management and coordination of their efforts.

D. Characteristics of Information Technology: Characteristics Of Information Technology
These are the characteristics that IT provides to companies to facilitate the delivery of key functions associated with the supply chain.

(1) Speed of contact with suppliers

Through the use of IT-based networks to ensure that communication is maintained as quickly as possible by the company to communicate with suppliers at any time.
(2) Speed of access to raw materials

Depending on the speed of communication between the company and suppliers to ensure that the orders of the company passes the raw materials required and get them in the required time.

Previous studies

The following part of the study includes a set of previous studies relevant to the subject of the study.

1 - Ciscel & Smith (2005) study entitled:

"The Impact of Supply Chain Management on Labor Standards: the Transition to Incessant Work"

The study aimed at identifying the ways in which the size of the stock is reduced by studying the activities and operations of the organization from the moment the materials enter the warehouses until the goods are delivered to the consumers, based on studying the working conditions and studying the activities of the workers in order to modify them and shorten them.

This study was implemented through three main aspects:

1. The production capacity has been replaced by the speed of supply, which ensures transport, storage, distribution channels and retail.

2. Speed, flexibility and continuous work activities have been replaced rather than production schedules.

3. The last aspect is the workers where modern ways of accomplishing tasks and duties have been found, resulting in new work schedules, new employment methods and, finally, new working conditions.

   One of the most important variables of the study was the flexibility of production, maintenance of flow, communication in the accomplishment of tasks, and the flexibility of the workers in accomplishing tasks. The study found the following results:
   (1) The new ways in which production processes are introduced will automatically change the ways workers accomplish their tasks, which means improving supply chain performance.

(2) There is an impact of the supply chain and improve its activities on continuity and business continuity and thus maintain the flow of goods and reduce the quantity of stock.

(3) Access to high degree of flexibility in the activities of the main supply chain will significantly affect the performance of the organization as a whole IT is one of its key factors.

2 - Study (Daekwan Kim, 2003 entitled:

"The Impact And Implications of Information Technology for Supply Chain Management Systems on Channel Relationships And Firm Market Performance"
The study aimed to shed light on information technology related to supply chain management systems and their impact on the organization's activities in general and supply chain performance in particular. The study is based on previous studies showing that there is a weakness in the impact of IT on the performance of the organization. One of the most important assumptions of this study was that information technology in the form of advanced information technology, appropriate information technology and supply chain communication systems had a significant impact on enhancing the capabilities of the organization's internal communication channels, which in turn facilitated information exchange and mobility within the organization, enhanced internal coordination, supply, factors that positively affect the performance of the organization as a whole.

The study concluded several results, the most important of which are:
(1) Advanced information technology has an average impact on the performance of supply chain communication systems.

(2) There is no direct relationship between advanced information technology and the capabilities of communication channels.

(Iii) Appropriate information technology for communication systems in supply chains promotes information exchange within the organization and coordination of direct activities.

4.   Patrick Jeffers, 2003, entitled:

"Information Technology (IT) And Process Performance: An Empirical Investigation of the Complementarities between IT And Non-IT Resources"

The study aimed to answer a key question: How can technology enhance the performance and value of the organization and complement its resources of (IT) information? The study tested and hypothesized an integrated structural framework that enables the introduction of information technology (IT) previously required to serve consumers and thus impact on the performance of the organization through its impact on supply chain performance.

The study tested two main hypotheses:

(A) What kind of information technology contributes to enhancing the Organization's value through its strategic role as an introduction to the consumer relationship as a key dimension of the Organization's performance?

(B) Is there a positive relationship and positive interaction between the sources of information technology and other key sources of the Organization represented by individuals?

The study concluded the following results:

(1) The central orientation of the consumer focuses on information technology in building a relationship of trust with the product and thus positively affect the performance   of   the   organization.
(2) Information technology has a key role in enhancing the organization's overall performance and financial performance in particular depending on the service delivery to the consumer.

4. Study (Kim, Soo Wook, 2003) entitled:

"An Investigation of Information Technology Investments on Buyer- Supplier Relationship and Supply Chain Dynamics"

The aim of the study was to investigate the importance of investing in information technology on the effectiveness of supply chains and their impact on building

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ISSN: 2011- 421X
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relationships with suppliers and the consequent interaction of various activities in the organization as well as building a sound supply chain structure for reverse feeding. The study highlighted three main types of feedback-based relationships.

The first is the positive feedback of information based on information technology in order to know the number of suppliers, the bargaining power of investors, and thus to achieve equal competition between competitors.

The second is negative feedback based on information technology that assumes incomplete access to information about the numbers of suppliers, and bargaining power of buyers, in other words inefficient IT in delivering complete market information. The third, negative feedback and their relationship to information sharing through the use of advanced information technology may not guarantee continued decline in costs or increased profits through supply chains, so the impact of information sharing varies according to the advantages of the supply chain system. As a result, the study assumes that the impact of IT investment on supply chain performance may vary depending on the interaction between the three previous types of feedback, their relationship to the extent of their impact on the buyer-supplier relationship and its eventual impact on the dynamics of the supply chain. The study concluded several results, the most important of which are:

(1) Investment in information technology affects feedback, hence the dynamics of supply chains and the buyer-supplier relationship if IT is adapted to the activities of the organization.
(2) The adoption of supply chain strategies to activate investment in information technology and increase its responsiveness to changes, technological developments, economic volume of production, buyer-supplier relationship, and the construction of a sound supply chain structure is one of the key steps in the success of the organization

The study differs from previous studies

The uniqueness of this study from previous studies can be summarized as follows:
- In terms of objectives: The objectives of previous studies focused on the following:
* Study information technology as part of several other factors without focusing on them alone.
* The economic feasibility of investing in information technology.
* Identify the impact of information technology in specific aspects of activities related to the supply chain in the organization.

* Identify the components of the information system required without addressing the information technology required.

This study is aimed at:

* Identify the relationship of IT to improve supply chain performance.
* Identify the impact of information technology in improving supply chain performance.

* Identify the best ways to improve the efficiency and effectiveness of supply chains.
* Develop a conceptual framework for the subject of information technology, and supply chains, in a holistic manner that goes beyond the partial coverage of subject literature.
- In terms of variables: In previous studies were dealt with the variables of the subject as follows:
* Focus on information technology in general without addressing the capabilities or characteristics associated with it.

* Study the impact of information technology on specific factors of supply chains, without addressing the other factors constituting the supply chain.
* Dealing with certain factors or components of information technology, without other factors, according to the objective of each study, and according to their scope as well. In this study, the factors associated with each variable were dealt with as follows:
* Focus on the variables of information technology capabilities, their characteristics, in addition to the variable availability of their components in the companies under study.
* Deal with all supply chain variables in an integrated manner, to reach a more comprehensive treatment, beyond the partial to certain variables.
- In terms of field of study: The previous studies were concentrated in a number of areas:
* Retail trade of food.

* Construction Sector.

* Wood sector and furniture industry.

* Insurance sector.

* Auto industry.

* E-commerce companies.

This study is in the field of the Libyan cement sector, where the subject has not been studied in this area by this coverage, despite the importance and privacy of both information technology and supply chains.

It should be noted that most of the previous studies were conducted in countries characterized by technological progress, following the most advanced methods in information technology and classified from the developed countries, while this study will discuss the subject in one of the developing countries that adopted the latest technological means and information technology and systems as an independent field linked to administrative and operational activities.

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Information Technology (IT).

The concept of information technology / Management information systems.

Although there is a clear distinction between the concepts of information technology (IT) and management information systems (MIS), there is still some ambiguity in the use of the appropriate concept by some researchers, some of whom use the term or concept of information technology (IT) Rather than information systems (MIS) or vice versa. This may be due to the fact that this era was characterized by technological and information revolution and thus the emergence of many new concepts associated with this new science, which created some ambiguity in these concepts.

The concept of information technology (IT) has been defined from different and synonymous perspectives. It has been defined as "the part that contains devices, databases, networks, and other associated devices such as printers, scanners and other related devices" (Turban et.al, 2002, p: 9)

Another definition of information technology (IT) is "all hardware, software, communication networks, and databases used to receive, process, store, modify, retrieve, print and transmit electronically either textually or in the form of audio or video messages to individuals who use it" O'Brien, 2003, p: 9)

Alter (2002, p: 14) has also clarified the concept of information technology (IT) as "any of the basic computers used by individuals to handle and support information in order to activate this information and harness it to serve the organization's goals."

MIS is defined as an "organized variety of individuals, hardware, software, networks, and information sources that collect, transform, and disseminate information within the organization" (O'Brien, 2003, p: 7)

(Alter, 2002, p: 6) defines it as "the business systems by which businesses that are designed to capture, transmit, transfer, store, process and display information that supports other systems are processed."

(Boddy et al., 2002, p. 9) defines it as "the interaction among hardware, software, databases, individuals and communication networks for the collection and storage of data on the work of the Organization and then its transformation into information for use in the conduct of the Organization's work" .

Others define it as "planning for development, management, and the use of IT tools to help employees accomplish all tasks related to data processing and management" (Haag et al., 2002, p: 4)

They are also defined as "a set of interrelated elements that collect, process, store, and distribute information to support decision making and control in the organization, as well as the analysis of complex problems and issues by employees, and finally the production of new products" (Laudon & Laudonal, 2004, p: 7)

It is clear from previous concepts that the concept of MIS and the divergence of views of previous writers reflects two trends:

1 - The first trend: focuses on the physical aspects that reflect the characteristics of the MIS, as if describing something physical such as the machine or car.

2. The other direction: focuses on the basic functions of the system and the basic objectives of such functions, such as the provision and use of information.

From the above it can be said that MIS is a set of procedures, software, machines and interactive structures for data processing and retrieval that serve the management of the organization. Figure(2) shows the process of converting data to information.

Figure (2) The process of converting data to information
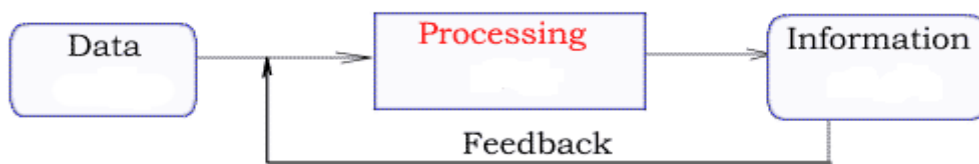
The process of converting data into information

Source: Figure by researcher design.

Characteristics of information technology

Information technology is characterized by a number of characteristics, including:

1 - Time reduction: Technology makes all electronic places adjacent, for example the Internet, which allows each one to obtain the necessary information and data in a short time, regardless of geographical location,

2 - Increasing productivity: IT works to raise productivity when used well and effectively;

3 - Flexibility: Multiple uses of information technology to meet our needs, the simplest example of the computer that we use in our daily lives and practical, it is a tool to write and do various complex processes such as distance or proximity ... etc. It also gives the

production of high efficiency This gain IT flexibility is great compared to a limited-use machine.

La miniaturization: It means the fastest, the smallest and the least expensive, which is one of the most important features of information technology is characterized by continuous improvement in speed and memory capacity. (Richia Lalouch, 2002 p: 99).

Importance of information technology

The importance of using information technology within any organization is as follows:

1. Speed. As the documentation procedures required for the information and its different volumes, are much faster when using computers, especially when retrieving that information.

2. Accuracy. The risk of error is much greater in manual systems than mechanical systems, due to the fatigue and stress of man in manual labor. As for the computer, its performance is the same capability and accuracy, whether in the first minutes of work or in the last minutes of it, regardless of the time, duration and conditions of work.

3. Provide efforts. Human effort in traditional systems is greater than the effort in automated systems, whether at the level of processing, processing and storage of information, or at the level of retrieval and utilization of information by planners, investors, decision-makers and other beneficiaries.

4. Quantity of information. The volume of information and documents stored in traditional methods is limited, regardless of the size of the human and spatial capabilities, in comparison to the large potential of electronic storage and storage media in computers.

5. Options available for retrieval. The information retrieval options are broader and better in automated systems than in conventional systems. There is a high flexibility in Boolean logic retrieval where more than one parameter can be used to access the most accurate information easily.

Information technology is one of the main resources of business organizations because it effectively contributes to the transformation of inputs into outputs such as delivering the necessary services and goods to local and international clients and customers, making information technology one of the most resource-intensive resources. It can develop substantial capabilities that give the organization competitive advantages that are not available Organizations in the industry itself (Mata et.al., 1995, p: 943-948)

The modernization and development of information technology by organizations seeking to improve decision-making processes require different approaches that focus on the

work itself and are related to information technology. Hagila summed up these approaches (Hajela, 2004, p:1-8)

- Application:

Information technology is applicable to the organization's data and circumstances.

- Quantitative:

That is, there is a possibility to quantify the results to give an indication of senior management of the performance of information technology.

- Integrated:

An important part of giving the organization the ability to update IT is its integration with the nature of the work itself to the best of detail.

- Interactive:

The interaction may not come from the moment or the first step but may take time and may require several attempts are done carefully and gradually.

- Ease of use:

Complex equipment may be a bad enemy of the organization, so the need to adopt an easy-to-use information technology that enables individuals to collect, analyze and handle information easily without complication is needed.

What is discussed in the previous paragraphs may reflect the importance of the use of information technology in organizations, whatever the type of work they do. It facilitates the process of selecting and developing the appropriate information technology that is appropriate to the nature of the work of the organization, which will be used and compatible with its performance so that it can be exploited. And develop them in line with the evolving performance of the Organization itself.

With regard to supply chain (SC), information technology automates the relationship between the organization and its supply chain partners in order to obtain the best plans, resources and methods of production and to deliver them to consumers in the form of goods and services.

Information technology experts also view supply chains as a set of activities and processes that constitute a business network that is based on the procurement of raw materials into ready-made materials and then their distribution and delivery to the end consumer as ready-to-use goods (Laudon & Laudon, 2004, p: 7)
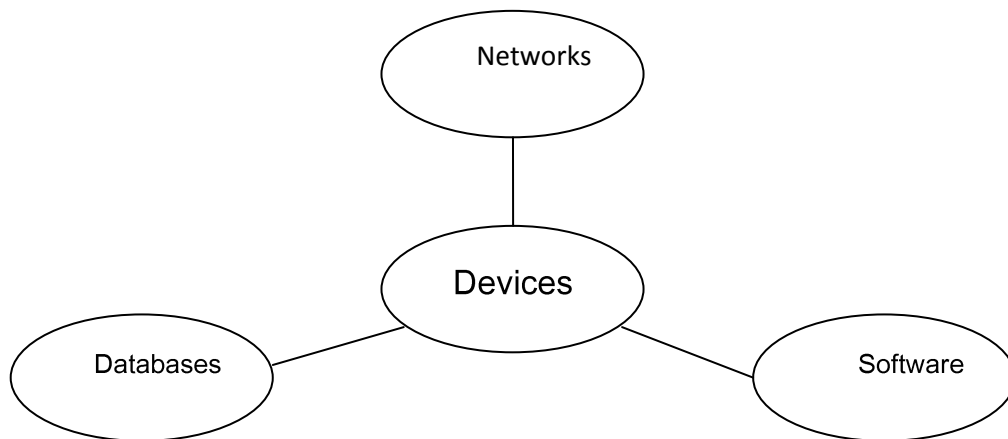
Information technology components

(Haag, 2002, p: 35) emphasized that organizations use these components, which are information technology tools for the purpose of activating This information. Haag has identified five categories that constitute information processing tasks (5Cs), which are as follows:

1. Capturing Information, the process of obtaining information from its sources.

2. Conveying Information, which is the presentation of information in the correct ways that facilitate the use of information.

3. Information Generation - processing the information available to FAO to obtain new information.

4. Cradling Information The process of storing information for later use.

5. Communicating Information: Communication with individuals, places or other organizations in order to provide or obtain information.

Figure (3) IT Components.

Source: Figure by researcher design

Based on the above, the components of information technology can be divided into four main components as shown in Figure (3). It is used to maintain the continuity of information flow to achieve the objectives pursued by the organization:

- Devices.

- Software.

- Databases.

- Networks.

For the purpose of clarifying the relationship between information technology and supply chains, these components will be discussed in short.

Supply Chain (SC)

Success in supply chain management is a strategic challenge for business organizations. The success of this thought or practice depends on bringing together the suppliers, manufacturers and customers to achieve their goals, such as growth objectives and financial goals, especially in the long term (Beamon, 2000).

Most studies and research confirm the need to believe that the key to successful supply chain management requires the need for integration, coordination, collaboration and information sharing among the parties to the chain (Mentzer, 2001).

In addition, the success of supply chain management depends on creating trust between the parties to the chain or else each party will seek to maximize reconciliation without looking at the public interest (La Londe, 2002).

In light of the above, it is interesting to shed light on the study and analysis of supply chain management practices and to identify the nature of the relationships between the parties in the supply chain in a way that helps the business organizations to cope with the important and rapid environmental changes and the ability to make strategic decisions, Through the efficient and effective management of supply chain activities in the face of intense competition and a turbulent business environment.

Supply chain concept

Many definitions and concepts of the supply chain (SC) have been presented in both Arabic and foreign references. In this section we will present the most prominent definitions.

The supply chain refers to the transition of goods and products from production centers to centers of consumption (Mustapha, Dib, 2008). It also refers to all activities related to the flow and manufacture of products through suppliers to the end consumer, as well as the flow of information, both flowing in both directions from suppliers to customers and vice versa from customers to suppliers (Rao, P., 2002).

Supply chain is also intended as a network of suppliers, manufacturers, distributors, retailers and customers to support the flow of materials, products, services, information flow, and financial flows (Tang, 2006).

In another definition of the supply chain, the organization is a loop in an integrated chain that starts with the supplier and then the organization and then the client, making the organization limited between suppliers and customers, where the value chain of the organization overlaps with value chains for both customers and suppliers (Rizk, 2006).

The supply chain is also defined as the demand chain or value chain, which involves the exchange between the organization and several end-users (Stock & Lambert, 2001).

The Institute of Management Accounting defines the supply chain as the process of managing the flow of materials and finished products from suppliers to consumers through a series of manufacturing, warehousing and distribution activities across various manufacturing, storage and distribution points.

The Concept of Supply Chain Management

The researchers presented several definitions of supply chain management, the most important of which were:

Supply Chain Management (SCM) refers to a range of logistics activities that integrate material management and material distribution management together (Idris, 2006).

Another definition of supply chain management is the integration of materials-oriented events into intermediate goods and finished products as well as their supply and delivery to customers (Al-Ali, 2001).

Supply chain management is also defined as "a set of integrated management activities that start from suppliers and end with customers to the benefit of the customer and all stakeholders in the chain" (Stock & Lambert, 2001).

Supply chain management has also been defined as all activities related to the flow and conversion of raw materials into final products and their delivery to the end consumer as well as the flow of information (Sohal et al., 2002).

Many authors and researchers have tried to develop more comprehensive definitions of supply chain management. In the following section we present the two most important definitions:

"Supply chain management is a network of interconnected organizations going up and down through different processes and activities to deliver value to the end consumer in the form of products and services" (Rudderg et al., 2002).

The second comprehensive definition of supply chain management is "the process of organizational coordination and strategy for the business of the traditional enterprise

through collaboration with the supply chain parties to improve the long-term performance of the company itself and the parties of the chain in general" (Mentzer, 2001).

From the previous definitions, the researcher concludes that supply chain management is a network that integrates all activities and links all partners in the chain. Including the company's departments and external partners including suppliers, carriers, intermediary partners and the necessary information systems, so they include the processes necessary to create, manufacture and deliver to demand. Technology also includes gathering information about market demands and information exchange between companies and the key point in supply chain management is that the overall process must. It is observed as a single system, and that the views of each member of the supply chain (suppliers, factories, wholesalers, retailers, stores, customers,) affect the overall performance of the supply chain and integrate with it.

Supply chain objectives

The supply chain seeks to achieve several key objectives, which can be presented as follows (Catlo,2006):

1. Provide the right products at the right time and at the right price.

2. Reduce inventory to a minimum.

3. Reducing production cycle time due to cooperation among supply chain members.

4. Achieve the wishes of customers.

5. Achieve full linkage between customer needs and requirements and ongoing activities of supply chain members.

6. Coordinate the flow of products and information among supply chain members.

7. Achieving competitive advantage and thus achieving international and local competition.

8. Improve relations between supply chain members.

9. Managing the flow of raw materials through the supply chain to ensure timely and cost-effective access.

10. Achieving the required quality level.

11. Reduce costs along the supply chain by creating alliances and improving relationships among supply chain members.

12. Solving the conflict of interest problem among supply chain members.

However, Kulmala et al. (2002) saw the supply chain as primarily aimed at:

From the above, the main objective of supply chain attention is the end user who dictates the specifications of the products he wants to consume.

Importance of Supply Chain Management

Supply chain management is increasingly important for many reasons(Tarn et al., 2002):

1. Supply chain management is a collaborative effort involving several parts or processes in the product life cycle.

2. Supply chain management can cover the entire product life cycle from providing raw materials to the point at which the customer purchases from the product.

In the past, most organizations have paid little attention to their supply chains, although they have tended to focus on their operations and their immediate suppliers, and there are a number of factors that make them desirable for today's business organizations. The most important of these are (Stevenson, 2002):

- Need to improve processes

- Increase levels of external sources

- Competition pressures

- Increasing interest in electronic commerce

- The complexity of supply chains

- Need for inventory management

The researcher believes that supply chain management has become essential and essential for organizations looking for the way to meet the challenges of competition in the business environment today.

Reasons for the emergence of supply chains

The rapid developments in the business world at various levels have made organizations, both service and industrial, working hard to cope with these developments through the various activities of their operations, relying on production in economic terms, shortening the time required for production and other tools that enhance their competitive advantages , And maximize its market share. Therefore, there were three main reasons or developments that led to the emergence of supply chain management:

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First: The information revolution

The emergence of computers that began in 1950 and the developments in these devices until they reached the point of arrival, as well as the emergence of different communication networks across these devices such as the Internet led to the ease of providing information and transmission, in addition to reducing the cost, making communication easy Fast and low cost.

These technological developments have helped many organizations move forward in e-business and, more importantly, many organizations have been able to form networks with suppliers and distributors to complete their operations and their internal and external activities (Shapiro and Varnian, 1999, p: 198).

Second: Globalization and increasing competition

The second major development in the business world is globalization and increasing competition among organizations, especially as the steady increase in market, product and technology changes has led managers to make short-term decisions based on less information (Summers, 2001, p. 29- 59).

In addition, cross-border transnational organizations have entered various markets as local organizations, consumers are demanding products with different tastes, and are responding less than before, and the life cycle of the product is shorter than in the past, month, as in electronic products such as computers (Basu & Siems, 2004, p. 5).

These changes have placed organizations in a critical position to face them and thus make greater efforts to sustain and sustain them. This has required them to develop their operations, ie, to develop supply chain performance (Al-Ali, 2001, p. 282, Matchetta & Lee, 2004, p. 7).

Third: Managing Relationships

The IT revolution has given organizations the best potential to manage their operations and supply chains through IT. Globalization and increased competition have given organizations the impetus to develop their markets and competitiveness, and any development-oriented efforts can only be achieved through inter-organizational cooperation. The maintenance and management of relationships between consumers, suppliers, distributors and vice versa is a sensitive issue; operations and supply chains are within the control of managers, while establishing and sustaining such relationships is the most difficult and variable factor that needs to be redoubled. The supply chain may lead to bad results and thus affect all chain loops.

Information technology and supply chain management

The features of information technology as well as the strategic necessity of using and applying technology in support of the Organization's activities have become obvious to all management leaders (Jacobs et.al, 2000, p. 280-299). While IT is widely adopted and used in different organizations, organizations adopt information technology that is appropriate to their activities, providing them with a competitive advantage, improving their performance and enhancing the efficiency and effectiveness of these organizations (Boyton & Victor, 1999, p.53-66).

The practice of IT management is closely related to administrative activities such as planning, organization, oversight, and leadership. The use of information technology has become a necessary requirement to strengthen the relationship between management leadership and its various divisions (Boyton et al., 1998, p.40-64).

Information technology plays a major and important role in facilitating and enabling organizations to deliver new products and goods and enables them to improve their managerial and operational processes, which depend on the success of the organization's management in linking the various complex processes that are interrelated (Ives & Jarvenpaa, 1998, p. 33-49).

As long as the use of information technology by organizations is an urgent necessity, it means that it is necessary for use within the supply chain. (Enver & Wassenhov, 2002, p. 1-6) say that the supply chain supports three types of flows that require planning and coordination :

- Operations involving value-added activities such as supply, development of new products, and knowledge management.

- Organizational structures, which define the scope of relationships, performance measurement, and reward programs.

- Technology, which includes process technology and information.

Fine, 2000, p. 213- 221) and (Fisher, 1997, p. 105- 116) suggest that coordination in supply chain management addresses the three types of flows through an IT business network used by FAO , and that the efficiency of coordination strategies depends on the transparency, exchange and sharing of information in the supply chain, as well as the flexibility of the interaction of this information.

Integration of supply chain activities through information technology

Before starting to address this issue, one must address the importance of IT preparedness in the IT sector. One of the strategies used to facilitate supply chain management is

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technology. As market conditions become more complex, managers are trying to use information technology to reduce uncertainty and uncertainty, improve performance, and build resilience in the supply chain (Harris, 2003, p. 23).

Information technology is used to manage information and knowledge that are vital to increasing the efficiency and effectiveness of the flow of materials and products within the supply chain. This requires that the organization use information technology that has a direct impact on increasing the efficiency and effectiveness of operations within the supply chain.

Table 2.3 shows supply chain activities and information technology that are commensurate with this activity (Pichey, 2003, p.17).

Information technology and the collaborative relationship between supply chain partners

The introduction of new information technology into one of the supply chain cycles is reflected in other functions within the chain, requiring an adjustment to those functions. For example, when Bar Code techniques are used, organizations are required to place that number on products when packaging (Silva & Fischman, 2000, p. 1-10).

The adoption of new information technology may have a negative impact on relationships among supply chain partners, such as inconsistencies between internal systems and software used in operations among partners, and short-term use of systems (McGowan & Madey, 1998, p. 13). In contrast, the advantages of introducing new information technology may be summarized as follows (Maltz & Srivastava, 1997, p.39-74):

1. The Organization should be the leader in the use of this technology.

2. Increasing supply efficiency and reducing uncertainty.

3. Increase the quality of information.

4. Increase the Organization's capacity to deal with market and environmental changes.

5. Increased interaction among supply chain partners.

6. Reduce costs and expenses.

7. Improve the services provided to the customer.

8. Accelerate communication and enhance customer loyalty.

The use of information technology as required will enable organizations to change the methods used by suppliers to supply raw materials to organizations in order to adapt to

new technologies, thereby maintaining a high level of product quality, enabling suppliers to understand customer preferences, and giving both the organization and the supplier the opportunity In the development of new visions, through the mediation of information technology in the interactions between them and wholesalers and individual, and find sophisticated ways to develop appropriate solutions to the problems that occur in the field, and promotes relationships of understanding between suppliers and wholesalers and Thus improving their relations (Subramani, 2004, p: 29-45)

Results

There is a rise in the application of information technology in the Libyan Iron and Steel Company.
There is a rise in the level of application of the supply chains of the Libyan Iron and Steel Company.
There is a statistically significant positive correlation between the level of application of information technology and the level of application of supply chains, with 72.93% of the change in the level of application of supply chains due to the change in the level of application of information technology if the level of application of supply chains is affected only by the application level Information Technology.

Recommendations
The researcher recommends the management of the Libyan Iron and Steel Company as follows:
1 - Attention to the level of application of information technology through:
1. Reduce the dependence of the company on agents in the purchase of raw materials using information technology.
2. Reduce the company's dependence on distributors in selling its products using IT.
3. Coordinate the company's operations in different geographic regions using IT
4. Open contact with suppliers to achieve coordination and integration
2 - Attention to the level of application of supply chains through:
1. Innovate new high-quality products using IT.
2. Engage suppliers and customers in the process of product development using IT.
3. Reduce transport costs by providing information on transport companies using IT capabilities.

Future directions for research

1. Conduct studies and research related to the impact of information technology in improving the performance of supply chains in other economic sectors such as the food industry, the ceramics industry, and the chemical industries sector.
2 . Study the development of the current model by adding other variables that may have an impact in showing other results of the research.

-General recommendations:

- The necessity of optimizing the use of IT resources, especially that provides the Libyan Iron and Steel Company with ease of dealing with suppliers, customers and consumers as a strategic and major resource to enable companies to perform their operations efficiently and effectively.

- Assess the cost of owning advanced information technology, linking it to the gains and positive effects that are reflected on the performance of the supply chain in particular, and overall company performance.

- Activate the exchange of information and experience and increase the level of cooperation between companies in the Libyan steel sector through direct electronic link (Intranet) ensures the achievement of industrial blocks capable of facing competitors in the global drug markets.

- The Libyan Iron and Steel Company has benefited from the e-Government project by involving its employees in ICDL courses to ensure that all its employees are able to utilize and utilize various IT tools.

And. Introducing a course in Libyan universities specializing in the topic of "supply chains", taking into consideration that it becomes an independent specialization in other disciplines of business administration.

Future directions of research.

1-Conduct studies and research related to the impact of information technology on supply chains in other economic sectors such as cement industry.

2-Study the development of the current model and by adding other variables that may have an impact in showing other results of the research..

3- A study on the impact of information technology on improving supply chain performance in a government sector.

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