The Role of Business Intelligence in Crises Management: A Field Study on the Telecommunication Companies in Jordan

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Abstract

The field of business intelligence and crisis management currently become important issues that organizations should be concerned about. The aims of the research is to identify the concepts of business intelligence (BI) and crisis management and review the importance of business intelligence in business organizations through the following independent variables (data source - data stores - specialized data - analytical processing- Data and data mining) and its impact on the crisis management stages (pre-crisis phase, during the crisis phase and post-crisis phase) in the Jordanian telecommunications companies. The study population consisted of employees of the Jordanian telecommunications companies. A simple random sample was selected, to whom (130) questionnaires were distributed and 120 questionnaires were retrieved. The study relied on the descriptive analytical approach (SPSS as statistical analysis). The research concluded that there is a positive significant impact between business intelligence and management crisis in the Jordanian business organizations. This indicates to the interest of these organizations in the tools of business intelligence, especially with regard to the analytical processing of data based on a secure and integrated system in the work environment to manage organization crises.

Keywords: business intelligence, crisis management, data source, data stores, specialized data, analytical processing, data and data mining

1. Introduction

Due to increased competition, the difficulty of predicting the environment effectively in the existing machines, processes and products, the role of knowledge has increased productivity (Pavkov, Poščić, & Jakšić., 2016).Furthermore, the emergence of globalization in the markets, strong competition, increasing speed with changes in market conditions and changing the needs of customers, all market participants and companies face new challenges (Azeroua & Theel, 2018). The economic reality and the modern and fast developments in the business organizations environment and the various and different crisis these organization are facing, made them face a reality that focused on searching for tools that would ease facing theses crises, improve the task of making efficient and qualified decisions regarding these crises and how to manage them through operating and analyzing the massive amount of data and information. This can be obtained from different sources. Therefore, the organizations that desire to survive in the business world and compete with efficiency in the market must search for tools that enable them to survive. The adoption of Business Intelligence concept represents one of the tools that can reduce the exposure to risks and crises.

The roots of BI surfaced in the decision support systems, where the research efforts that were specialized in using the calculated quantity models, helped in the planning and decisions-making processes. Those systems helped in introducing the idea of data warehousing and increasing the organization's database (Jon, 2008). Many surprising changes may occur in the business environment, whether it is an internal or external environment, without having the right opportunities to avoid these changes, which can be a crisis, and often the efficient response by management is the only solution to avoid the crisis or minimize their negative effects on the organization. In this context, the poor handling by the organization management can lead to a very bad situation. Therefore, it has to be handled by using the (BI).

1.1 The Concept of Business Intelligence

Initially, (BI) varied and spread in many directions. (Azeroua & Theel, 2018) It is defined as a collective term for concepts and methods of information analysis for decision-making, delivery, and processing purposes. BI has become widespread in business practice and science. Mos and Atre (2003) define (BI) as An architecture and a group that are fully operational, as well as decision-support applications of database that provide the business community easy access to business data. Vikas (2013) defines it as the management technique and the export and presentation of raw database in a way that is useful, meaningful and can help any organization make right business decisions. (Wieder, Ossimitz, Chamoni.,2012) stated that BI is the process of gathering and transforming fragmented data of markets and enterprises into knowledge about objectives, to provide opportunities and positions for an organization. (BI) was also defined as the ability to access information and analyze it (Gartner, 2006).Another definition of Business Intelligence is taking large amount of data and presenting high-level of reports that reveal the essence of these data to the foundation of business procedures which enable the management to make the daily commercial businesses the foundation of decisions making (chen, chiang, storey, 2012).

1.2 The Importance of Business Intelligence

BI is a component that helps organizations increases their competitive advantage. Unfortunately there is a lack and shortage in the research and development process around the world which focus on IT tools to develop BI (Olszak a & Zurada. ,2015).This hard work requires taking fast, correct, and decisive decisions in response to these changes, as most of them can be unexpected and not result-calculated. For this reasons business organizations come under huge pressures from the competitors and the market to produce new products and provide high quality services. Therefore, these pressures must be contained very rapidly.

The dynamic structure for the business organization is the first fundamental requirement to succeed in containing those pressures and the main character for this structure is represented in the rapid response to the changes in the achievement of businesses (Jaynthi, 2009).

The importance of (BI)is evident in the usage of technology to collect information in order to improve the commercial efficiency and enable the employees at the organization to obtain the source of information they need to do their job efficiently, the ability to analyze and easily share this information with others (Reiger, 2005). BI refers to software products that are designed to assist in the analytical processes. For example, data warehouse software, digital dashboard software and data mining software (Wieder, Ossimitz, Chamoni .,2012).

In addition, (BI) can be easily understood as the employment of techniques in the use of precise, immediate, different and high quality information that is connected to the business field itself and a large and reliable data available from different sources, as well as implementing the experiences that had been gained of for the goal of improving and developing the quality of decision that must be made based on these information (Jayanthi, 2009).

Moreover, (Jayanthi, 2012) mentioned a group of benefits for the Business Intelligence, namely: (1) Investigating the information, where the companies are able to determine the most profitable customers and the reasons for the loyalty of those customers, as well as determining the future of those customers.(2)Analyze the possible profitability growth of the customer and limiting exposure to risks, determining the products, the customers and the service lines. (3) Limiting the breakdown of equipments by implementing predictive maintenance.

Vikas(2013) mentioned a group of realized benefits of Business Intelligence as follows: Provide historical data that is more precise which enables Business Intelligence to provide updates in real time and help the management know when it is unable to see the current detailed data from every aspect of its business such as financial data, product data and customer data. Accordingly, the management will be able to make decisions that are based on reality and not just predictions. It also helps to understand customer's behavior, such as identify, monitor, and track the customers and the customer base in the future, not to forget giving insightful vision on customer's behavior.

1.3 Business Intelligence Tools

BI includes the underlying architectures, tools, databases, applications, and methodologies (Guoqing et al., 2013). BI provide many tools through the use of appropriate technologies to assist with the collection, integration, storage, editing, and analysis of existing data (Azeroua & Theel ,2018).

1.3.1 Data Sources

Data is a group of facts and figures where no operation was performed on them, and it is like the raw material

that information is derived from them. It represents the materials, facts, ideas, opinions, activities, the registered, categorized and stored transactions (Tayeb, 2016) (Aruldoss, Travis & Venkatesan,.2014)

1.3.2 Data Storage

(Olszak & Zurada, 2015) Data storage technique is considered like a strong foundation that works on the basis of immediate and fast response to the work activities and the needs of beneficiaries inside and outside the organization. This is due to the integrated nature of the data storage systems and the sources of internal and external data that depend on it. It is possible to say that data storage is a live dynamic configurations in continues and constant growth as long as the activities of traditional treatment of the business data are constant and as long as there is an urgent need to retrieve and invest the storage for the purpose of supporting the operation and activities of the management (kabali,2014).The data storage system may include different data units, data warehouse (partition, function, application-specific, decision support system, using relational, multidimensional, or column-based servers) or one or more operational Data Stores (Sharrmilla&subramani,2013).Data warehousing is the process of taking, processing and storing internal data in a data warehouse to help decision makers access and make decisions. External information is also brought to the data warehouse (Liang, Stroeve, Box, 2005).

1.3.3 Specialized Data (Data Mart)

Specialized data is: The sub group of the data that is found inside the data storage which is usually directed toward a specific line or specific work-team or it is used for a specific goal. The creation of a 'data market' is based on a predetermined and specific need to collect and configure specific data and the data tool can support a particular business function, business process, or business unit (Manea, Ali., 2009). Data statements are described in (Hall, 1999) as the topics organized to support decision-making based on the needs of the department concerned.

1.3.4 The Analytical Processing of Data

Data exploration is a passive BI analysis consisting of query and reporting systems as well as statistical method (Carlo, 2009).The analytical treatment is: Analyzing and processing data with sophisticated tools that help summarize data. In addition, it is used to prepare the reports and modeling analysis and the planning to improve work inside an establishment. Data analysis includes diverse techniques under a variety of names and is used in various commercial, scientific and social fields. In today's business world, data analysis is important in taking more scientific decisions and help companies work effectively (Xia & Gong, 2015).

1.3.5 Data Mining

Data mining is the active BI methodologies with the purpose to extract information and knowledge from data (Carlo, 2009). Data mining allows presenting and discovering the useful relationship between data, specially the hidden patterns that exist between data elements, but it is also found between a vast amount of data. The duties of data mining are not limited to the amount of discovering and searching for useful data and relations, but they also work on building new connections and relations such as the management of categorizing the beneficiary of suppliers and other tasks, Data mining systems also be used to find a type of conclusion patterns through testing the records that are found in the files of data or data storage (kabali, 2014; Turbanaronson, liang, 2005).

1.4 The Concept of Crisis Management

The term crisis includes a wide range of knowledge that includes actions such as countering disasters and personal problems (Coombs, 2015). Hoffman (2007) defined crisis as: a sudden or unexpected occurrence of a situation that make the organization face challenges forcing it to respond in order to be able to continue its operations. In addition, crisis management relies on the measurement and evaluation of threats, thereby developing strategies that serve management and to address imbalances (Aljuhmani&Emeagwali ,2017).

1.4.1 The Stages of Crisis Development

The organizations with all their fields aspire to recognize the stage at which the crisis resides now, which makes it the most importance in making good decisions. The right diagnose is considered the most important factor in the treatment of the crisis, before the escalation of events can cause the explosion of the crisis and the occurrence of losses. The diagnostic and management responsibility falls on the top level workers of management, however, in the event of a crisis occurring, dealing with it can be expensive for the organization, because the treatment can take many stages which are usually tiring and exhausting (Alkhafaji, 2007). Ahmad (2014) pointed out that the crisis management passes through implementing the following five stages: early warning stage, readiness and prevention stage, the containment and limiting damages stage, reclaiming activity stage and useful and learning stage.

The researcher reviewed previous literatures that are related to this study where it turned out that there were many forms for crises management, specifically: (1) Steve Albrecht model (2) Jonston and Stefanovich Model (3) Pearson and Mitroff Model (4) Sha'lan Model (5) Momni Model

After the reviewing of Pearson and Mitroff model, it was evident to the researcher that it suits the subject of this study, where this model is considered one of the most important and most clear ones since it consists of five stages that are considered the base of crises management. The crisis is so a complex one that cannot be seen as consequences of isolated events or individual decisions, but rather "a complex, interactive structures in which the results are comprehensive and involve multiple actors" (Seeger et al., 2003).

Therefore, there must be a useful development structure to create a larger picture, involving multiple actors, and many decisions that have been taken with multiple consequences. Post-crisis adjustment, adjustment (Seeger, Sellnow, Ulmer, 2003) consequently in this research categorized these stages as follow:

1. **Early warning stage (Pre Crises Stage):** Every crisis produces a group of signs before it occurs in a very short period. These signs form the initial symptom that points to the possibilities of the occurrence of the crisis. Therefore, investigating and determining these signals stop the occurrence of the crisis Ahmad (2014). Early and before they occur, all crises send a series of early warning signals, which announce the possibility of a crisis (Mitroff & Anagnos, 2001).

2. **Readiness and prevention stage**: Organizations must adopt the principal of Prevention better than cure where the organization must provide the necessary preparations to prevent crises and identify the prevention techniques. This stage aims at preventing the occurrence of a crisis by establishing different scenarios for all different facts during a crisis. Furthermore, it must determine the duties and responsibilities and distribute them in a way that guarantees handling the crisis with liability and accountability.

3. **Crisis containment and damage-minimization stage:** Organizations face the need to contain damage in a timely manner by finding appropriate solutions (Seeger et al., 2003). (Ahmad ,.2014) stated that the organizations sometimes face a painful reality where it becomes impossible to prevent a crisis from happening. Therefore, there will be no other choice for the organization except to try containing and minimizing its effects. This stage aims at preparing the necessary tools to extinguish the crisis by taking decisions that can isolate the crisis, prevent it from spreading and expanding where it can reach to all parts of the organization that were far from the crisis.

4. **Post-crisis stage:** The post-crisis phase is usually the longest phase in containing a crisis. After a crisis, which can sometimes last for a few years depending on how serious it is (Seeger et al., 2003), the post-crisis stage serves as a catalyst (Wooten& James., 2008) and in order to allow managers to think outside the box and differently from the organization (Wooten &james., 2008), this stage includes establishing and executing the plans and programs that were ready and tried before. This includes several aspects: Most importantly, trying to recover the principals that were lost. This is where the decision maker chooses which employees have a high degree of qualifications who can execute the daily operations and recover activity with competence (Ahmad .2014). In the post-crisis period, companies must use the opportunity to innovate and learn (Cretu and Alvarez, 2010). In the post-crisis stage, means retrospective sense-making, as shown in (Weick, 2005).Retrospective reflection on decisions taken and attitudes faced by organizations helps in finding different interpretations of different attitudes and thus facilitates learning and development.

2. Statement of the Problem

The research problem occurred through reviewing previous literatures where it was found that many organizations use the Business Intelligence tools separately from crises management and there is no enough awareness in the relationship between the two subjects, especially, the absence of previous studies that dealt with those dimensions.

The problem of the study appears through answering the following questions:

1. What is the role of Business Intelligence in crises management in the Jordanian Telecommunication Companies?

3. The Research Importance

The importance of this research also appears in the scientific and research visions which it provides to other researchers in the field of Business Intelligence and who are in search of making the desired development in the management techniques and the decision making process as well as adding a new understating with the aim to make the positive change in the qualification of Jordanian Telecommunication Companies?

4. The Research Objectives

This paper intends to achieve a goal research that will relates two fields of study which have been largely ignored each other researchers. This paper seeks to accomplish the following objectives:

1. Identify the concepts of Business Intelligence and crises management as well as reviewing the importance of Business Intelligence in business organizations.

2. Help business organizations realize the importance of Business Intelligence and enable them to invest in building it.

3. Understand if the implementation of Business Intelligence affects the management of crises in the Jordanian Telecommunication Companies?

4. Motivate the management, particularly the top management, to the importance of following principle of Business Intelligence in the facing crises.

5. The Research Hypotheses

This research aims to investigate the following hypotheses:

The First Main Hypothesis:

Ho1. There is no significant effect at the significant level of (a ≤0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) in crises management in the **Jordanian Telecommunication Companies**.

Branching from this main hypothesis the following sub-hypotheses:

Ho1-1:- There is no significant effect at the significant level of (a ≤0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) on the pre-crisis stage in the **Jordanian Telecommunication Companies.**

Ho1-2:- There is no significant effect at the significant level of (a ≤0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) on the crisis stage in the **Jordanian Telecommunication Companies**.

Ho1-3:- There is no significant effect at the significant level of (a ≤0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) on the post crises stage in the **Jordanian Telecommunication Companies.**

6. Conceptual Model

After reviewing the hypothetical literatures and previous studies related to the subject, the following study model was established.
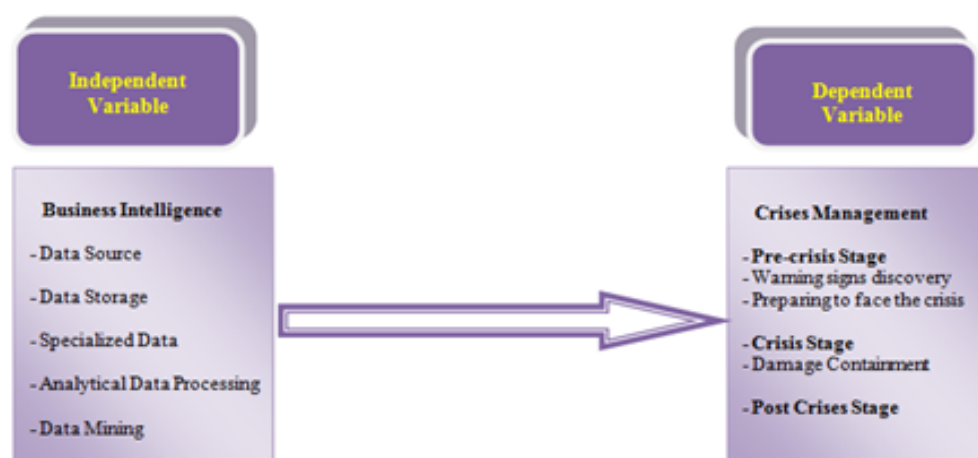

Figure 1. Study Model 1

7. Study Methodology

The study relied on the analytical descriptive approach because it suites the nature of the study, its goals and questions. Data sources are derived from two sources and they are: Secondary sources are represented by the study literatures which rely on the scientific references and previous researches and studies that discuss the study subject, and the articles that are published in magazines and periodicals as well as the Primary sources. The design of the questionnaire covers all the study variables, answers and questions not to forget the distribution of the sample individuals to collect the right data.

7.1 Study Population and Sample

The study sample consisted of employees at the Jordanian Telecommunication Companies and a simple random sample was chosen (N=130), and the questionnaires were distributed among them. (120) questionnaires were returned back which they were suitable for statistical analysis and were the actual study sample that was formed.

7.2 Study Instrument

1. After reviewing the literatures related to the concept of Business Intelligence and the relation of some variables and all the factors connected to it, (25) sections that were distributed over five dimensions were chosen based on the theory that researchers and academics reached.

2. After reviewing the literatures related to the concept of crises management and the related factors (25) sections distributed over five dimensions were chosen, based on the theory that researchers and academics reached.

3. After the adoption of the study dimension (Business intelligence – crises management) the questionnaire questions were chosen and were reviewed to ensure that they cover all aspects of the main study.

4. Some elements of the questionnaire were rearranged. The five elements Likert's scale, (strongly agree, agree, do not agree, disagree, strongly disagree), were used in the answering of the sections of both axes. This questionnaire consisted of two parts:

Part one: This part included five dimensions that measure the extent of using Business Intelligence tools in the Jordanian Telecommunication Companies

Part two: This part included five dimensions that measure crises management Jordanian Telecommunication Companies Every statement of the previous statements was given a specific score to in order to statistically remedy it. They were as follow: Strongly agree = 5 points Agree = 4 points neither agree or disagree = 3 points Disagree = 2 points Strongly disagree = 1 point

8. Study Tool Validity and Reliability

8.1 Content Validity

This validity means the extent of the sections-expression of every study variables from the variable it belongs to. The attention was focused on making sure that every variable of the study is represented in a precise manner with a group of sections and sentences in a suitable way and that these sections really measure this variable. The validity of the questionnaire content was measured through measuring the relationship between every section and the axis it belongs to as well as excluding the sections whose correlation coefficients were weak, by relying on correlation coefficients that are over (95%), and their statistical significance important at the level of ($a \leq 0.05$) as explained in the following tables:

Table 1.Content Validity for the first dimension (Business Intelligence Tools)

Dimension	Correlation Coefficient	Significance Level
First dimension: Data Source	0.87	**0.000
Second Dimension: Data storages	0.93	**0.000
Third Dimension: Specialized Data	0.89	**0.000
Fourth Dimension: Data Analytical Processing	0.88	**0.000
Fifth Dimension: Data Mining	0.90	**0.000

** Statistical Significance at (0.01)

From the previous table it is clear that the correlation coefficients factors for the first dimension ranged between (0.87) and (0.93) and it is a statistical significance at the level of (0.000). This indicates to the existence of a strong internal consistency for the first dimension of the study model .

Table 2. Content validity for the second Dimension crises management)

Dimension	Correlation Coefficient	Significance level
First dimension: Discovering warning signs	0.90	**0.000
Second Dimension: Readiness to face the crisis	0.94	**0.000
Third Dimension: Damages containment	0.92	**0.000
Fourth Dimension: Reclaiming activity	0.90	**0.000
Fifth Dimension: After crises stage	0.91	**0.000

** Statistical Significance at (0.01)

From the previous table it is clear that the correlation coefficients factors for the second axis dimension ranged between (0.90) and (0.94), and it is a statistical significance at the level of (0.01) and this indicates to the existence of a strong internal consistency for the second axis of the study dimensions.

8.2 Reliability

The validity for each of the study tool was measured separately, and then measure the validity for the whole tool based on (Cronbachs' Alpha). Table (3) shows the reliability results:

Table 3. Reliability of the study tool using Cronbachs' Alpha (n=120)

Axis	Dimensions NO	Cronbachs' Alpha Factor
First Dimension - Business Intelligence tools		
First Dimension: Data Sources	5	0.891
Second Dimension: Data Storages	5	0.916
Third Dimension: Specialized Data	5	0.901
Forth Dimension: Data Analysis Processing	5	0.889
Fifth Dimension: Data-Mining	5	0.901
First dimension as a whole	25	0.972
Second dimension - Crises Management		
First Dimension: Discovering Warning Sign (Pre-crisis)	5	0.921
Second Dimension: Preparation to face the crisis (Pre-crisis)	5	0.905
Third Dimension: Damages Contentment (During crisis)	5	0.916
Forth Dimension: Reclaiming Activity	5	0.911
Fifth Dimension: After crisis stage	5	0.897
Second Dimension **as Whole**	25	0.961
Questionnaire Dimensions as whole	50	0.978

The results of the previous table indicate that Cronbachs' Alpha for all of the study tool were (0.978) and it is an indicator to the validity if the study's tool, and it is considered that a reliability coefficient more than (0.70) is acceptable. Furthermore, Cronbachs' Alpha for the study dimension each separately was high and this validates the reliability of the study tool.

Displaying the Study Result

The independent variable results (Business Intelligence Tools).

To answer the first question of the study the medians and standard deviations for the answers of the study sample individuals about the sections of the Business Intelligence dimension sections with all its dimensions were extracted: (data source, data storages, specialized data, data analytical processing, data-mining) it is explained in the following table:

Table 4. The Median and Standard Deviations for the answers of sample individuals to the first dimension (Business Intelligence Tools)

NO	Dimension	Median	Standard Deviation	Evaluation level
1	Data Sources	3.91	0.41	High
2	Data Storages	3.87	0.38	High
3	Specialized Data	3.68	0.48	High
4	Data Analysis Processing	4.11	0.55	High
5	Data-Mining	4.02	0.54	High
	The Average	3.92	0.42	High

From the previous table it is clear that the medians to for the acceptance of the sample individuals of the employees at the Jordanian business organizations for the first axis dimension (Business Intelligence tools) varied from (3.68) for the dimension (specialized data) and with a high evaluation level, to (4.11) for the

dimension of (Analytical data processing) also with a high evaluation level.

The Results Related to the Dependent Variable (Crises Management)

To answer the question of the second study regarding the medians and standard deviations of the study sample individuals regarding the sections of crises management with all its dimensions: (the pre-crisis stage, the crisis stage, post crisis stage) they are explained in the following table:

Table 5. Medians and standard Deviations for the answers of the sample individuals for the Second Dimension (Crises Management)

NO	Dimension	Median	Standard Deviation	Evaluation level
1	Discovering Warning Sign (Pre-crisis)	3.81	0.37	High
2	Preparation to face the crisis (Pre-crisis)	4.02	0.51	High
3	Damages Contentment (During crisis)	3.84	0.57	High
4	Reclaiming Activity (During Crisis)	4.00	0.62	High
5	Post crisis stage	3.99	0.58	High
	The Overall Median	3.89	0.32	High

The previous table shows that the medians for the acceptance of the sample individuals of the workers at the Jordanian Telecommunication Companies for the dimensions of the second axis (crisis management) varied between (3.81) for the dimension (discovering warning signs in the stage before the crisis) with a high evaluation level, and (4.02) for the dimension (preparations to face the crisis) with a high evaluation level, too.

8.3 Testing the Study Hypotheses

To answer the questions of the third study, the following hypotheses were as follow:

Main Hypothesis:

There is no significant effect the a significant level of (a≤0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) in crises management in the Jordanian Telecommunication Companies.

To test this main hypothesis, sub-hypotheses were tested at the beginning using the Simple Regression test for the effect of independent variable dimension on every dimension of the dependent variable dimensions and the results were as follow:

Testing the first sub-hypothesis

Ho1-1:- There is no significant effect at the significant level of (a≤0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) on the pre-crisis stage in the Jordanian Telecommunication Companies.

Table 6. The results for implementing the Simple Regression formula for the effect of Business Intelligence dimensions on the per-crisis stage in the Jordanian Telecommunication Companies

Dimension	β	T	Statistical Significance	R	R^2	F	Statistical Significance
Data Sources	0.249	3.123	0.002				
Data Storages	0.083	2.043	0.029				
Specialized Data	0.217	2.755	0.007	0.487	0.350	8.459	0.000
Data Analysis Processing	0.331	3.142	0.000				
Data-Mining	0.302	3.022	0.000				

The previous table indicates to the existence of significant statistical effect at the significance level (a ≤ 0.05) for Business Intelligence on the pre-crisis stage, where the value of correlation coefficient (R) was (0.487), and it is a statistical significance and indicates the level of a statistical significance correlation between the independent variables, (data source, data storages, specialized data, data analysis processing, data-mining), and the dependent variable (pre-crisis stage). The value of coefficient of interpretation (R^2) was (0.350) and it is a statistical significance explains the ability of the effect of Business Intelligence tools on the pre-crisis stage. This means that the Business Intelligence tools explain the percentage of (35.0%) of the change that exists in the pre-crisis stage which is represented by discovering the early warning signs and the preparedness to face the crisis.

In addition, the (F) value was (8.459) and it is of a statistical significance at (0.000) which indicates to the existence of variations in the ability of independent variables (Business Intelligence dimensions) on the effect of in the pre-crisis stage as a dependent variable, therefore, reject the first nihilistic sub-hypothesis and accepting the real hypothesis that states (There is a significant statistical effect at the significant at level of (a≤0.05) for

Business Intelligence, with all its dimensions (data source, data storages, specialized data, data analysis processing, Data-mining) on the pre-crises stage in the Jordanian Telecommunication Companies.

Testing the second sub-hypothesis

Ho1-2:- There is no significant effect at the significant level of (a ≤ 0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) on the crisis stage in the Jordanian Telecommunication Companies.

Table 7. The results for implementing the Simple Regression formula for the effect of Business Intelligence dimensions on the crisis stage in the Jordanian Telecommunication Companies

Dimension	β	T	Statistical Significance	R	R^2	F	
Data Sources	0.356	2.811	0.020				
Data Storages	0.457	2.498	0.013				
Specialized Data	0.174	3.130	0.034	0.304	0.22	7.887	0.03
Data Analysis Processing	0.332	3.222	0.000				
Data-Mining	0.401	3.560	0.000				

The previous table indicates to the existence of significant statistical effect at the significant at level of (a ≤ 0.05) for Business Intelligence dimensions on the crisis stage, where the value of correlation coefficient (R) was (0.304) and it is a statistical significance value, and it indicates the level of statistical significance between the independent variables (data source, data storages, specialized data, data analysis processing, Data-mining) and the dependent variable (crisis stage), and the value of interpretation coefficient (R^2) was (0.22) and it is a value that explains the effect of Business Intelligence tools on the crisis stage, this means that the Business Intelligence dimensions explain about (22.0%) of the change that exist in the crisis stage.

Furthermore, the (F)value of was (7.887) and it is a statistical significance at (0.03) and it points to the existence of contrast in the ability of the independent variables (the dimensions of business Intelligence tools)on the effect of crisis stage represented in damage containment and reclaiming activity as a dependent variable, thus, rejecting the nihilistic second sub-hypothesis and accepting the real hypothesis that states (There is a significant statistical effect at the significant at level of (a≤0.05) for Business Intelligence, with all its dimensions (data source, data storages, specialized data, data analysis processing, Data-mining) on the crisis stage in the Jordanian Telecommunication Companies.

Testing the Third Sub-hypothesis

Ho1-3:- There is no significant effect at the significant level of (a≤0.05) between the role of Business Intelligence (data source, data storage, specialized data, data analytical processing, Data-mining) on the post crises stage in the Jordanian Telecommunication Companies.

Table 8. The results for implementing the Simple Regression formula for the effect of Business Intelligence dimensions on the after crisis stage

Dimension	β	T	Statistical Significance	R	R^2	F	
Data Sources	0.266	2.358	0.02				
Data Storages	0.359	2.987	0.013				
Specialized Data	0.265	3.544	0.034	0.387	0.214	6.971	0.038
Data Analysis Processing	0.315	2.987	0.000				
Data-Mining	0.399	3.56	0.000				

The previous table indicates to the existence of significant statistical effect at the significant at level of (a ≤ 0.05) for Business Intelligence dimensions on the after the crisis stage, where the value of correlation coefficient (R) was (0.387) and it is a statistical significance value, and it indicates the level of statistical significant between the independent variables (data source, data storages, specialized data, data analysis processing, Data-mining) and the dependent variable (after crisis stage), and the value of interpretation coefficient (R^2) was (0.214) and it is a value that explains the ability of Business Intelligence tools on the crisis stage, this means that the Business Intelligence dimensions explain about (21.4%) of the change that exist in the after crisis stage.

Moreover, the (F) value of was (6.971) and it is a statistical significance at (0.038) and it points to the existence of contrast in the ability of the independent variables (the dimensions of business Intelligence tools) on the effect of after crisis stage as a dependent variable, therefore, rejecting the nihilistic third sub-hypothesis and accepting the real hypothesis that states (There is a significant statistical effect at the significant at level of (a ≤ 0.05) for Business Intelligence, with all its dimensions (data source, data storages, specialized data, data analysis processing, Data-mining) on the after crisis stage in the Jordanian Telecommunication Companies .

After the sub-hypotheses were tested, a test for the main hypothesis will be conducted and table (9) explains the result of this test.

9. The Research Conclusion

1. There is a high level of Business Intelligence in the Jordanian Telecommunication Companies. This indicates to the interest of these organizations in Business Intelligence tools, especially in regard to the analytical processing of data that rely on a safe and integrated data system around the work environment and the field it works in.

2. There is a high level of crises management in the Jordanian Telecommunication Companies, and that comes from the realization of these organizations to the importance of controlling the crises they could face and how it can limit their competence and performance efficiency through using a group of tools to overcome, contain, or minimize the damages of these crises as much as possible.

3. There is a significant statistical effect at the significant at level of ($a \leq 0.05$) for Business Intelligence, with all its dimensions (data source, data storages, specialized data, data analysis processing, Data-mining) on the pre-crisis stage in the Jordanian Telecommunication Companies

4. There is a significant statistical effect at the significant at level of ($a \leq 0.05$) for Business Intelligence, with all its dimensions (data source, data storages, specialized data, data analysis processing, Data-mining) on the crisis stage in the Jordanian Telecommunication Companies

5. There is a significant statistical effect at the significant at level of ($a \leq 0.05$) for Business Intelligence, with all of its dimensions (data source, data storages, specialized data, data analysis processing, Data-mining) on the after crisis stage in the Jordanian Telecommunication Companies

10. The Research Recommendations

Based on the results that were arrived, the study recommends the following:

1. Paying attention to implementing Business Intelligence tools in countering the crises which business organizations could face.
2. Provide highly qualified human resources to establish precautionary plans for the anticipated crises in the business organizations and Develop and implement modern policies and procedures in the field of crises management, as well as establishing standardized, comprehensive and well-planned programs on all job levels with the goal of progressing with competency in the dealing with crises.

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