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The role of critical success factors in economic intelligence systems for improving the effectiveness of inter-organizational cost management (IOCM)

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Abstract---Determining the indicators of the success of these systems from its inception must be clearly documented for all parties involved in the work of the organization to achieve a high flow of implementation, by examining the type of correlation between the critical success factors of economic intelligence systems, and accounting information systems, as the current economic conditions show, Organizations usually use scattered and semi-structured external sources of information, and these days different groups of individuals contribute to the decision-making (stakeholders, customers, suppliers, and others), the scope of private decision in many cases has a global nature, regional and international interdependence requires exchange Expanded information and knowledge sharing, better collaboration between activities that are done unlike anything else in the past, and economic intelligence systems contribute to optimal business processes and resources, maximizing profits, improving proactive decision-making and reducing costs (Olszak and Ziemba, 2006: 47).The search for solutions to reduce cost is one of the most important priorities for companies in the current competition environment, especially outside its regulatory borders along the supply chain, which is considered a new field for cost management, and opens up broader horizons and areas for achieving them, especially since cost reduction is not a goal in itself, but rather a means to achieve An improvement in the competitive position, so the tendency of companies to efficiently direct their resources through supply chain activities will support this trend and lead to the creation of new areas of cost reduction. Inter-

organizational Cost Management (IOCM) enables efficient on-the-ground supply chain management allowing the flow of materials and information supporting production processes, as well as management decisions across the chain (Madu and Kuei, 2006: 46).

Keywords---critical success factors, economic intelligence systems, inter-organizational cost management.

Introduction

The flow of information is the lifeblood of economic units, and with the advent of globalization, the spread of information and communication technologies, the construction of formal and informal networks, and the exponential and accelerated increase in the volume of information, all this has posed challenges to management day by day in all types of economic units. To take this into account, an organizational strategy is needed in order to deal with this huge amount of information, it is crucial to adopt realistic and effective methods to examine and choose what is really useful for the decision-making process.

The information revolution and the tremendous progress in Information Technology, and the many variables and rapid developments it has produced, have a great impact on the performance of economic units and their achievement of their goals. In light of these modern developments, economic intelligence is a form of good economic sense. In order for an economic unit to innovate, produce, market and compete, it needs certain, complete and exploitable information. Analyzing and organizing information is becoming more important. Because we are in a highly competitive world and economic units need new and fast ways to obtain information, based on this, economic units find themselves in dire need of adopting economic intelligence in their strategies in order to tighten control over the market characterized by constant competition.

The search for solutions to reduce cost is one of the most important priorities of companies in the current competitive environment, especially outside their organizational boundaries along the supply chain, which is a new area of cost management, and opens up broader horizons and areas for achieving them, especially since cost reduction is not a goal in itself, but rather a means to achieve an improvement in the competitive situation, so the orientation of companies towards efficiently directing their resources through supply chain activities will support this trend and lead to the creation of new areas for cost reduction.

Research Methodology

We will present the contents of the research according to the following methodology

Research Importance

The importance of the research stems from the following:

- 1- Contributing to enriching the accounting and administrative literature related to the integration of some administrative systems, and benefiting from this accounting integration in the field of inter-organizational cost management.
- 2- Updating or developing accounting information systems, and by identifying the critical success factors of economic intelligence systems, this will lead to raising the efficiency of accounting information systems, reducing costs and improving the competitive position, in order to achieve the various objectives of companies

Research Problem

Given the importance of the issue of critical success factors in the progress and development of organizations, many studies have appeared that dealt with this issue from multiple angles, and these studies have made clear contributions to identifying the critical success factors and indicators of economic intelligence systems, and their impact on reducing costs and in light of these challenges emerge The problem of the increase in the volume of data and internal information, as well as exchanged across the members of the supply chain about various activities in the ERP system, which results in a huge amount of data and information, especially cost information and the difficulty of managing it. Here emerges the importance of data mining techniques, which allow classification and analysis of data, and explore the relationships and characteristics between the vast amount of information stored in databases to highlight new patterns and knowledge, as well as its ability to predict the future, which reduces potential risks.

Research Objectives

The current study aims to shed light on the most important critical success factors for economic intelligence systems, and to demonstrate the importance of these factors to support decisions and reduce costs, by testing the effectiveness of integration between critical success factors and economic intelligence systems for the purpose of benefiting from them in supporting accounting and management information systems.

Research Hypothesis

The study seeks to test the following main hypothesis:

(There is no statistically significant correlation between the critical success factors for economic intelligence systems and inter-organizational cost management).

From which the following hypotheses are derived: -

1. There is no statistically significant correlation between ERP systems and inter-organizational cost reduction.
2. There is no significant correlation between DM systems and inter-organizational cost reduction.

Theoretical framework for critical success factors

Concept of critical success factors

The concept of critical success factors has spread among administrative circles during the past 30 years through a number of researchers and writers, and now this method is increasingly used by consultants and various departments as a means of support for strategic planning, which has led to a significant increase in interest by researchers. There is a great deal of growing interest in this concept in the literature, as many indicate that the use of critical success factors can have a significant impact on the design, development, and implementation of information systems (Amberg, 2005: 1).

Also, the concept of critical success factors cannot be defined within a specific scope; Because it touches on various aspects with broad effects; Because it is comprehensive, it is possible that the new thinking of managers and their awareness of knowledge, which is also a stage for adapting many different uses, and within this formula, the critical success factors are in turn more than leadership or guiding principles, which can be considered an important element of strategic systems that can be achieved as well as achieving goals desired (Stevens et al, 2004:11).

He agrees with this trend (Thompson), who sees that the critical success factors differ from one industry to another, but from time to time within the same organization, so it is important for managers to resist the desire to include factors of little and marginal importance in the list of critical success factors, because the goal of Recognizing the critical success factors is to judge what matters most and what is least important in an organization's success model (Thompson, 2003: 108).

Characteristics and attributes of critical success factors

It is known that the current era is the era of comprehensive renaissance in all its fields, and the basis of this renaissance is the presence of organizations with all their inputs, forms and objectives aimed at providing goods and services and satisfying the needs of individuals (Al-Louzi, 2003: 117) and because the critical success factors are located within the internal or external work environment of the organization, they It will derive from it the dynamic nature as described (Williams & Ramaprasad, 1996: 4).

He explained (Mohammed, 2008: 3) dynamism as increasing and successive cases of change, and dynamism may be the degree to which the components of the environment change. Therefore, it can be concluded that the critical success factors are dynamic and changing with changing individuals and changes in the environment, and therefore they must be managed. In other words, the critical success factors are a process of social structures that are bound by time, place and market. And (Williams & Ramaprasad, 1996: 4) stressed that the critical success factors are explanatory, that is, they explain to managers and show them the way to reach success if they are effectively and efficiently managed and controlled, but if the opposite happens, they will lead to failure and collapse.

(Wong & Tein, 2007: 2) that the critical success factors are an interrelated process, and as a result, any change in one of them leads to affecting the other factors, whether directly or indirectly. And (Gunter & Andrea, 2009: 5) stated that there are special success factors in each site of the organization, and this in turn affects the results of the programs in that site, and each worker in it has a set of administrative procedures or indicators associated with it that affect each of the other factors determined by management.

Importance of critical success factors

The importance of critical success factors appeared in many aspects, because these factors can be applied to other types of information systems and are not necessarily limited to a particular system itself. (Yeoh & Koronios, 2010, 23).

According to the opinion of some researchers, with the following points:

1. Critical success factors affect the level of project performance through project management practice and arranging those charts that will enable organizations and project management to evaluate project outcomes, and CSFs will become a measure by which project managers can evaluate their companies (ArisAlias, 2014:62 &).
2. The process of identifying some time-critical success factors should be in constant change with new reports being developed as needed to accommodate changes in the organization including strategy, environment and organization structure. (Amberg, 2005: 7)
3. CSF systems are more effective in influencing the operating environment as they are more dynamic in their impact on operating conditions.
4. Determining the critical priorities and concerns of the project. It also provides a forecasting tool to enable the different parties to assess the possibility of project success from their point of view and avoid failure.
5. Optimize the balance between strategies, tactics, and operating systems in the development and innovation portfolio, and consider an integrated set of options; To achieve the desired goals through the best distribution of resources, as well as the development of new systems of strategic importance, and that it has priority in focusing on strategic opportunities (Peffer et al, 2009: 5).

The concept of economic intelligence systems

During the last twenty years, many terms have appeared in the field of management and information technology alike, which have become the focus of attention of researchers and major organizations alike. Among these terms is Business Intelligence, which was first put forward as we mentioned earlier in 1985 by the researcher (Hans Peter Luhn) of the IBM computer and software industry, and then researchers addressed this term in various forms and by comparing data, information and knowledge, we have a better understanding of the economic intelligence hierarchy, which consists of: (Loshin, 2003, 6)

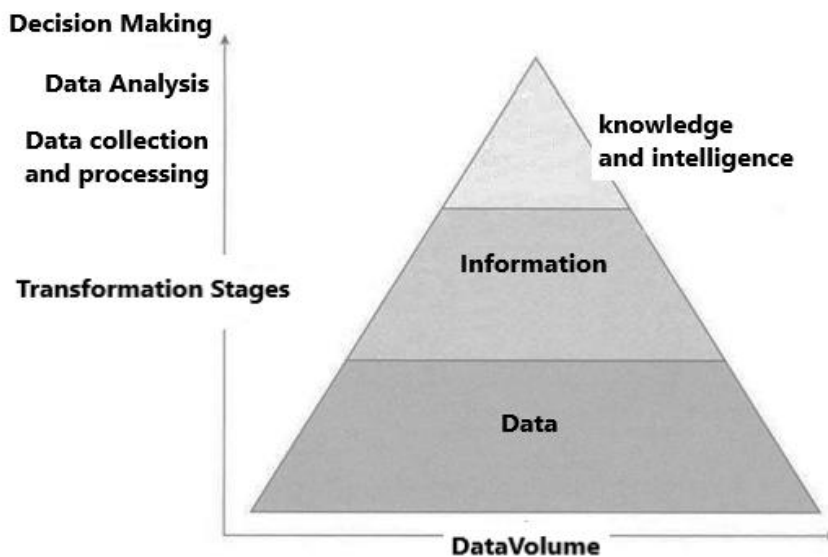
1. Data: It is the input of economic intelligence systems, and data is a raw material that can only be used in its current nature after converting it into

information, and data is collected from various internal and external sources of the organization.

2. Information: It is the product of the data after processing according to the relationship between the data elements and their importance, and the information is arranged in the form of reports, graphic forms, tables, lists, and so on.
3. Knowledge: It is the product of information that enables the user to make decisions, and knowledge is the understanding that the user derives when reading, examining and analyzing the information.

Figure No. (1) shows the different levels between data, information, knowledge and the volume of data at each level:

Figure : Hierarchy of the stages of work of economic intelligence systems



Loshin, D. (2003), "Business Intelligence, The Savvy Manager's Guide", Morgan Kaufmann Publishers, publisher/Editorial of DM Review.

Justifications for the implementation of economic intelligence systems

Organizations are increasingly interested in implementing economic intelligence programs; Because they realize that there is a lot of information that can be extracted from databases, and by means of economic intelligence programs, organizations can help organizations with the following (Cohen, 2009, 9):

1. Increase sales by identifying customer buying behaviors and patterns, opportunities and incentives across sales, and the economic intelligence divides customers into profitable and unprofitable customers based on short-term profit strategies.
2. Reduce costs by estimating organizational and operational expenses and investments, as it helps to improve logistics management.

3. Reduce risks by analyzing the activities and behaviors of consumers and suppliers as well as dependence on the supply chain.
4. Improving strategic planning activities by providing accurate and reliable data to policy makers, and integrating and standardizing data, which improves economic performance, creates competitive advantages and achieves set goals

The main tools of economic intelligence systems

The economic intelligence tools that have a role in improving the effectiveness of Inter-organizational cost management are (Data Mining DM, ERP Systems). (Negash, 2004: 179)

Data Mining

The concept of data mining

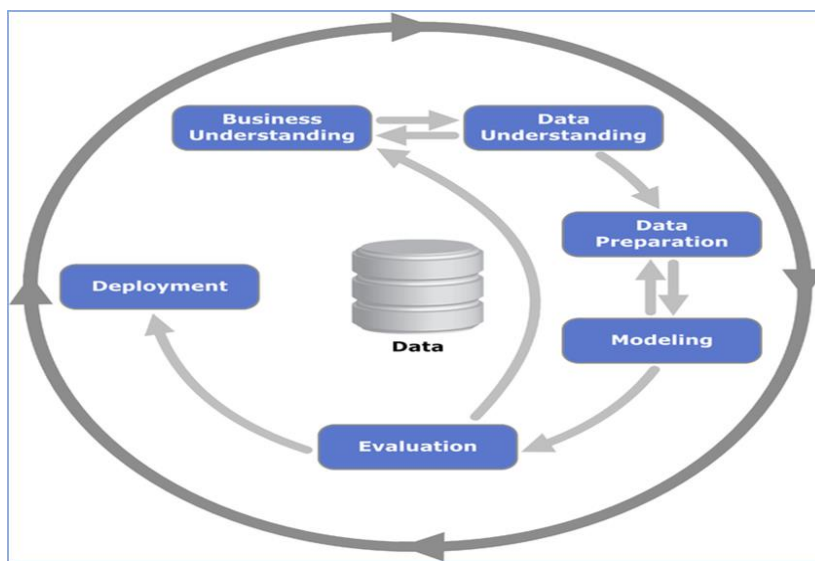
Sirikulvadhana (2002: .24) defines data mining as “a set of computer techniques designed in an automated manner to mine large volumes of integrated data to access unexpected or hidden information or patterns. Data Knowledge Discovery in Databases. Data mining was also defined as "the methods and tools of exploring unknown knowledge, and it can be viewed as a necessary form of knowledge necessary to solve specific problems in a particular field. By relying on data mining techniques, a decision model can be built to predict and classify the potential domain problem." Sousa & Figueiredo (2014, :379) also indicate that "data mining" is an advanced methodology for searching for "hidden" knowledge in organizations' databases, as it is considered one of the most important tools that facilitate access to efficiency in recent years.

Objectives of using data mining in economic facilities

The objectives of data mining are to discover Hidden Knowledge, Unknown Patterns, New Rules, Correlations, Variations, Anomalies and Significant Structures from huge databases that are potentially useful and understandable fundamentally for making important decisions. Various methodologies for decision-making, problem solving, analysis, planning, diagnosis, identification, discovery, prevention, innovation Through data, insights obtained through a high level of understanding of data that can help improve business practice, and recently data mining software vendors are integrating data mining capabilities into their Data base engines so that users can Implementation of data mining tasks in parallel within the databases, which saves time (Zhang & Zhou, 2004, p.513) In this context, Kirkos & Manolopoulos (2004) sees that performing Data mining is an isolated application or piece of statistical analysis software and its inclusion in commercial databases or Enterprise Resource Planning (ERP) systems facilitates the deployment of the usefulness of data mining tools for professionals and economists.

Data mining steps

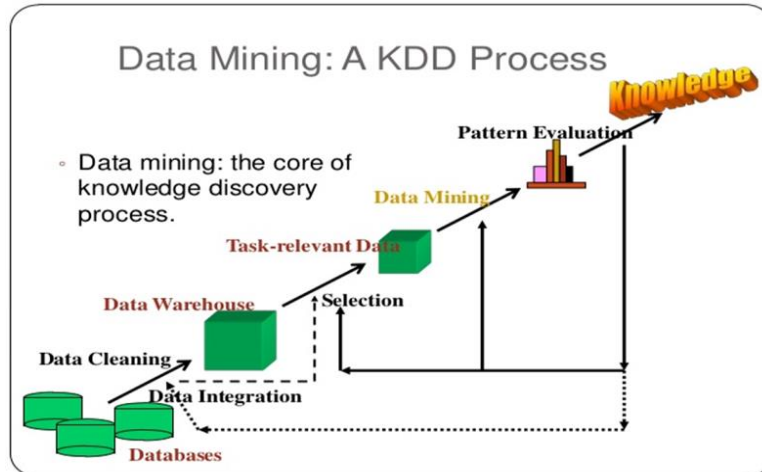
Data mining is a long and complex process that requires iterative steps until the target results are reached, which requires human intervention and interpretation during it. But it is generally in the same context. It was concluded that the most common and widely used standard process for data mining is “The Cross-Industry Process of Data mining or CRISP-DM”. Sirikulvadhana refers to CRISP-DM as a model of the data mining process that describes the methods that data mining experts use to solve problems. In the data, then the general tasks, then the special tasks or procedures that are implemented in specific cases, and finally practical cases represented in a record of procedures, decisions and the results of the actual participation in data mining or the final product for each stage. As shown in the following figure No. (2) that the CRISP model- DM consists of 6 steps that need to be carefully applied to generate meaningful and useful results from the performance analysis: (Cios et al., 2007, p.13)



Cios, K.J., Pedrycz, W., et al., (2007), "Data Mining: Knowledge Discovery Approach, 1st ed, Springer, Newyork

Lessons learned at the end of each stage should be documented as a guide to the next stage, in addition to documenting all stages, the outcome of the model should be documented for the next engagement, and the details should include the results of each stage, important topics, problem-solving choices and the method chosen. It should be noted that along with CRISP-DM as a guide, there are textbooks that are dedicated to integrating and including "data mining" in databases of economic problems. (Singh & Chauhan, 2012, p.39) referred to data mining as one of the steps of knowledge exploration, as shown in the following figure (3):

Figure : Steps to explore knowledge



Singh, Y., & Chauhan, A., (2009), "Neural Networks in Data Mining", Journal of Theoretical and Applied Information Technology.

Organization Resource Planning (ERP) Systems

The concept of organization resource planning systems

Enterprise resource planning (ERP) is an economic management system that includes an integrated set of comprehensive software, which can be used successfully, to manage and integrate all business functions within a unit. This software includes a set of economic applications, financial tools, cost accounting, sales and distribution, materials management, human resources, production and manufacturing planning, supply chain, and customer information (Shehab et. al., 2015, 359).

It is noted that the organization's resource planning (ERP) is a model of the information system that enables the economic organization to automate and integrate the main economic operations. ERP breaks down traditional technical barriers by facilitating data exchange, information flows, and the introduction of common business practices among all users. Implementing a unit resource planning system can be a huge project that can span several years. Because of the complexity and scale of unit resource planning systems, few units are willing or able to allocate the necessary financial and material resources and incur the risk of developing a unit resource planning system within economic units (Hall, 2011, 31).

Advantages of an ERP system

The ERP system has superior capabilities in the field of planning and multiple uses, as the ERP system provides the necessary information that helps to act easily and quickly towards problems when they occur, and provides the advantages of planning achieved by allowing the organization to reduce costs, increase production, avoid inventory shortages, and improve delivery performance, And increase flexibility in preparing what the client needs.

The most important advantages achieved by this system are as follows: (Dimitrios et al., 2012:61)

- Reduced operating costs (lower inventory control cost, lower production costs, lower marketing costs, lower support and assistance costs, as there are no boundaries between units, synchronization of processors, and corrective maintenance directly by the designer and not by the organization's IT department).
- Increasing the return on financial assets.
- Enable the organization to respond more quickly to change.
- Improving relationships with clients.
- Enhance competitiveness or create a strategic advantage.
- The integrated solution to manage the organization's resources in all its forms, types and ramifications.
- Dealing with a single database in which all the organization's data flow to be the main and only resource for data and then processing it to obtain information for the organization and those who deal with it.
- Providing timely and accurate information to the administration and organizational divisions, as well as those who are related to it from outside.

Integration of critical success factors in economic intelligence systems (ERP system and DM technology) to improve the IOCM Inter-organizational cost management

DM, with its various technologies and OLAP, provides support for the ERP system through its integration with its various applications that cover the multiple tasks and functions of the organization, which is positively reflected on the effectiveness of cost management and its reduction in the organization and with its partners in the supply chain, through the following:

- The organization's alliance with customers and suppliers requires participation in the cost policy, cooperation and coordination among members in the supply chain, where cooperation between the organization and its partners through the exchange of information through ERP systems allows making the procurement process more interconnected with the rest of the other activities to highlight its weaknesses. The processing and analysis of production orders and transportation activities through DM techniques within the integration of activities in the supply chain is better than processing them in isolation from the rest of the activities, and then the ability to reduce the costs of these activities through the classification of suppliers and analysis of their costs, and coordination on the smooth flow of materials and goods in stores and then the ability To reduce the costs of these activities, with a focus on the good selection of members of the supply chain and the development of incentives to reduce the risk of leakage of cost information to competitors.
- The integration of DM & ERP will allow the organization to take advantage of DM's predictive technologies to forecast the company's demands and serve the customer by exchanging data across the supply chain which enhances the value system in the organization.

- The ERP system supports the open records technology through the high technological capabilities provided by the system for the exchange of information, which plays an important role in exchanging cost information, especially in the pre-production stage, so that the integration with the DM comes using classification / grouping techniques for specific designs to see if the proposed designs have It leads to an unacceptable defect rate in the final products, and thus to a greater ability to manage and reduce costs (Abdellatif et al., 2011: 167).
- Integration between DM & ERP contributes to accurately determining the target cost at the level of the product components, increasing coordination and exchanging cost information for the components and parts of the product with suppliers and trying to compress costs during the purchasing process on the one hand, and on the other hand classifying these costs by component, supplier or cost and aggregating them on Product level and analysis using DM tools.

The field study of the opinions of the sample in the extent of the influence of critical success factors in economic intelligence systems for improving the effectiveness of inter-organizational cost management

Designing the Study Tool

In this study, the researcher will try to study three axes, namely, the effect of data mining, ERP systems, and the integration between data mining and ERP systems on improving the effectiveness of inter-organizational cost, through a survey of different opinions from academics, experts, managers and employees working in the General Company for Manufacturing Batteries. In light of the study variables and its hypotheses, to test the duration of the effect of the three axes on improving the inter-organizational cost, a questionnaire was designed to know the different opinions on the study axes. The questionnaire passed through several stages until it reached its final form, which includes the following:

1 . The stage of preparing the questionnaire form: This stage included obtaining some ideas and expressions from the extrapolation of previous studies on the subject of the three axes and their effect on the inter-organizational cost taking into account the development of some of the basic factors or features of these axes.

The parties of the professional environment, including academics, experts, managers and employees working in the General Company for Manufacturing Batteries, were asked to express their opinions and estimates for each axis and the extent of its impact on the effectiveness of inter-organizational cost.

The tests for answering them were formulated using the five-point Likert Scale, and the answer score for each item was from 5 degrees, so that the highest degree represented the highest degree of agreement, and degree one meant the lowest degree of agreement, according to Table No. (1):

Table No. (1)

Classification		↔			
Degree	5	4	3	2	1

2- Study population and sample: the study population consists of the target academics with specializations, numbering (22), experts working in the General Company for the manufacture of batteries, numbering (20), as well as managers working in the General Company for the manufacture of batteries, numbering (26), employees working in the General Company for the manufacture of batteries, numbering (18), which responded to the research. The sample size of the study was 120 individuals, and the questionnaire was distributed to all members of the sample, and 90 questionnaires were retrieved from them. After examining the questionnaires, 4 questionnaires were excluded due to the lack of fulfillment of the required conditions, and thus the number of questionnaires subject to the study was 86, as in Table No. (3):

Table No. (2)

The study population and its sample with the rate of responses in each category

	Names	Academic	Experts working in the General Company for manufacturing Batteries	Managers working in the General Company for manufacturing Batteries	Employees working in the General Company for manufacturing Batteries	Total
1	Sample	30	30	30	30	120
2	Response	22	26	18	20	86
3	Response rate	73.3%	86.6%	60%	66.6%	71.6%

It is clear from the previous table that the percentage of responses were from the financial experts category (86.6%), the academics (73.3%), and the employees working in the General Company for Manufacturing Batteries (66.6%), and from the category of managers working in the General Company for Manufacturing Batteries (60%), and the response rate for all categories (71.6%) is appropriate and sufficient for data analysis in this type of study in a manner consistent with previous field studies in this regard.

3- The statistical methods used:

The process of analyzing data and drawing conclusions was carried out through the application of statistical methods appropriate to the nature of the data, the type of sample, and the objectives of the study, using a set of statistical programs for social sciences, The researcher used percentages, arithmetic averages, standard deviation, and correlation coefficient between axes to test the extent of axes correlation.

4- Analysis of the field study results:

The results of the statistical analysis of the data obtained from the questionnaire forms showed the following:

First: The effect of data mining in improving the effectiveness of the inter-organizational cost:

Table No. (4) summarizes the results of the statistical analysis of the answers of academics, experts, managers and employees working in the General Company for Manufacturing Batteries by expressing their opinions and estimates for each axis and the extent of its effect on the effectiveness of inter-organizational cost as follows:

Table No. (3)
The financial academicians and experts

The financial academicians and experts					
	First axis The effect of data mining on improving the effectiveness of inter-organizational cost	Academicians		Experts working in the General Company for manufacturing Batteries	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
1	Empowering data warehouses with DM technologies helps discover new information about suppliers, customers and support data of inter-organizational cost management.	3.1	2	3.1	1.1
2	DM technology is based on indicative analysis of data using OLAP, which contributes to the initial analysis of the data and the development of presumed solutions.	3.2	1.1	3.4	1.3
3	DM technology is based on indicative analysis of data using OLAP, which contributes to the initial analysis of the data and the development of presumed solutions.	3.2	1.1	3.4	1.3
4	The company realizes its need to extract specifications and relationships and to provide new cost information that was not previously known in traditional work systems.	3.4	1.2	3.5	1.1
5	The company realizes that the external environment through the systems used is able to impose new environmental requirements towards the exercise of the cognitive role as integrated systems and as a tool for exchanging knowledge from the external environment.	3.6	1.2	3.2	2
	Total	3.1	1.1	3.3	1.3

Table No. (4)
Managers and employees working in the General Company for manufacturing Batteries

Managers and employees working in the General Company for manufacturing Batteries					
	First axis The effect of data mining on improving the effectiveness of inter-organizational cost	Academicians		Experts working in the General Company for manufacturing Batteries	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
1	Empowering data warehouses with DM technologies helps discover new information about suppliers, customers and support data of inter-organizational cost management.	3	1	3.1	1.5
2	DM technology is based on indicative analysis of data using OLAP, which contributes to the initial analysis of the data and the development of presumed solutions.	4.3	2	3.2	1
3	DM technology is based on indicative analysis of data using OLAP, which contributes to the initial analysis of the data and the development of presumed solutions.	3.3	1.2	3.2	1.1
4	The company realizes its need to extract specifications and relationships and to provide new cost information that was not previously known in traditional work systems.	3.1	1.1	3.7	1
5	The company realizes that the external environment through the systems used is able to impose new environmental requirements towards the exercise of the cognitive role as integrated systems and as a tool for exchanging knowledge from the external environment.	3.8	1	3.5	1.2
	Total	3.1	1.1	3.3	1.3

The items answers of the first axis of the questionnaire that related to (the effect of data mining in improving the effectiveness of the inter-organizational cost), which obtained an arithmetic mean ranging between (3 - 3.8) and a standard deviation (2 - 1), reflects a good indicator for the consensus of the answers. It is noted from the answers of the first question of the first axis that the arithmetic mean of the answers ranges between (3 - 3.1), so the arithmetic mean of the sample answers is (3.1),

This proves the agreement of the opinions of the sample members, especially in the difference in the standard deviation of the answers as it is clear in the table above, to accept the first question, which indicates the strengthening of data warehouses with DM techniques, which helps in discovering new information about suppliers and customers, and supporting data for inter-organizational cost management. It is also noted from the answer of the second question that it included an arithmetic mean that ranges between (3.2-3.4), and thus the arithmetic mean of the sample answers is (3.3), and this shows the agreement of the sample's opinions in a high way to accept the question with a different standard deviation.

It is noted from the third question that the answer to it, included an arithmetic mean ranging between (3.1 - 3.3) and the arithmetic mean of the sample answers is (3.2), and this shows the agreement of the opinions of the research sample as well as the difference in the standard deviation of the answer. As for the fourth question, the answers have an arithmetic mean ranging between (3.1 - 3.7), and the arithmetic mean of the sample answers is (3.4), which is approved by the sample as it gives a correct and honest vision. It is noted from the fifth question that the research sample agrees on the answers whose arithmetic mean ranges between (3.2-3.8), which gives a high arithmetic mean of the sample as evidence that the sample's opinions agree to the question, and the arithmetic mean of the sample answer is (3.5).

It is noted from the above that the average of the arithmetic mean of the answers of the questions is equal to (3.2), this indicates the acceptance of the first axis indicating the effect of data mining on improving the effectiveness of the inter-organizational cost, to achieve the correct and honest view, especially in light of the average standard deviation of answering the questions of (1.2), It is also noted that the arithmetic mean of the answer of the research sample of the seventh question related to the direct proof of the first axis is equal to (3.4) with the stability of the deviation, and this means the acceptance of the axis. Second: The resource planning systems of organization and the extent of its impact on the effectiveness of the inter-organizational cost:

Table No. (5) summarizes the results of the statistical analysis of the answers of academics, experts, managers and employees working in the General Company for Manufacturing Batteries by expressing their opinions and estimates for each axis and the extent of its effect on the effectiveness of inter-organizational cost :

Table No. (5)
The financial academicians and experts

The financial academicians and experts				
Second axis: The effect of Enterprise Resource Planning (ERP) systems on improving the effectiveness of the inter-organizational cost	Academicians		Experts working in the General Company for manufacturing Batteries	
	Arithmet ic mean	Standard deviation	Arithmetic mean	Standard deviation

1	The successful implementation of the economic intelligence system must take into account the factor of the organization resource planning systems to improve the effectiveness of the inter-organizational cost.	3.1	1.3	3.8	1
2	Issuing any purchase order requires providing real-time information about stock requests of unavailable materials, which is provided by the ERP system through logistical support that enhances the shipping activity of the company.	3.1	1.4	4	1
3	Enterprise Resource Planning (ERP) systems allow the organization to focus on the best opportunities for improvement and development.	3	1.1	3.3	1.1
4	The process of developing detailed project plans is the basis for operating the resources being built such as the budget and timeframe.	3.4	1	3.8	1.1
5	The primary objective of the economic intelligence system is to integrate sets of data for analysis in order to improve decision-making and optimize the inter-organizational cost.	3.3	1	3.8	1.1
	Total	3.2	1.2	3.4	1.1

Table No. (6)
Managers and employees working in the General Company for manufacturing Batteries

Managers and employees working in the General Company for manufacturing Batteries					
	Second axis: The effect of Enterprise Resource Planning (ERP) systems on improving the effectiveness of the inter-organizational cost	Academicians		Experts working in the General Company for manufacturing Batteries	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
1	The successful implementation of the economic intelligence system must take into account the factor of the organization resource planning systems to improve the effectiveness of the inter-organizational cost.	3.3	1	3.3	1.4
2	Issuing any purchase order requires providing real-time information about stock requests of unavailable materials, which is provided by the ERP system	3	1	3	1.1

	through logistical support that enhances the shipping activity of the company.				
3	Enterprise Resource Planning (ERP) systems allow the organization to focus on the best opportunities for improvement and development.	3.4	1.4	3.4	1.2
4	The process of developing detailed project plans is the basis for operating the resources being built such as the budget and timeframe.	3.9	1	3.3	1.1
5	The primary objective of the economic intelligence system is to integrate sets of data for analysis in order to improve decision-making and optimize the inter-organizational cost.	3.7	1.4	3	1.2
	Total	3.6	1.1	3.2	1.2

The items answers of the second axis of the questionnaire that related to (the effect of Enterprise Resource Planning (ERP) in improving the effectiveness of the inter-organizational cost) reflect a good indicator for the consensus on the answers, where the arithmetic mean of the answers ranges between (3 - 4.1) and a standard deviation (1 - 1.4).

It is noted that the answers of the first question of the second axis shown in Table No. (5) are that the arithmetic mean of the answers range between (3.1 - 3.8), and thus the arithmetic mean of the sample answers is (3.3), and the total arithmetic mean of the answers of the first question are good, which indicate the agreement of the sample opinions on its validity and authenticity, with a difference in the standard deviation of the answers. As for the answers of the second question, the arithmetic mean of the answer ranges between (3-4), and from this the arithmetic mean of the sample answers is (3.2), and this is a good indicator that the expansion of extra-budgetary items is negative for the institution, and thus shows the agreement of the sample opinions on validity and authenticity the question .

It is noted from the third question that the arithmetic mean of the answers ranges between (3 - 3.4), and thus the arithmetic mean of the sample is (3.2), and this indicates the reservation of the mechanisms of institutional governance and its good application, and thus this indicator is considered good through the agreement of the sample opinions about the validity and credibility the answers. It is noted from the fourth question, that the arithmetic mean of the answers ranges between (3.3 - 3.9), and thus the arithmetic mean of the sample answers is (3.6), and this shows the agreement of the sample opinions greatly in the credibility and validity of the answers.

It is also noted from the fifth question that the arithmetic mean of the answers ranges between (3 - 3.7), and thus the arithmetic mean of the sample answers is (3.3), and this shows the agreement of the sample opinions, especially in the convergence of the standard deviation of the answers. It is noted from the above that the arithmetic mean of the answers of the questions is equal to (3.4), and

this indicates the acceptance of the second axis, which indicates the importance of the organization resource planning (ERP) systems to improve the effectiveness of the inter-organizational cost.

In order to achieve the correct and honest vision, especially in light of the mean standard deviation for answering the questions, which is (1.2), It is also noted that the arithmetic mean of the answer of the research sample of the fifth question related to the direct proof of the second axis is equal to (3.3) with the convergence of the standard deviation, and this means the acceptance of the axis.

Third: Integration between Data Mining and Enterprise Resource Planning (ERP) systems and their effect on improving the effectiveness of the inter-organizational cost

Table (6) summarizes the results of the statistical analysis of the answers of academics, experts, managers and employees working in the General Company for Manufacture of Batteries by expressing their opinions and estimates for each axis and the extent of its effect on the effectiveness of the inter-organizational cost:

Table No. (7)
The financial academicians and experts

The financial academicians and experts					
	Third axis: Integration of data mining and Enterprise Resource Planning (ERP) systems for improving the effectiveness of the inter-organizational cost	Academicians		Experts working in the General Company for manufacturing Batteries	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
1	Integration of DM technology and ERP system leads to meeting the requirements of improving the effectiveness of IOCM.	3	1.2	3.6	1.4
2	The company obtains the required information from data banks using the necessary technologies.	3.3	1	3.8	1.2
3	The company has the ability to evaluate the capabilities available to it and the possibility of exploiting them externally.	3.1	1.4	3.3	1.1
4	The company has the ability to integrate the accounting and costing information needed to discover new knowledge (the ability to integrate various technological resources).	3.6	1.3	3	1
5	The company is aware of the field to be worked in to obtain inter-organizational cost information by depending on	3.5	1.2	3.1	1.1

	various internal and external sources of information.				
	Total	3.2	1.2	3.4	1.1

Table No. (8)
Managers and employees working in the General Company for manufacturing Batteries

Managers and employees working in the General Company for manufacturing Batteries					
	Third axis: Integration of data mining and Enterprise Resource Planning (ERP) systems for improving the effectiveness of the inter-organizational cost	Academicians		Experts working in the General Company for manufacturing Batteries	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
1	Integration of DM technology and ERP system leads to meeting the requirements of improving the effectiveness of IOCM.	3.4	1.1	3.2	1.1
2	The company obtains the required information from data banks using the necessary technologies.	3.3	1.3	3.1	1
3	The company has the ability to evaluate the capabilities available to it and the possibility of exploiting them externally.	3	1.5	3.1	1.1
4	The company has the ability to integrate the accounting and costing information needed to discover new knowledge (the ability to integrate various technological resources).	3.5	1.2	3.4	1.2
5	The company is aware of the field to be worked in to obtain inter-organizational cost information by depending on various internal and external sources of information.	3.3	1	3.5	1.3
	Total	3.4	1.3	3.4	1.2

The items answers of the third axis of the questionnaire related to (the integration of data mining and the Enterprise Resource Planning (ERP) in improving the effectiveness of the inter-organizational cost), which obtained an arithmetic mean ranging between (3 - 3.9) and a standard deviation (1 - 1.5) are a good indicator for the consensus of the answers. It is noted from the answers of the first question of the third axis that the arithmetic mean of the answers ranges between (3 - 3.6), so the arithmetic mean of the sample answers is (3.3), this proves the agreement of the opinions of the sample members, especially in the difference in the standard deviation of the answers as shown in Table No. (6) to accept the first question.

It is also noted from the second question that the answer to it included an arithmetic mean that ranges between (3.1-3.8), and thus the arithmetic mean of the sample answers is (3.4), and this shows the agreement of the sample opinions in a high way to accept the question with a difference in standard deviation. It is noted from the third question that the answer to it included an arithmetic mean ranging between (3.1 - 3.3) and the arithmetic mean of the sample answers is (3.1), and this shows the agreement of the opinions of the research sample as well as the difference in the standard deviation of the answer.

As for the fourth question, the answers will have an arithmetic mean ranging between (3-3.6), and the arithmetic mean of the sample answers is (3.4), which is approved by the sample as it gives a correct and honest vision. It is noted from the fifth question the agreement of the research sample on the answers whose arithmetic mean ranges between (3.1 - 3.5), which gives an arithmetic mean of the sample answer (3.4), and this gives a good indication of the compatibility of the answers of the research sample. It is noted from the above that the mean of the arithmetic mean for the answers of the questions is equal to (3.4), and this indicates the acceptance of the third axis, which indicates the integration between data mining and ERP systems in improving the effectiveness of the inter-organizational cost, to achieve a correct and honest vision, especially in light of the average standard deviation of answering the questions which is (1.2), it is also noted that the arithmetic mean of the answer of the research sample of the eighth question related to the direct proof of the third axis is equal to (3.7), and with a different standard deviation, this means the acceptance of the axis.

Correlation coefficient r:

Table No. (7) shows the correlation coefficients between each of the three axes, which shows that the indicated correlation coefficients are a function at the level of significance (0.05), and the calculated r value is greater than the division of r tabular, which is equal to 0.3, Thus, the items of the axes are considered true to what they were designed to measure.

Table No. (9)
Correlation Coefficient of the three axes

Academicians			
	r23	r13	r12
Correlation Coefficient	0.6	0.7	0.7
Experts			
	r23	r13	r12
Correlation Coefficient	0.4	0.5	0.4
Managers working in the General Company for manufacturing Batteries			
	r23	r13	r12
Correlation Coefficient	0.4	0.5	0.6
Employees working in the General Company for manufacturing Batteries			
	r23	r13	r12

Correlation Coefficient	0.8	0.7	0.9
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From Table No. (7), the first axis has been assumed as (X_1), the second axis as (X_2), and the third axis as (X_3), and thus the correlation coefficient between the three axes is good because the calculated r value ($-1 \leq r \leq 1$). Referring to Table No. (7), we find that the correlation of the first axis and the second axis is good because ($-1 \leq r \leq 1$) in all the selected research sample, as well as the first axis with the third axis, and the second axis with the third axis.

Discussion

The use of data mining technology with accounting information systems increases the ability to produce accurate, complete and timely information. The use of ERP systems achieves a lot of requirements for the calibration of quality control systems and performance, which as a result leads to a noticeable improvement in the quality levels of the product and cost reduction, and the ERP system, through its impact on the cost structure of the product and its quality levels, and its integration with DM, plays an important role in achieving responsiveness to customer desires, and thus greater preservation of the market share of the organization.

The automation and integration of business processes through the adoption of ERP systems has helped to eradicate many cost hotbeds (as a result of poor technological infrastructure) and improve the cost structure of the product for many organizations. Having good technological capabilities in the company is a key factor that enables the ERP system to achieve its goals by achieving high levels of performance and reducing costs.

Economic intelligence is an integrated information system to provide strategic information to users, as it can be applied at the level of a country or a level of economic unity. One of the requirements for the application of economic intelligence is the re-engineering of the work environment because intelligence needs to introduce information and communication technologies as well as improve the workflow in economic units.

Conclusions and Recommendations

These conclusions will be presented as follows:

1. The ability of Data Mining tools is to support organization managers to re-design and analyze operations to suit the surrounding economic environment, achieve a competitive advantage, and achieve a high level of interoperability to provide knowledge integration.
2. The information system is the heart of the unit resource planning system, as the latter system provides units with the ability to improve business operations by integrating all functional fields within the unit in a way that the financial and non-financial data are integrated alike and thus seeks to reduce the inter-organizational cost.

3. The ERP system, through its effect on the product cost structure and its quality levels, and its integration with Data Mining plays an important role in achieving response to the desires of customers, and thus greater preservation of the market share of the organization.
4. There is a statistically significant correlation relationship between the ERP systems and the improvement of the effectiveness of the inter-organizational cost management in the General Company for Manufacturing Batteries.
5. There is a statistically significant correlation relationship between the DM data mining technique and the improvement of the effectiveness of the inter-organizational cost management in the General Company for Manufacturing Battery.
6. There is a statistically significant correlation relationship through the integration between ERP systems and DM technology in improving the effectiveness of the inter-organizational cost management in the General Company for Manufacturing Battery.

The most important recommendations of the research are the following

- a. With regard to the critical success factors of the economic intelligence systems (ERP systems and DM technology), organizations must work to identify these factors and determine the percentage of their impact on these systems in order to achieve their success and thus harness them to support and improve the effectiveness of inter-organizational cost management.
- b. The need for increased attention to the methodology of procedures integration when using ERP systems, as the results of the research agree with many studies and researches in that neglecting the process of re-engineering processes when adopting ERP systems reduces the advantages and benefits of using them.
- c. Providing a database and sufficient information on costs to give a clear image to the decision-makers in the company to face external constraints, and to address intense competition in the modern economic environment, and the need to pay attention to research directed towards the integration of cost management methods to serve the achievement of the company goals.
- d. The management of the General Company for the Battery Industry should work to improve the company's position by working to increase production and compete with the products available in the market. This is done by collecting the necessary information on the labor market and modernizing work mechanisms.
- e. The General Company for manufacturing Batteries must possess an efficient information system that provides the company with the information necessary to perform its activities and raise the efficiency of its performance in the market. The company should adopt another type of system that is comprehensive of information (such as ERP systems and DM data mining technology).
- f. Strengthening the relationships between the existing information systems in the organizations, and the need to work on benefiting from the outputs of the systems, and training the appropriate human cadres for this, which will be positively reflected in reducing costs, improving their performance and distinguishing them in their work.

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