Business Management
Gph-International Journal
www.gphjournal.org

Research Article

Paper ID #338

The effect of data mining on supporting information technology competencies - An analytical study of the opinions of a sample of workers in Asia cell Iraq Communication Company

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ABSTRACT

The research aims to determine the impact of data mining in support of the information technology competencies A group of workers in a selected sample of Asia cell Iraq Telecom Company, the study's problem revolves that the employment of data mining techniques in Asia cell will add and develop the information technology competencies, and adopted a hypothetical scheme of the study identified through it Study objectives and hypotheses The researcher used the descriptive and analytical approach to achieve the results, and the questionnaire form as a main tool in collecting data and information related to the field side of the study, and Asia cell Iraq Telecom Company was chosen in the field for the study and others Its assumptions were fulfilled, and opinions were polled (81) individuals, and the study came out with a number of conclusions, the most important of which (data mining is a sophisticated process for analyzing large quantities of data and to benefit from them in developing information technology competencies), then formulating a number of recommendations related to the results of Her research was the most important one (working to increase awareness-raising in the company, especially in the operational and executive levels of data mining techniques and the extent of the local need to make decisions based on knowledge and data analysis because of this great role in supporting information technology competencies).

KEYWORDS

Data Mining, Technological Connection, Technological Scanning, Technological Flexibility, IT Competencies.

INTRODUCTION

Telecommunications companies must balance and choose their level of excellence with technological competencies in order to meet the needs and requirements of customers, in other words, companies must possess a set of competencies, especially information technology competencies that work together to enable the company to continuously move towards new opportunities that appear in the business environment. Competencies are the most important for the company and that leads to success in organizations. They reflect the set of requirements that business organizations need that use high levels of technology.

Communication companies have historically benefited greatly from technological advances. New technologies may allow for cost savings or service improvements, and may provide additional or revolutionary benefits. Some technologies may create the basis for significant changes affecting all the ways we live in, while other technologies may target Very narrow needs and opportunities. Data mining techniques are the main nerve of all communication companies, due to the ability to explore and forecast which is one of the most important knowledge needs for this type of company, whether in order to explore and seize investment opportunities before it is too late, assess and analyze risks and take what is necessary to avoid them. This is in addition to the knowledge capacity it provides that contributes to managing these companies in modern ways that depend mainly on the explored knowledge that is predicted by studying, analyzing and exploring the available data in the field of work or even in other areas.

In light of these data, the intellectual framework for this research is centered by determining the impact of data mining in support of information technology competencies, and the Asia Cell Communications Company, Iraq, was chosen as a field to diagnose these starting points, and used these parts in a logical and practical context to be a model and a starting point for Scanning employees' opinions In the executive and operational departments that represent the basis of the company's operations.

The first topic: Research methodology

First: - The research problem

Determining the intellectual bases of this perspective in a complex and highly changing environment, such as the technological environment, which today lives in a highly competitive situation as a result of the state of openness in the markets and the increasing intensity of competition, which was reflected in one way or another on the speed of response of companies operating in Iraq to the variables of their home, most notably the demands of their customers, including the mobile telecommunications companies sector Which has become in dire need of data mining techniques to provide the necessary knowledge, collect it and analyze it in detail in order to confront these challenges, and surround its work environment, thus enabling its departments to form cognitive and mental perceptions about their present and future operations in a manner that guarantees them continuity and distinction, which requires them to modern techniques In data mining, it is used in the formation of information technology competencies related to the future and ways to confront the present, and then measure competitors' movements and follow them in order to anticipate them and quickly reach the customer.

Through the foregoing, the research problem is crystallized in identifying the impact of data mining techniques in supporting the IT capabilities of the Asia Cell Iraq Communications Company, the research sample. Therefore, asking the following questions can contribute to clarifying the implications of the research problem:

1. What are the data mining techniques? Does the interest of the company in question differ in its adoption of all data mining techniques?
2. What are the competencies of information technology? Does the interest of the company in question differ in terms of its adoption of all IT competencies?
3. Is there a correlation between data mining and IT competencies?
4. Do all data mining techniques support IT competencies?

Second: - The importance of research

The research derives its importance from the importance of the topic it deals with and the chosen site for the research, where this research contributes and by proposing theoretical frameworks for the research variables represented by the elements of data mining and information technology competencies, and the importance can be determined to two levels:

1. Academic level: the academic importance of the research topic is reflected:

- The importance of academic research is embodied in building a knowledge framework for topics (data mining, information technology capabilities), as well as enriching and enriching the Iraqi library due to the limited studies that relate to research variables, so the researcher seeks to provide an intellectual framework that is the starting point for other researchers to enrich this topic.
- The importance of information technology competencies as a modern trend that seeks to achieve efficiency and effectiveness in technical operations.

2. Field level: the field importance of the research topic is reflected:

- Determine the IT competencies of the company in question.
- The study of the independent variable (data mining) and its impact leads to the possibility of determining the required level of support for these variables that positively affect the dependent variable (IT competencies) of the communication company under consideration.
- This research is important at the field level, as it will provide an information base that can be employed in the company in question. This information will guide how to employ data mining elements that support the IT competencies to add new capabilities in the company's technological capacity.

Third: - Research objectives

In light of the current research problem and the lack of studies linking the variables under study, the main goal of the research is to determine the effect of data mining in supporting the IT competencies of telecommunications companies. The main objective is divided into two sub-goals:

1. Establishing a diagnostic framework for information technology competencies in the field of communication companies, and the related capabilities that enhance the company's competitive position.
2. The research aims to introduce Asia Cell to what are the elements of data mining and what are the information technology capabilities of these companies.
3. Enhancing the perceptions of the company under discussion regarding the general content of the assumptions from which the research was launched and presenting this relationship with a hypothetical model aimed at field application to reach the results of hypothesis testing.
4. Presenting a practical view of the nature of the impact of data mining elements in supporting IT competencies. And to know the extent of the variation of the company under investigation in adopting the research variables.
5. A report on the perceptions of the functional community in the company regarding the general content of the assumptions from which the research was launched in the field of data mining and its impact on supporting the information technology competencies of the company in question.

Fourth: - The default search form

The systematic treatment of the research problem according to its theoretical framework and field contents requires building a hypothetical scheme that reflects the nature of the logical relationship between the variables under consideration, as well as clarifying the sub-variables of those variables and their effects in the communication company under consideration, taking into account the possibility of measuring these variables and assuming that the relationship is one-way.

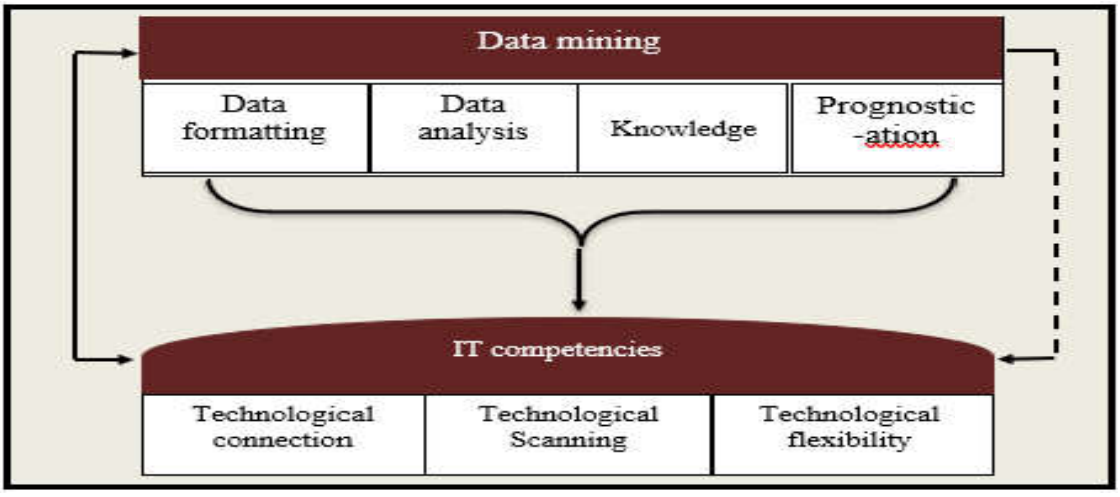

Figure (1) the default search scheme

Source: Prepared by the researchers.

Fifth: Research hypotheses

1. The interest of the company in question varies significantly in terms of its reliance on data mining elements.

2. The combined interest of the company under discussion in IT capabilities varies significantly.

3. There is a significant correlation between data mining and IT capabilities in the company under study.

4. All the elements of data mining have a significant effect in supporting the IT competencies of the company in question.

Sixth: Research tools

In order to achieve the objectives of the research and test their hypotheses, two types of methods were used in collecting data by:

1. The first type related to covering the theoretical side through many sources represented by scientific references such as books, journals, studies, theses and periodicals, available in libraries, as well as relying on the International Communication Network (the Internet).
2. As for the second type of data, it was obtained through field research, and through the questionnaire form, and it is the main tool in collecting data and information for the research whose formulation took into account its ability to diagnose and measure the main and sub-variables of the research. Its initial form has two axes:
   - **The first axis:** It includes the paragraph of personal and job information for the research sample related to (academic qualification, administrative position, and service in the position).
   - **The second axis:** the questionnaire included two of the main variables, namely: (data mining, IT competencies), as each of these variables includes a set of sub-variables.

Seventh: Research limits

The current research includes some limitations, namely:

1. **Human Boundaries:** It includes the (81) employees in the operational and executive departments of Asia Cell Communications Company.
2. **Spatial boundaries:** The spatial search limits of the scope of the search included the (Asia cell Communications) company.
3. **Temporal limits:** It is represented by the period of preparation of the research in the telecommunications company, which began with field visits and interviews that contributed to diagnosing the research problem, and then collecting initial information on the research community, and the period of distribution and retrieval of the questionnaire, and extended for the period 1/15/2020 until 1/10 / 2020.
4. **Research boundaries:** They are represented by the cognitive limits of the exploited variable (data mining) and the aggressive variable (information technology capabilities).

The second topic: the theoretical framework of the research

First: data mining

1. The concept of data mining

The concept of data mining appeared in the late 1980s and has proven itself as one of the successful solutions for analyzing huge amounts of data, by converting it from mere accumulated and incomprehensible information (data) to valuable information that can be exploited and used afterwards (Chau & Kao, 2015: 211). The data mining phase has attracted a lot of attention in the research community over the past decade, in an effort to develop algorithms that are scalable and adapt to increasing amounts of data in the search for meaningful cognitive patterns. Packages of algorithms and software have grown significantly over the past decade, to So much so that the expansion has made it difficult for workers in this field to track the available technologies to solve a specific task (Cheng, & Prabhakar, 2014: 1116).

The so-called Data Mining emerged as a technology aimed at extracting knowledge from vast amounts of data, by relying on mathematical algorithms, which are the basis of data mining and are derived from many sciences such as statistics, mathematics and logic, artificial intelligence and expert systems, and the science of recognition Patterns, machine science, and other sciences that are smart and unconventional (Cheng et al, 2014: 205).

Data mining is a process by which large amounts of data are sorted with the aim of extracting relevant and useful information, and this term is increasingly used in administrative sciences to extract information from large data sets resulting from modern experimental and observational methods, It is the process of selection, exploration and modeling of large amounts of data to discover unknown regularities or relationships in order to obtain clear and useful results for the owner of the database (Jiawei & Micheline, 2016: 142).

Data mining (Yeung, & Ruzzo, 2011: 767) is defined as an activity that extracts information contained in large amounts of data, with the aim of searching for cognitive patterns and discovering hidden facts contained in databases. He referred to itas the process of analyzing data to identify relationships that previous analyzes had not previously discovered, as well as analyzing data to establish relationships and identify patterns. (Hamdan & Govaert, 2015: 881) is defined as data mining as the process of analyzing data from different perspectives and discovering anomalies, patterns and correlations in data sets that are insightful and useful for predicting outcomes that help you make an informed decision.

By recognizing the contributions of researchers regarding defining the concept of data mining technology, a number of things can be identified as follows: (Ali, 2018: 38)

- Data mining technology represents one of the methods of business analysis by relying on data that the organization maintains and processing it to build models that contribute to the process of predicting future behavior.
- The ability of the beneficiary increases when he knows the required data and how to deal with it, which indicates the importance of data mining and hence the importance of decisions based on it.

- Data mining is an effective indicator of the variety of data that the organization possesses, in various specializations and trends, and in a way that secures the creation of its own database.
- Data mining technology employs modern methods to explore the required knowledge through compatibility between statistics and computer data to reach the desired results.

Data mining can be defined as the data in databases using tools that search for trends or meaningless data, extract tacit information, previously unknown, and can be useful, and focus on extracting cognitive patterns from large data sets through combination. Among the methods of statistics and artificial intelligence with database management.

2. The importance of data mining

The importance of data mining technology by using it in various fields as in the field of finance and business to forecast profit and loss and then answer many questions in record time, especially those questions that are difficult to answer if not impossible using traditional statistical techniques, which if any. It takes a long time and many analysis procedures, in addition to the use of data mining technology in credit cards and the expected risks in this area also in the field of business and anticipating the changes occurring in the market in the future and can be used (Padhy et al, 2012: 265). Clarifying and indicating the importance of a data mining technique by extracting information, in a manner that provides organizations with the ability to explore, in various activities, and then build predictions and forecasts of future behavior and trends, allowing the right decisions to be estimated and taken at the right time (Nisbet et al, 2009: 12).

The importance of data mining can be determined in the ability to use advanced technologies and keep pace with the shifts and developments in all fields, so that exploration, deduction and prediction can be made, and then access to better decisions as quickly as possible, and the importance of data mining can be determined: (Ali, 2018: 38)

- Assist in the efficient use of available data and resources.
- Facilitating dealing with advanced information technologies, in a manner that ensures measuring the effectiveness and productivity of various subsystems of information, by providing accurate and correct information.
- Encouraging organizations to grow and keep abreast of developments and developments in their various materials, technical and human resources, thus increasing knowledge, limiting alternatives and reducing the uncertainty associated with them.
- Assist the decision maker with the information he needs to make decisions that contribute to speeding up work, accomplishing tasks, and simplifying procedures.
- Enabling the decision-maker to conduct the planning process and its continuity, in a way that contributes to defining the problem and its elements and completing control over the information and data files necessary for his decision.

3. Advantages of data mining:

The goals provided by data mining techniques are to provide accurate, correct, and rapid information and to clarify the objectives of data mining for the decision-maker as follows: (Larose, 2015: 297)

- Help in revealing the company's ability to grow and keep pace with development, and its needs to develop the technical and human resources for the information systems used, and thus the information helps in increasing knowledge and limiting alternatives, and this leads to getting rid of the uncertainty that is represented in these alternatives.
- Assist the decision maker with the information he needs in order to make decisions that contribute to speeding up work, completing tasks and simplifying procedures.
- Assist in the effective use of available data and resources, and in planning to improve and develop the accounting and banking information systems used.
- Facilitate dealing with advanced information technologies, and help measure the effectiveness and productivity of various information subsystems, by providing accurate and correct information.
- Assist the decision-maker in activating the interconnectedness between the various departments and businesses, because this is reflected positively on the interest of work in the company.

4. Stages of data mining:

The data mining process uses many techniques, and the choice of one of them depends on the nature and size of this data. One or more of these techniques shown in Figure (2) can be used as follows:

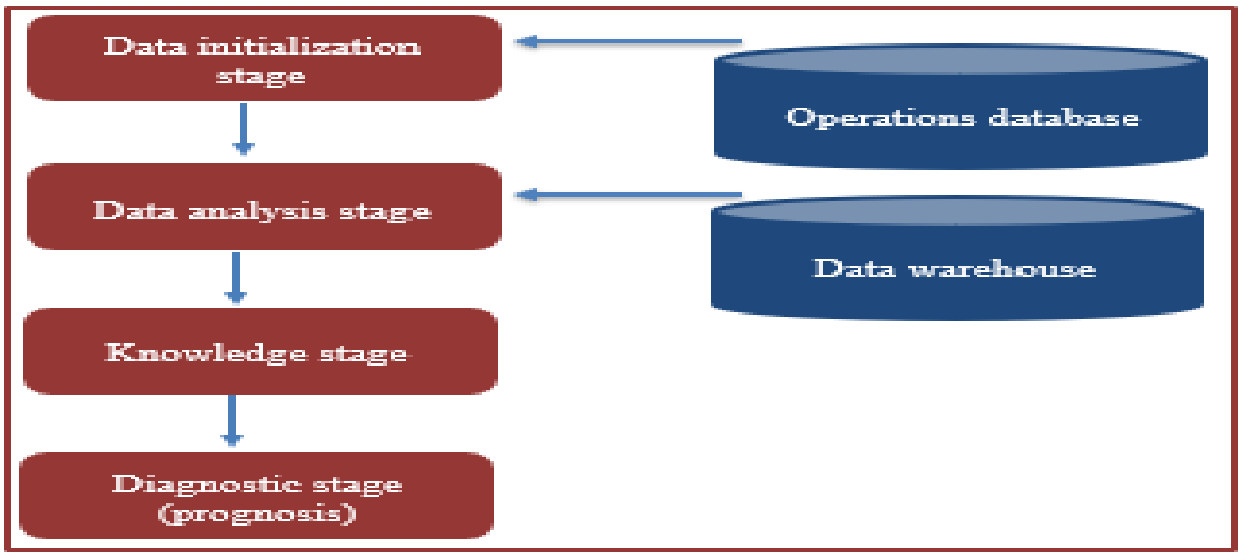

Figure (2) The stages of data mining

Source: Rob, Peter & Coronel, Carlos, (2000), "**Data Base Systems Design, Implementation and Management**", Fourth Edition Course Technology, P.611.

- **Data initialization:** the mining process is a process of processing, but the initialization of the data is the frying of the processing, as the data is the raw material to be analyzed and at this stage the data that contains the data that is ambiguous or missing from the data set is prepared and isolated, it is the stage of preparing and isolating the important and missing data or that It contains impurities from the rest of the data such as canceling duplicate information, formalization, processing missing

data and making it ready for implementation (Al-Moqaddam, 2018: 4). There are some ways to do it: (Hafez and Abbas, 2014: 124)

- **Clean data:** the data is not always free from defects or from losing some of it, and it may contain old data that is incorrect at the present time.
- **Missing data:** Data mining requires that this data be complete. If this data is not achieved then it is difficult to reach useful results.
- **Derivation of data:** Sometimes in the initialization process, derivation of some columns may occur, which helps in obtaining useful data.
- **Merging data:** Also, sometimes we need to merge some columns to get better results, and that is up to the supervisor of this data.

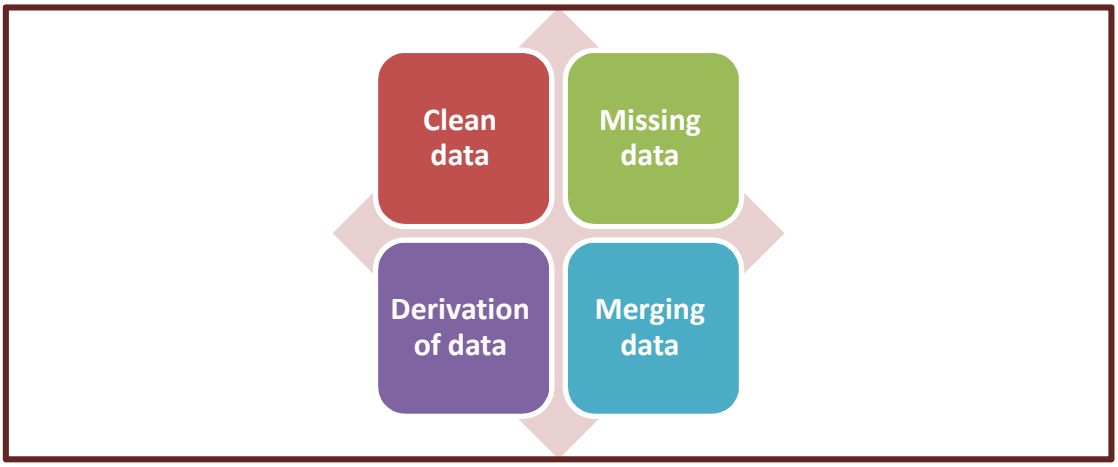

Figure (3) Data formatting methods

Source: Prepared by the researchers

- **Data analysis:** It is known that the process of collecting data in records of large sizes such as (Data warehouse) may contain great knowledge which may be useful to its owners through knowledge of many statistics required in the future, so we need different techniques to take advantage and this is what we want from data mining Normal techniques may not be useful and impractical in such large volumes of data (Dunham, 2016: 328). They are used in temporal analyzes, knowledge discovery and decision-making. They are designed to extract data, manipulate, represent and present it in a suitable manner for these purposes. A huge amount of data is analyzed that may be from different sources, for example several databases of several models (Fayyad et al, 2006: 288). Because after we have prepared and corrected the data, we come to a step or how to study the data, and this method mainly concerns us in order to determine the method of learning this data. As for supervised learning, here there is a desired goal and the algorithm is trying to reach it through a set of variables Or the data, or in other words, that the used algorithm makes the connection between the desired goal and the previously defined one with the related solutions and suggestions in the solution path (learning) compared to the expected target with the originally specified goal (learning through examples) (Baazaoui et al, 2015: 42).

- **Knowledge:** Information can be transformed into knowledge about historical patterns or future expectations. For example, information on the movement of sales and purchases of customers can provide knowledge about customers' purchasing behavior (Sirgo et al, 2013). In this stage of knowledge discovery in databases that the beneficiary sees, it is the basic stage which uses a visual method to help the user understand and interpret the results used (Al-Muqaddam, 2018: 5). Here, the final result of data mining is presented / used in the decision-making process and the benefit of the resulting knowledge. The previous stages together constitute the data mining process, which is not necessarily in one direction only. After completing any phase, we can return to any previous phase in case we find that there is some defect or inaccuracy in the results or even for the purposes of the experiment, and this matter gives the data mining process a kind of dynamic that facilitates work (Bianca et al, 2015: 390).

- **Predicting:** Predicting or anticipating from data mining techniques that reveal the relationship between independent and non-independent variables, at this stage the outcome is evaluated in the context of business objectives, the goal at this stage is to determine whether there is any important business issue that has not been adequately considered. At the end of this stage, a decision must be made to move or not to the publishing stage (Baazaoui et al, 2015: 45). Here we need to define how the results will be used. The knowledge gained should be organized and presented in a way that the stakeholders can use it, and according to the requirements the publishing phase can be as simple as creating a report, or as complex as carrying out an exploration of repeatable data across the company. The goal of this stage is to perform the process of predicting the value of a data feature based on the values of other attributes. The attribute whose value is predicted is called (Target Class). There are two types of these tasks, the first is called Classification and the second is called Prediction (Dunham, 2016: 331).

Second: IT competencies

1. The concept of information technology competencies

The new classifications of information technology workers reflect the current business needs and the changing work environment. Companies are moving away from single and narrowly focused jobs to an environment in which work complexities require broader skills and flexibility, work tasks may change on a daily basis in order to respond to this cultural change, job classifications include The new program has a wide range of duties and responsibilities and uses competency factors to distinguish between different levels of work within the new classifications (Liang et al, 2017: 139). Information technology competencies represent the knowledge and skills required to perform and support business operations, they form the basis for creating value in a company, and are observable and measurable factors (Liu & Tsai, 2014: 975).

Information technology competencies are a set of knowledge and experiences related to information technology that lead to achieving the goals, and focus mainly on the technology through which the organization is able to achieve competitive advantage (Zhang et al, 2018: 359). It is a set of information technology skills, management skills, information technology experience and interpersonal skills that professional accountants must possess to use information technology effectively (Ku Maisurah Ku Bahador, 2011: 354). Emphasis on information technology that enables organizations to achieve competitive advantage and enhance performance levels (Dehning & Stratopoulos, 2013).

Information technology competencies can be defined as a set of qualitative characteristics, knowledge and capabilities that emerge through activities such as the ability to link relationships between workers, collect useful data, the ability to use it, and adapt to technological variables.

2. The importance of information technology competencies

Information technology competencies are a must for employees to perform their tasks, as these competencies represent information technology skills, and these skills help on the one hand the routine business activities related to the work of employees, and on the other hand they help them to create an environment in which these technologies operate at the optimum level for the sake of the internal strategic advantage. For example, information technology has reduced the huge amount of work involved in the double entry system and the maintenance of various businesses, and at the same time the role of the worker has changed from just a means to decision maker (Patrakosol & Lee, 2019: 128).

Competencies increase employees with the capabilities to perform a specific job appropriately. It is a set of known behaviors that form a structured guide to enable the identification, evaluation and development of individual employee behaviors (Lai & Wang, 2016: 255). It represents as a set of practical and theoretical knowledge, cognitive skills, behavior and values used to develop performance, status or quality of what is going on adequately or well qualification, having the ability to perform a specific role, for example, management merit may contain systematic thinking, emotional intelligence and influence skills. And negotiation (Tippins & Sohi, 2013: 748).

3. Fundamentals for the success of IT competencies

The following competencies and competencies are essential to achieving organizational success in the field of information technology, and they are as follows: (Hafez et al, 2014: 201) (Samira, 2018: 30)

- **Technical knowledge:** Technical knowledge includes those skills and abilities within the IT discipline (s) required to provide products and services that support business processes.
- **Work coordination:** includes those skills and abilities required to organize and prioritize work, respond to conflicting business needs, and work collaboratively with a group of people to produce a product or service.
- **Problem Solving and Prevention:** Problem solving and prevention includes the skills and capabilities needed to analyze problems within the specialization and field (s) and evaluate alternatives to achieve quality and technical solutions that support long- and short-term goals from users and departments, and the mission of the university.
- **Communications and services:** These include the skills and capabilities needed to effectively exchange information in order to explain the needs of our customers, respond to their needs, achieve user satisfaction, and teach different levels of information technology tools to groups or individuals.
- **Accountability:** Accountability includes the skills and abilities needed to make decisions and take responsibility for action.

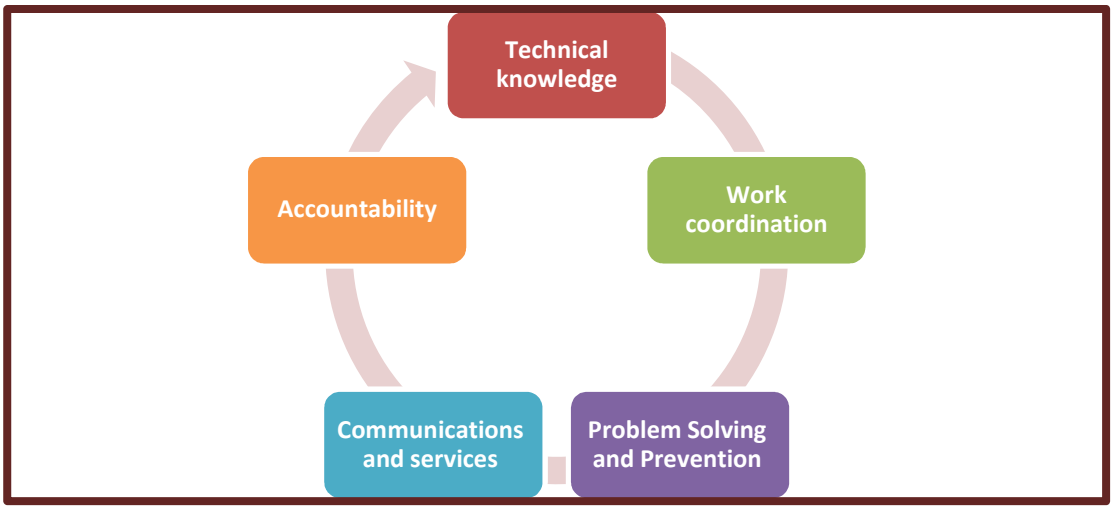

Figure (4) Essentials for the success of IT competencies

Source: Prepared by the researcher

4. Elements of information technology competencies

The competencies that must be available in the workers include the following:

- **Technological Connectivity:** The ability of the organization to operate wired and wireless communication networks in accordance with its computer systems in support of its operations and business (Croteau & Raymond, 2014). This merit supports the resource planning systems of various organizations and electronic business administration, and such systems require a high-level technological infrastructure capable of providing coordination and integration (communication) between the various functional business units (Susana, 2012: 647). Connectivity is essential for all businesses these days whether it is with employees, clients or suppliers, it is increasingly important to stay online and in touch if you are going to witness intense competition and extract more talent to beat it (Barrales-Molina, 2010: 138). The Technology Innovation and Communication Division (ITC) responds to new opportunities related to implementing modernization in (GMS) and aims to narrow development gaps by strengthening technology connectivity (Crawford, 2011: 167). It is the ability to engage in innovation through cooperation, and communication is essential in today's knowledge-based economies. This type of communication and access not only provides information, but also attracts investment because it helps in communication and communication necessary now to understand and respond to market needs (Choi & Davis, 2018: 241). For small businesses, communication may be simply about providing effective voice or data communications with contractors or flexible workers. However, for larger companies, especially those with offices spread across the globe, it is often necessary to provide standardized communications over data, voice and internet services. Integrated network (Bhatt, 2011: 89).

- **Technological Flexibility:** the potential of the organization and its capabilities to generate a set of alternatives related to information technology in accordance with the needs and requirements of customers and the surrounding environment (Croteau & Raymond, 2014). That is, the intense interference of technology with what it contains complex parts, which required that there be a kind of flexibility to keep pace with any change, whether at the internal or external level of the

organization. If it is able to keep up with any change, whether it is in the current or strategic way of performance (Bhatt & Grover, 2015: 258).

- **Technological Scanning:** It is represented by the technology and technical skills that the organization possesses capable of providing knowledge and information in the areas of its specialization, which is all that contributes to supporting the organization's strategic orientation of information capable of raising its performance through the modern technologies it possesses (Choi & Yoo, 2010: 857). The technology Scanning refers to the organization's ability to manage, acquire, analyze and publish information technology through its personnel to increase its competitiveness (Bharadwaj, 2010: 173). Technological Scanning enhances technological insight by searching for the main distinguishing features in the technology landscape, these features are called salient techniques and act as indicators of the development of technological and economic potentials, for the manager's strategic teacher techniques can become points of contact for understanding the external environment, just as the core competencies have become points of contact for understanding Internal capacity of the organization (Nfuka & Rusu, 2011: 422).

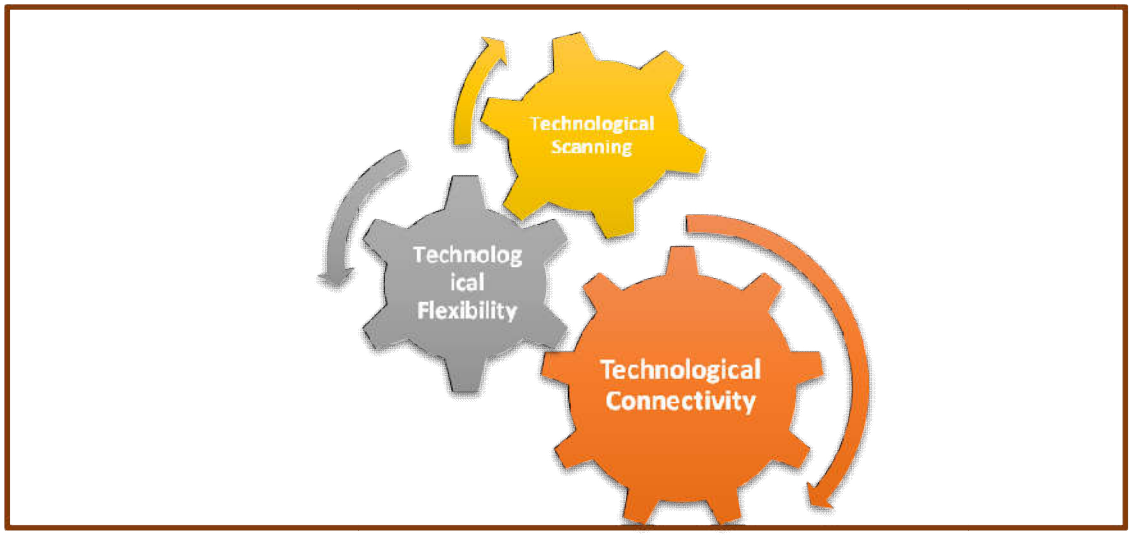

Figure (5) Elements of IT competencies

Source: Prepared by the researchers

Third: the theoretical relationship between the variables

Data mining techniques help companies build the necessary capabilities and technological capabilities by relying on the accumulation of knowledge extracted from data preparation and analysis processes, data mining helps companies by analyzing the chain of operations, for the company to have an appropriate management possessing sufficient capabilities that enables it to excel and enables customers to be assured For what the company provides services and products (Nisbet et al, 2009: 12). Data mining is the meeting point for the efforts made by researchers in several fields of knowledge, through which technologies that deal with data and its various forms and different types are developed and built in order

to confront problems in various fields such as information systems and engineering, business, industry, medicine and science (Cheng et al, 2014: 208).

The main role of databases is to save and obtain data when needed, while the role of data mining is to be able to read and analyze this data to help make the appropriate decision. Visualization techniques are used as a tool in the data preparation phase or the post-data mining phase to show results, Data mining uses some machine learning techniques such as neural networks and decision trees, and the goal of data mining differs from the goal of machine learning. Machine learning aims to give computers the ability to carry out tasks that humans do by teaching them, in other words: replacing the human role, but data mining aims to help the role The human being is supported and not replaced by strengthening the capabilities and technological skills of the individual (Martı´n-Rojas et al, 2011:989).

The third topic: the field framework for research

First: Description of the field of research:

1. A brief introduction about the company, Asia Cell: It is the first Iraqi telecom company established in (1999) in Iraq, and started working on the GSM system since the year 2001, and the company's scope of work was defined in the Kurdistan region (Erbil, Dohuk, Salmaniya) and after 2003 Asia cell Company obtained a license to work in all parts of Iraq from the northern region, that the Asia Cell Company was established as a limited company on (25/7/2007) according to the decision of the Registrar of Companies in Baghdad, with a capital of one million Iraqi dinars and the company continued in its kind as a limited company Until (11/1/2011) and obtained a license on (30/8/2007) from the Media and Communications Authority for a period of (15) years with a value of (1.25) billion dollars, and it was transformed from a favorable company to a joint stock company on (24/7/2017) And it obtained the approval of the Securities Commission on (24/7/2012) to be listed on the Iraq Stock Exchange, and Table (1) shows the identifying information about the Asia Cell Company.

Table (1) Summary of Asia Cell Company

T	The singular	The information
1	The Company's name	Asia Cell
2	Headquarters	Iraq - Salmaniya / Salem Street, Asa Cell Building
3	Date of Establishment	1999
4	Type of Company	A private Iraqi joint stock company
5	Labor market	All governorates of Iraq
6	Industry type	Telecom sector
7	Number of subscribers	More than 12.5 million subscribers
8	The number of affiliated branches	40
9	The size of the general revenue	• 2012, an amount of 2,173 billion Iraqi dinars • 2013 an amount of 2,232 billion Iraqi dinars • 2014, an amount of 2,012 billion Iraqi dinars
10	Seed capital	One million Iraqi dinars

Source:www.asicell. com

2. Determining the size of the sample: It is not enough for the researcher to choose the appropriate sample to be used in the study. Rather, it is important to determine the size of the sample to be studied, which can represent the community as a whole, and determining the size of the sample is associated with the desired accuracy of the sample to be studied, which represents the community as a representation (Abdullah, 35: 2014). The individuals surveyed were chosen from the managers and officials of the departments and divisions in the company in question (Asia Cell Company), and the researchers distributed (81) questionnaires to the individuals surveyed.

Second: Description and Diagnosis:

1. Describe and diagnose the data mining

The overall agreement rate for the data mining variable was (79.73%), meaning that the individuals surveyed whose opinions in the company under investigation confirmed that the company used the data mining stages in terms of its requirements, while the respondents whose opinions were in the negative direction represented (6.6). The percentage of the respondents whose opinions did not have an opinion or their answer was neutral represented (13.67%), and the preliminary analysis of the answers of the individuals interviewed confirmed their opinions that the company has the dimensions of data mining, and all the dimensions came with an arithmetic mean of (4.00) and a deviation Standard (0.86) and coefficient of variation (0.215).

The importance of describing the requirements of agile management can be arranged in terms of degree of agreement.

A. The one who contributed to the positivity of this variable is knowledge, as it came with an agreement of (81.1%), meaning the dimension came first.
B. Initiatives came in second place, with an agreement of (80.7%).
C. The forecast came in third place, with an agreement of (79.4%).
D. Data analysis ranked fourth, with an agreement of (77.7%).

Table (2) Summary of data mining

Data mining	Totally agree, agree	neutral	Do not agree, do not completely agree	Arithmetic mean	standard deviation	Coefficient of variation
Initialize data	80.7	14.1	5.2	4.02	0.88	0.218
data analysis	77.7	15.3	7	4.00	0.87	0.217
Knowledge	81.1	11.6	7.3	3.98	0.89	0.223
speculate	79.4	13.7	6.9	4.01	0.81	0.201
General Average	79.73	13.67	6.6	4	0.86	0.215

Source: Prepared by the researcher based on the statistical program (SPSS). N = 81

2. Describe and diagnose elements of information technology competencies

The overall agreement rate for the elements of information technology competencies was (78.4%), meaning that the individuals surveyed whose opinions in the company under investigation confirmed the company's use of the elements of information technology competencies in terms of its aforementioned elements. (6.1%), and the percentage of the respondents formed their opinions who did not have an opinion or their answer was neutral (15.5%). The preliminary analysis of the answers of the individuals interviewed confirms their opinions that the company owns the elements of information technology, and all the elements came with a mean of (3.99) and a deviation Standard (0.86) and coefficient of variation (0.216). The importance can be arranged to describe the elements of IT competencies represented by its components and diagnose them in terms of degree of agreement.

A. The technological survey that contributed to the positivity of this variable, as it came with an agreement of 82%, meaning the dimension came first.
B. The technological flexibility dimension came in second place, with an agreement of 79%.
C. The technology connection dimension came in third place, with an agreement of 78.5%.

Table (3) Summary of IT competencies

Data mining	Totally agree, agree	neutral	Do not agree, do not completely agree	Arithmetic mean	standard deviation	Coefficient of variation
Technological connection	**76.8**	**16.4**	**6.8**	**3.98**	**0.88**	**0.221**
Technological Scanning	**82**	**12.3**	**5.7**	**4.13**	**0.80**	**0.198**
Technological flexibility	**79**	**14.7**	**6.3**	**4.00**	**0.87**	**0.218**
General Average	**78.4**	**15.5**	**6.1**	**3.99**	**0.86**	**0.216**

Source: Prepared by the researcher based on the statistical program (SPSS). N = 81

Third: testing research hypotheses:

1. The first hypothesis: The interest of the company in question varies in terms of its adoption of data mining techniques: In order to prove the validity of the first hypothesis of the study, the Duncan test was adopted, and by using the SPSS statistical package, we obtained the following results:

Table (4) of Duncan test results

T	Dimensions	Subgroups
		1
1	**Initialize data**	4.02
2	**data analysis**	4.00
3	**Knowledge**	3.98
4	**speculate**	4.01

Duncan's test results, which are supported by the results of the analysis of variance, show that the company in question is interested in adopting all data mining techniques without distinction, as all technologies have close arithmetic averages ranging between 3.98--4.02 and all of them are in one group. On the basis of these results, the hypothesis of the first study is rejected, and the alternative hypothesis is accepted, as it is evident that the interest of the company under study in data mining techniques does not differ.

2. The second hypothesis: the interest of the company under investigation varies for the capabilities of information technology: the statistical treatment to test the second hypothesis requires the use of Duncan's analysis to identify whether the company in question possesses all the IT competencies of equal importance or not. By using the statistical package (SPSS), we obtained the following results:

Table (5) of Duncan test results

T	Dimensions	Subgroups	
		1	2
1	**Technological connection**	4.98	
2	**Technological Scanning**		4.82
3	**Technological flexibility**	4.00	

The results of the table (5) show that the company in question paid the first attention to the technological survey, as it appeared in an independent group on its own and the arithmetic mean of this variable was (4.82), which is higher than the value of the arithmetic mean of the rest of the competencies that appeared in one group, which comes in second place in terms of importance. Despite the slight convergence in the values of the arithmetic means of these values. With these results, the second hypothesis of the study is accepted.

3. Testing the third hypothesis: This hypothesis states that there is a significant correlation between data mining and information technology competencies in a company under investigation. Table (6) shows the results of the correlation test related to this hypothesis.

Table (6) results of the correlation test in the company in question

The explanatory variable / The transponder variable	data mining
information technology competencies	0.63*

***N= 810.05≤P**

Table (6) indicates the existence of a positive significant correlation between data mining and the IT competencies of the company under investigation, as the overall index value of the correlation coefficient was (* 0.63) and at a significant level (0.05), which is evidence of the existence of the relationship between the two variables. This result is that the more the company under investigation increases its interest in data mining, it contributes to achieving the information technology competencies of the company under investigation by providing the appropriate environment for experts in the company under study and

working on the accurate exchange of information, and based on the results of the statistical analysis of the correlation between the two variables The study accepts the second main hypothesis at the company level in question.

4. The third hypothesis: This hypothesis states that there is a significant effect of all data mining elements in supporting the IT competencies of the company under consideration. Table (7) illustrates this effect as follows:

Table (7) The effect of data mining on IT competencies

The explanatory variable / The transponder variable	data mining			F
	β0	β1	R^2	
IT competencies	0.668	0.571 (10.025)*	0.44	64.822

***N=81 D.F=1. 79 P ≤ 0.05 Denotes the calculated T value (*)**

Table (7) for regression analysis shows the existence of a positive significant effect of data mining as explanatory variables in the IT competencies combined as a responding variable, as the calculated value of (F) is (64.822), which is greater than its tabular value at two degrees of freedom (1, 79) And a significant level (0.05). The coefficient of determination (R2) reached (0.44), meaning that (44%) of the explained differences in the IT competencies are due to the effect of data mining, and the rest are due to random variables that cannot be controlled or are not included in the regression model at all. From a follow-up of the parameter (1), it becomes evident that the increased interest in data mining with one unit leads to a change of (0.571) in the competencies of information technology, and the factor (0) means that the company under research is achieving the competencies of information technology, regardless of the effectiveness of the exploration for The data, and from following up the calculated (t) test of (* 11.320), we find that it is a significant value and greater than its tabular value of (6.302) at a level of significance (0.05) and two degrees of freedom (1,48). Thus, you accept the second main hypothesis, which states that: (There is a significant impact of data mining on the IT competencies of the company in question).

The fourth topic: conclusions and recommendations

First: Conclusions:

1. Data mining is an advanced process for analyzing large amounts of data and for using it in developing the competencies of information technology.
2. The data mining process represents a need and necessity at the same time for the organization to analyze and create benefits from that data and use it to predict current and future decision-making.
3. Information technology competencies adopt all its subsidiary and partial processes with appropriate techniques, and their results are more accurate as the information provided is more expressive of the required technological actions.
4. A positive significant correlation was achieved between the combined data mining techniques and the combined IT competencies of Asia cell in terms of its variables according to the value of the correlation coefficient at the macro level.

5. The existence of a positive significant impact of data mining techniques collectively on the IT competencies combined, indicating that the increased interest of the company's management in question in the combined data mining techniques will contribute to enhancing the competencies of information technology by reducing costs, improving quality and delivering services on time.

Second: Recommendations:

1. Work to increase awareness in Asia cell, especially at the operational and operational levels of data mining techniques, and to demonstrate the extent of the urgent need for knowledge-based decision-making and data analysis, as this plays a major role in supporting IT competencies.
2. Focus on methods and methods of data mining, as they can analyze very large results in record times.
3. The need to pay attention to all divisions in the company under discussion by equipping them with the development of appropriate means, theories, equipment and devices to carry out the tasks assigned to him, and to supply him with qualified, experienced and highly skilled individuals.
4. The necessity of attention by the company's management to the results of the relationship between the research variables and their impact on the nature of the company's work. The research sample, the study may recommend the necessity of paying attention to these variables and giving them more importance because of their extreme impact in determining the future of this company and ensuring its survival.
5. The necessity to work on disseminating concepts of data mining and information technology competencies among the individuals working in the company under discussion at all administrative levels through seminars, periodicals, and notice boards for the purpose of consolidating these concepts.

References

1. Baazaoui, Z., H., Faiz, S., and Ben Ghezala, H., (2015), "**A Framework for Data Mining Based Multi-Agent: An Application to Spatial Data**", volume 5, Proceedings of World Academy of Science, Engineering and Technology.
2. Barrales-Molina, V., Benitez-Amado, J. and Pe´rez-Arostegui, M.N. (2010), "**Managerial perceptions of the competitive environment and dynamic capabilities generation**", Industrial Management & Data Systems, Vol. 110 No. 9, pp. 1355-84.
3. Bharadwaj, A.S. (2010), "**A resource-based perspective on information technology capability and firm performance: an empirical investigation**", MIS Quarterly, Vol. 24 No. 1, pp. 169-96.
4. Bhatt, G.D. (2011), "**Knowledge management in organizations: examining the interaction between technologies, techniques and people**", Journal of Knowledge Management, Vol. 5 No. 1, pp. 68-75.
5. Bhatt, G.D. and Grover, V. (2015), "**Types of information technology capabilities and their role in competitive advantage: an empirical study**", Journal of Management Information Systems, Vol. 22 No. 2, pp. 253-77.
6. Bianca V. D., Philippe Boula de Mareüil and Martine Adda-Decker, (2015) "**Identification of foreign-accented French using data mining techniques**", Computer Sciences Laboratory for Mechanics and Engineering Sciences (LIMSI).
7. Chau, M., Cheng, R., and Kao, B, (2015), "**Uncertain Data Mining: A New Research Direction**", In Proc. Workshop on the Sciences of the Artificial, Hualien, Taiwan.
8. Cheng, R., Kalashnikov, D., and Prabhakar, S, (2014), "**Querying Imprecise Data in Moving Object Environments",** IEEE TKDE, 16(9), 1112-1127.
9. Cheng, R., Xia, X., Prabhakar, S., Shah, R. and Vitter, J, (2014), "**Efficient Indexing Methods for Probabilistic Threshold Queries over Uncertain Data**", In Proc. VLDB.
10. Choi, B., Poon, S.K. and Davis, J.G. (2018), "**Effects of knowledge management strategy on organizational performance: a complementarity theory-based approach**", Omega, Vol. 36, pp. 235-51.
11. Choi, S.Y., Lee, H. and Yoo, Y. (2010), "**The impact of information technology and transactive memory systems on knowledge sharing, application and team performance: a field study**", MIS Quarterly, Vol. 34 No. 4, pp. 855-70.
12. Crawford, J., Leonard, L.N.K. and Jones, K. (2011), "**The human resource's influence in shaping IT competence**", Industrial Management & Data Systems, Vol. 111 No. 2, pp. 164-83.
13. Dunham, M. H., Sridhar S., (2016), "**Data Mining: Introductory and Advanced Topics**", Pearson Education, New Delhi, ISBN: 81-7758-785-4, 1st Edition.
14. Fayyad, U., Piatetsky-Shapiro, G., and Smyth P., (2006), "**From Data Mining to Knowledge Discovery in Databases**", AI Magazine, American Association for Artificial Intelligence.
15. Hafez and Abbas, Abdel Nasser Abbas, Hussein Walid Hussein, (2014), "**Management Information Systems by Focusing on the Organization's Functions**", First Edition, Dar Al-Hikma for Printing and Publishing.
16. Hamdan, H. and Govaert, G, (2015), "**Mixture Model Clustering of Uncertain Data**", IEEE International Conference on Fuzzy Systems, 879-884.
17. Jiawei Han and Micheline Kamber, (2016), "**Data Mining Concepts and Techniques**", published by Morgan Kauffman, 2nd ed.
18. Lai, F., Zhao, X. and Wang, Q. (2016), "T**he impact of information technology on the competitive advantage of logistics firms in China**", Industrial Management & Data Systems, Vol. 106 No. 9, pp. 1249-63.
19. Larose, D. T., (2015), "**Discovering Knowledge in Data: An Introduction to Data Mining**", ISBN 0-471-66657-2, ohn Wiley & Sons, Inc.
20. Liang, T.P., You, J.J. and Liu, C.C. (2017), "**A resource-based perspective on information technology and firm performance: a meta-analysis"**, Industrial Management & Data Systems, Vol. 110 No. 8, pp. 1138-58.
21. Liu, P., Chen, W. and Tsai, C. (2014), "**An empirical study on the correlation between knowledge management capability and competitiveness in Taiwan's industries**", Technovation, Vol. 24 No. 12, pp. 971-7.
22. Martı´n-Rojas, R., Garcı´a Morales, V.J. and Garcı´a-Sanchez, E. (2011), "**The influence on corporate entrepreneurship of technological variables",** Industrial Management & Data Systems, Vol. 111 No. 7, pp. 984-1005.
23. Nfuka, E.N. and Rusu, L. (2011), "**The effect of critical success factors on IT governance performance**", Industrial Management & Data Systems, Vol. 111 No. 9, pp. 1418-48.

24. Padhy Neelamadhab, Dr. Pragnyaban Mishra, and Rasmita Panigrahi, (2012), "**The Survey of Data Mining Applications and Feature Scope**", International Journal of Computer Science, Engineering and Information Technology (IJCSEIT), Vol.2, No.3.
25. Patrakosol, B. and Lee, S. (2019), "**IT capabilities, interfirm performance and the state of economic development**", Industrial Management & Data Systems, Vol. 109 No. 9, pp. 1231-47.
26. Presenter, Samira Muhammad Ali, (2018), "**Application of Data Mining Techniques to Evaluate the Performance of Students of the Computer Department - College of Science**", Master Thesis in Computer Science, Computer Department, College of Science, Sebha University.
27. Rob, Peter & Coronel, Carlos, (2000), "**Data Base Systems Design, Implementation and Management**", Fourth Edition Course Technology.
28. Sirgo, J., Lopez, A., Janez, R., Blanco, R., Abajo, N., Tarrio, M., Perez, R., (2013) "**A Data Mining Engine based on Internet, Emerging Technologies and Factory Automation**", Proceedings ETFA '03, IEEEz Conference,16-19Sept.
29. Susana Pérez-López, Joaquin Alegre, (2012),"**Information technology competency, knowledge processes and firm performance**", Industrial Management & Data Systems, Vol. 112 Iss: 4 pp. 644 – 662.
30. Tippins, M.R. and Sohi, R.S. (2013), "**TI Competency and Firm Performance: is organizational learning a missing link?**",Strategic Management Journal, Vol. 24 No. 8, pp. 745-61.
31. Yeung, K. and Ruzzo, W, (2011), "**An Empirical Study on Principal Component Analysis for Clustering Gene Expression Data**", Bioinformatics 17(9), 763-774.
32. Zhang, M., Sarker, S. and Sarker, S. (2018), "**Unpacking the effect of IT capability on the performance of export-focused SMEs: a report from China**", Information Systems Journal, Vol. 18, pp. 357-80.