

**T.C.**

**ISTANBUL AYDIN UNIVERSITY**

**INSTITUTE OF SOCIAL SCIENCES**



**THE IMPACT OF BUSINESS INTELLIGENCE ON**

**STRATEGIC DECISION MAKING**

**M.Sc. THESIS**

**SANGAR ABDULKAREEM HASAN HASAN**

**(Y1312.130059)**

**Department of Business**

**Business Administration Program**

**Thesis Advisor: Assis. Prof. Dr. Burçin KAPLAN**

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İSTANBUL AYDIN ÜNİVERSİTESİ  
SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜ

**Yüksek Lisans Tez Onay Belgesi**

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## **FOREWORD**

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**SANGAR ABDULKAREEM HASAN**

## TABLE OF CONTENT

	<u>Page</u>
<b>FOREWORD</b> .....	<b>iii</b>
<b>TABLE OF CONTENT</b> .....	<b>iv</b>
<b>ABBREVIATIONS</b> .....	<b>vi</b>
<b>LIST OF TABLES</b> .....	<b>vi</b>
<b>LIST OF FIGURES</b> .....	<b>x</b>
<b>ABSTRACT</b> .....	<b>x</b>
<b>ÖZET</b> .....	<b>xii</b>
<b>1. INTRODUCTION</b> .....	<b>1</b>
1.1 Background to the Research .....	1
1.2 Statement of the Purpose .....	3
1.3 Statement of the Problem.....	3
1.4 Aim of the Research .....	4
1.5 Objectives of the Research .....	4
1.6 Research Model and hypothesis .....	4
1.7 Study Delimitations .....	6
1.8 The Definition of Business Intelligence .....	6
1.9 BIS Infrastructure Flexibility.....	10
1.10 Business Intelligence Tools .....	11
1.10.1 Data Warehouse .....	12
1.10.2 Operations Extract, Transform, Load (ETL).....	12
1.10.3 Online Analytical Processing (OLAP).....	13
1.10.4 Data Mining.....	13
1.10.5 The Review of the Information Technologies.....	14
1.11 The Importance of Business Intelligence.....	15
<b>2. BUSINESS INTELLIGENCE ON STRATEGIC DECISION MAKING</b> .....	<b>18</b>
2.1 Previous Studies .....	18
2.2 Quality of Information.....	20
2.3 Business Value of Business Intelligence .....	22
2.4 Strategy and Decision Making.....	23
2.5 Concept of Strategic Decision Making.....	24
2.6 Key Elements of Strategic Decision .....	27
2.6.1 Customer Care .....	28
2.6.2 Environment .....	29
2.6.3 Long Term Impact .....	30
2.6.4 Reliance on Competitive Advantages.....	30
2.6.5 Flexibility .....	30

2.7	The Model of Strategic Decision Making .....	31
2.7.1	Intelligence .....	32
2.7.2	Design .....	32
2.7.3	Choice .....	32
2.7.4	Implementation .....	33
2.8	Characteristics of Success Strategic Decision Making.....	36
2.9	Effectiveness of Strategic Decision .....	42
2.10	Business Intelligence Versus Strategic Decision .....	43
<b>3.</b>	<b>RESEARCH METHODOLOGY .....</b>	<b>46</b>
3.1	Introduction.....	46
3.2	Research Model .....	46
3.3	Research Questions.....	47
3.4	Research Hypothesis.....	48
3.5	Study Population and Sample.....	49
3.6	Overview of the Companies .....	50
3.7	Study Tools and Data Collection.....	51
3.8	The Questionnaire Instrument .....	52
3.9	Limitations of the Research .....	53
<b>4.</b>	<b>DATA ANALYSES AND FINDINGS.....</b>	<b>54</b>
4.1	Data Analyses .....	54
4.2	Result of Hypotheses Test .....	90
4.3	Findings .....	90
<b>5.</b>	<b>CONCLUSION AND RECOMMENDATIONS.....</b>	<b>92</b>
5.1	Conclusion .....	92
5.2	Recommendations for the Further Research.....	95
	<b>REFERENCES .....</b>	<b>97</b>
	<b>APPENDIX .....</b>	<b>103</b>
	<b>RESUME.....</b>	<b>110</b>

## **ABBREVIATIONS**

<b>BI</b>	: Business Intelligence
<b>BIS</b>	: Business Intelligence System
<b>ETL</b>	: Extract, Transform, Load
<b>DM</b>	: Decision Making
<b>OLAP</b>	: Online Analytical Processing
<b>SDM</b>	: Strategic Decision Making
<b>SD</b>	: Strategic Decision

## LIST OF TABLES

	<u>Page</u>
<b>Table 2.1:</b> Process of Synoptic and Incremental .....	40
<b>Table 4.1:</b> Distribution of the Sample According to Age .....	54
<b>Table 4.2 :</b> Distribution of the Sample According to Gender .....	55
<b>Table 4.3 :</b> Distribution of the Sample According to Education Level.....	55
<b>Table 4.4 :</b> Distribution of the Sample According to Professional Experience. ....	55
<b>Table 4.5 :</b> Distribution of the Sample According to Time Working on the Company. 56	56
<b>Table 4.6 :</b> Distribution of the Sample According to Job Tittle.....	56
<b>Table 4.7 :</b> Use of Business Intelligence.....	57
<b>Table 4.8 :</b> Describing Respect to the Various Levels of Business Intelligence.....	57
<b>Table 4.9:</b> Type of BI Tools.....	58
<b>Table 4.10:</b> How Factors Influence Decision Making. ....	59
<b>Table 4.11:</b> Perceived Value of BI.....	60
<b>Table 4.12:</b> Quality of Information with Respect to BI.....	61
<b>Table 4.13:</b> BI Use.....	62
<b>Table 4.14:</b> BIS Infrastructure Flexibility.....	63
<b>Table 4.15:</b> Formation of New Strategic Decisions.....	64
<b>Table 4.16:</b> Evaluating the Prior Strategic Decision.....	65
<b>Table 4.17:</b> Determine the Cause of the Problem.....	67
<b>Table 4.18:</b> Attempting of Determining Cause of the Problem.....	67
<b>Table 4.19:</b> Possible Problem Causes Identifying Primarily Through.....	68
<b>Table 4.20:</b> Hierarchical Decentralization.....	69
<b>Table 4.21:</b> Lateral Communication.....	70
<b>Table 4.22:</b> Politicization.....	71
<b>Table 4.23:</b> Reliability and Validity.....	72
<b>Table 4.24:</b> Reliability Statistics for Business Intelligence .....	73
<b>Table 4.25:</b> Item-Total Statistics For Business Intelligence .....	73
<b>Table 4.26:</b> Reliability Statistics for Strategic Decision Making.....	74
<b>Table 4.27:</b> Item-Total Statistics for Strategic Decision Making .....	74
<b>Table 4.28:</b> KMO and Bartlett's Test.....	76
<b>Table 4.29:</b> Communalities.....	77
<b>Table 4.30:</b> Total Variance Explained.....	79



<b>Table 4.31:</b> Rotated Component Matrix.....	80
<b>Table 4.32:</b> KMO and Bartlett's Test. ....	82
<b>Table 4.33:</b> Communalities. ....	82
<b>Table 4.34:</b> Total Variance Explained.....	83
<b>Table 4.35:</b> Rotated Component Matrix.....	85
<b>Table 4.36:</b> Correlation coefficient .....	87
<b>Table 4.37:</b> The Relationship Between Parts of Business Intelligence and Strategic Decision .....	88
<b>Table 4.38:</b> The Relationship Between Business Intelligence and Strategic Decision ..	89

**LIST OF FIGURES**

	<b><u>Page</u></b>
<b>Figure 1.1:</b> The Model of the Research.....	4
<b>Figure 1.2:</b> Broad Concept of the Business Intelligence Term .....	8
<b>Figure 1.3:</b> Business Intelligence Architecture .....	15
<b>Figure 2.1:</b> The Rational Decision Making Process .....	34
<b>Figure 2.2:</b> Model of Pressure Response Supporting Business .....	45

# **THE IMPACT OF BUSINESS INTELLIGENCE ON STRATEGIC DECISION MAKING**

## **ABSTRACT**

Business intelligence is an important issue to collect and bring the data together that decision making is depended on. Managers in today's organizations are still to know how to apply Business Intelligence (BI) in Strategic Decision Making. The main aim of this study is to explore the impact of business intelligence on strategic decision making. Business intelligence is not only a tool or a product or a system, it's described as a new approach in the organizational architecture that is based on the speed of analyzing information to make the accurate strategic decision in a less time with high quality.

Strategic decision making could be defined as gradual and interdependent, which is formed by a variety of impacts contextual to the past events arising in present-day conditions and finally the future views. A descriptive method was applied to carry out this research with primary and secondary data collected. Using questionnaires applied at four communication companies in Iraq, experienced top level managers and those in middle management are the focus of this research. SPSS software was used to analyze the results. Results show that business intelligence has a great impact on strategic decision making and improved the efficiency and effectiveness of strategic decision making.

The relation of business intelligence parts and decision making were positive which means that business intelligence tools, BIS infrastructure flexibility and BI use could be able to improve the efficiency of strategic decision making. Managers still have to use more managerial tools for their decisions to be strongly affected by business intelligence. This explains why managers have been advised in many areas on how to manage their companies by keeping in mind that business intelligence has an impact on strategic decision making.

**Keywords:** *Business Intelligence, Strategic Decision, Business intelligence Tools.*

## İŞ ZEKASININ STRATEJİK KARAR VERME ÜZERİNDEKİ ETKİSİ

### ÖZET

İş zekası, karar vermenin dayandığı verinin toplanıp bir araya getirilmesinde kullanılan önemli bir konudur. Günümüzde şirketlerdeki yöneticilerin işletme zekasını stratejik karar vermede uygulamayı öğrenmeleri son derece gereklidir. Bu çalışmanın asıl amacı, iş zekasının stratejik karar verme üzerindeki etkilerini araştırmaktır. İş zekası sadece bir araç, ürün veya sistem değildir, aynı zamanda daha kısa zamanda nitelikli doğru stratejik kararı vermek için bilgiyi analiz etmeye dayalı kurum mimarisinde yeni bir yaklaşım olarak tarif edilir.

Stratejik karar verme, günümüz şartlarında görülen ve son olarak gelecekte de ortaya çıkacak olan eski olaylarla bağlantılı çeşitli etkilerle oluşan sıralı ve birbirine bağımlı süreçler olarak tanımlanabilir. Bu araştırmayı yapmak için toplanan birincil ve ikincil verilerin analizinde nicel yöntem kullanılmıştır. Irak'ta faaliyet gösteren dört iletişim şirketinde uygulanan anketlerle toplanan verilerin kullanılmasıyla yapılan bu araştırmanın örnekleme noktası tecrübeli üst ve orta düzey yöneticilerdir. Sonuçları analiz etmek için SPSS yazılımı kullanılmıştır. Sonuçlar iş zekasının stratejik karar verme üzerinde anlamlı bir etkisinin olduğunu ve stratejik karar vermenin verimliliğini ve etkililiğini arttırdığını ortaya koymaktadır.

İş zekası bölümleri ve karar verme ilişkisi arasındaki pozitif ilişki, iş zekası araçları, iş zekası sistemi altyapı esnekliği ve iş zekası kullanımının stratejik karar vermenin verimliliğini ve etkinliğini geliştirebildiği anlamına gelir. Yöneticiler kararlarının iş zekasından daha fazla etkilenmesi için daha fazla yönetim araçları kullanmak zorundadırlar. Bu durum, yöneticilere şirketlerini yönetirken neden iş zekasının stratejik karar verme üzerinde olan etkisini göz önünde bulundurarak şirketlerini yönetmeleri gerektiği konusunu da açıklamaktadır.

**Anakhtar Kelimeler:** *İş zekası, Stratejik karar, iş zekası araçları.*

## **1. INTRODUCTION**

### **1.1 Background to the Research**

The world has seen a significant change in all works of life, in particular since the beginning of the last decades of the century. It has clearly reflected its effect on the practices and the nature of organizational relationships, the roles and problems beyond the borders of countries where organizations live in different types and activities by the growing effects of the commission and its dimensions. The need to predict the future of the organizations is part of a local system within the broader global system.

This affects the activities, plans, strategies, and decisions of those organizations by non-conforming which holds the future of the organization. Cares detection about organizations' basic lineaments and the search for appropriate scientific methods which can explores and prepares for the future to face this trend of developments and changes (Smith and Lindsay 2012). As to those circumstances and variables that accompanied the diversity and restriction factors in internal and external environment, organizations current era, necessitated the presence of leaders and thinkers.

Leaders and thinkers become smarter with the intellectual capacity and skills of non-conventional which depends on development of knowledge, experience, principles, as well as the formation of perceptions, visions related to the future and also the ways to confront the present. Adding to the importance of follow-up and analysis to continue to discuss the possibility of containment, and then try to control them to ensure excellence and be successful. Business intelligence is an effective tool to direct the organization so as to accomplish its goals, maintain its position and read the future by taking the right strategic decision.

The aim of this research is to achieve the impact of business intelligence on strategic decision making. In organizational planning, there will be discussion about some parts of BI which contains, concepts, quality of information, BIS infrastructure flexibility,

tools and other aspects (Ansoff, H 1984). However, the importance of BI sees itself from the data that will transform it into the kind of information needed. Therefore, the data warehouse, OLAP and other parts would be discussing its plan because of the care about BI on those features. As concerns planning, the value of BI can be taken seriously into consideration in this dissertation because BI has an important role in decreasing the degree of uncertainty which is necessary for each manager to make the right decision. The process of decision making and strategy have a relation in that the decisions will depend on the strategy that makes and maintains each decision in the future (Ansoff, H 1984). Also, planning describes the elements of strategy and decision which have some elements that affect decision making, such as environment which has the long-term impact on decision making.

After that, models of strategic decision making will be analyzed which are important in decision making. These models include rational and external models in the literature. For the success of organization's characteristics, a strategic decision will be taken and a description that will exclude comprehensiveness and extension (Digman, L 1986). For the sake of strategic decision, going work for a long period will need the explanation of effectiveness of strategic decision. After all, thoughts that will be collected in planning, the relation between BI and the strategic decision would be described.

This will then see the integration, flexibility, quality, and agility of organizations. Having described all aspects of BI and SD and the methods of collecting data, the researcher is going to use a quantitative approach that would include questionnaire survey and hypotheses of business intelligence and strategic decision. After data collection and analyzing statistics, there will be a result of the findings to see if the relation between BI and SD is negative or positive with the hypothesis result. After all done, the conclusion and recommendations are going to collect all the thoughts which the researcher will arrive at.

The concept of BI and strategic decision are central in the world of business today, before many businesses have grown and the economy was at the boom. The advent of world economic crisis had a great impact on business and business had to slow down. Many employees lost their jobs as all fingers pointed at management for an inadequate

decision taken caused by the shortage of BI. The impact of this new concept of BI has to be upheld because it has been seen as having a great impact on strategic decision making carried out chiefly by managers at different levels of operation in the companies. In Iraq, the concept of BI has been embraced by companies especially the four companies under research in this study. Although these companies are moving on, more need to be done on the domain of decision-making. Decision making is obviously in the hands of managers who need expert knowledge in BI. Knowledge gained in BI will have a great impact on decision making in all companies.

## **1.2 Statement of the Purpose**

In general, most of the companies especially communication companies in Iraq are careless about business intelligence and the important of business intelligence in the domain of strategic decision making, because business intelligence has positive relations with strategic decision. In today's business, business intelligence can be useful for managers who are trying to take the best strategic decision for their organizations to reach organizational goals.

Business intelligence can be also used as the data in order to transform the information and without the accurate information; the decision and strategic decision cannot reach their goals. So, it makes the companies remain the same as established before and their assets would not be increased and if they do not have the right decision making they may go bankrupt.

## **1.3 Statement of the Problem**

Business intelligence has an impact on strategic decision making because it is one of the best issue in the business world for collecting, extracting and bringing together data which were gathered from various sources that managers in today's organizations are still to know how to apply business intelligence in strategic decision making.

#### 1.4 Aim of the Research

The aim of this study is exploring the impact of business intelligence on strategic decision making.

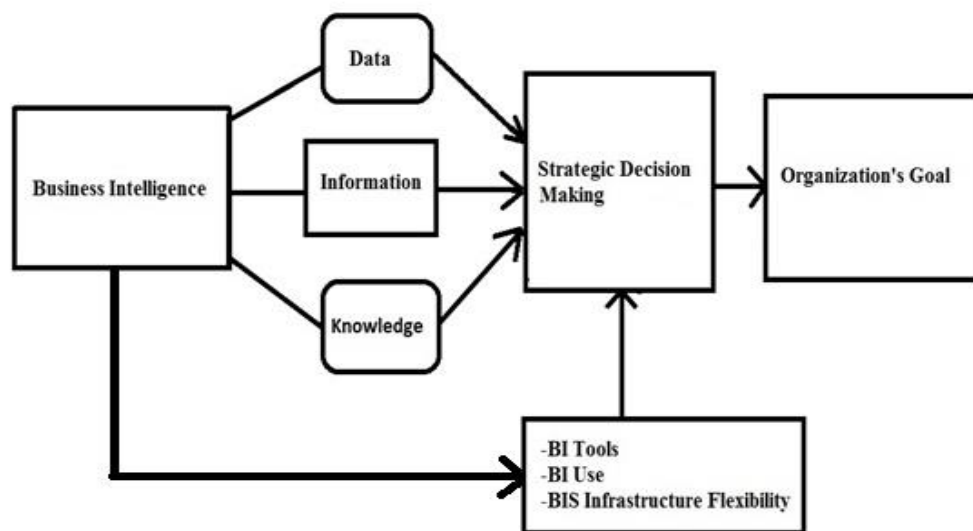
#### 1.5 Objectives of the Research

- To inquire into in detail business intelligence.
- To estimate the value of strategic decision making.
- To evaluate the power of business intelligence on strategic decision making.

#### 1.6 Research Model and hypothesis

In measuring business intelligence the researcher depends on (Ahmad 2010), (Riabacke 2011).

In measuring strategic decision making the researcher dependent on (Mohammad 2013).



**Figure 1.1:** The Model of the Research Prepared by the Researcher



The model of the study is proposed the relation between Independent variable (BI) and Dependent variable (SDM) and although illustrated the relation between other variables of (BI tools, BI use, BIS infrastructure flexibility) and (SDM) in order to achieve the organization's goals.

Based on the research questions and literature review the following hypotheses of the research were examined.

- There is a significant and positive relation between business intelligence and strategic decision making, under the information quality in four communication companies at level ( $\alpha = 0.05$ ).
- There is a significant and positive relation between business intelligence tools and strategic decision making, under information quality in four communication companies at level ( $\alpha = 0.05$ ).
- There is a negative relation between quality of information with respect of business intelligence and strategic decision making, under information quality in four communication companies at level ( $\alpha = 0.05$ ).
- There is a negative relation between influencing factors and strategic decision making, under information quality in four communication companies at level ( $\alpha = 0.05$ ).
- There is a negative relation between perceived value of business intelligence and strategic decision making, under information quality in four communication companies at level ( $\alpha = 0.05$ ).
- There is a significant and positive relation between BIS infrastructure flexibility and strategic decision making, under information quality in four communication companies at level ( $\alpha = 0.05$ ).
- There is a significant positive relation between business intelligence Use and strategic decision making, under information quality in four communication companies at level ( $\alpha = 0.05$ ).

## **1.7 Study Delimitations**

- The research is concentrated and depended on the four communication companies as the case of the research.
- The accuracy of the research also depends on the top managers and med-level managers in the four communication companies.

## **1.8 The Definition of Business Intelligence**

Nowadays, business around the world confronts different matters as technology, the speed of communication, competitors, develop knowledge. This aspect had to show the threats and opportunities that occasionally most organizations are facing a terrible situation. It is happening in a local business environment and global environment which lead to intensive and extensive competition. Most of the corporations try to focus on the various efforts and improving strategies for keeping in the competitive situation. The needs of companies for business intelligence are increased tremendously. Currently, there has lots of economic information from an organization which has been gathered in order to take the best decisions as possible in the quick period (Misner et al 2002).

Therefore BI refers to be the system that would include combining data, the management knowledge and the data storage and finally involves analytical tools to offer the information which is complex and competitive to the decision makers and planners. There is an interest for those who believe that BI have some tools and technologies, then the process that addresses converting data into information to put information into knowledge and plans then using for the best business, called that optimize business (Eckerson 2007).

In this explanation, BI is engaged with the process of decision-making by converting data into information which has used for varying analytical tools. The data warehouse defined business intelligence as a process of the organization which includes technologies and knowledge tools needed to transform data into information, then into knowledge and finally into plans, that could be take advantages of profitable business action (Loshin 2012). Business intelligence can also be described as a factor for analyzing a large amount of data and operating those data as much as it can. At the same

time, BI presents a set of reports to the higher levels, which is able to get an advantage and condensing the essence of data put it into business action (Cui et al 2007).

The opinion of BI would make it clear that as a method or the way for getting better business performance by providing study assists for an executive for who is going to make the decision. When the term of BI contains lots of meaning and using for many purposes as its definition may different from the comprehensive term. For all decision support systems that linked concepts for serving the knowledge of management like market intelligence and competitive intelligence (Popovič et al 2010). BI could be viewed like it is turning claims as a larger part of knowledge management. Whereas an organization has the ability to use effective internal and external information capital, the organization helped by knowledge management for the insight it experiences. According to (Herschel and Jones 2005), the general term of business intelligence consists of knowledge, platform, tools, application, and technology. It is able to support finding the process to business data and its relation. It also provides executive just in time and exacts better understanding from information in business which could be informed. The form business decision, in real time defined the term BI as an operation for collecting data from internal and external information in business after that analyzing, preparing and using in the business action (Okkonen et al 2002).

In the north of the USA, Gartner group and others like international market research make a differentiation between business intelligence and competitive intelligence. Business intelligence used for internal information management, which collects data from the operating system that is endeavoring to provide historical and current facts to an organization, then predict the view of business operations, and competitive intelligence and market intelligence seems concentrate only on external information.



**Figure 1.2:** Broad Concept of the Business Intelligence Term Popovič, et al 2010

In the Europe, the term of business intelligence is considered and understood to be widely competitive intelligence with other intelligences that are related to each other which concentrate on external sources such as competition, market, suppliers and at the same time an internal source such as technology and strategy with an employee's culture (Pirttimaki et al 2006). This indicates that BI is the necessity for getting the better and developing decision making into an organization. According to BI definition and other definitions as competitive intelligence and market intelligence, they are considered subgroups. There is another aspect was tools which were offered by business intelligence system to improve the decision making into an organization. It does not include the meaning of systematic available like planning, controlling, and managing the business objective strategy that was implemented (Frolick and Ariyachandra 2006).

However, it will be done through embracing business performance management term which could provide the meaning of the business strategy combination and technological structure to lead about across the whole organization for achieving organizational goals. Business intelligence and business performance management grew in last years, although they get closer to each other, there were some thoughts that they are one whereas they are not. BI and business performance management is tangled. Participating in a synergistic relation such as BI has been provided the essential of tools to connect the

requirement of business performance management by its role helping BI to adopt and try to initiate business strategy. According to (Williams and Williams 2010) business performance management offers the service that includes information which is prepared for decision making in business.

Within a real context, the key to business for making decision, in particular, take advantage information asset within business key by attempting to fulfill improvement of business performance. The environment of business intelligence encompasses all the information process, development and activities that are supported, asking for delivering information of the business by highly relevant, reliable, and the analytical capabilities to business activity.

The environment of BI within an organization is endeavoring to design that leads to a successful implementation of the business intelligence system. It is defined as the system of information for getting better quality of information about decision-making analysis. Such analysis uses this source for guiding and achieving business toward goals into the organization. In another means, the system of business intelligence uses the information produce and business analysis as it helps users. This will only depend on understanding the business operation improvement (White and Davis 2008). Sometimes the system of business intelligence represents a broader technology term which is contain the management knowledge and data mining to use of the decision system support.

The solution of BI consists some ways which can be introduced such as statistical analysis, online analytical process, reporting, and forecasting. It can be explained that business intelligence also is neither a system nor a product which could be architecture as a set of process for supporting decision making, which applications with database and provide the community of business is easy to access business data (Moss and Atre 2003). The business intelligence pointing philosophy managerial as it tools could be used to organize and manage just in time and it also helps organization for gathering business information by being more effective in business decision.

BI term is defined clearly and the origin of the industry means that different software vendors and consulting organizations have been identified to suit its products, even some use BI for the full range entry from approaches to support the decision (Arnot and

Pervan 2005). It is also called the process of collecting information and analyzes business. Business intelligence systems contains of a number of basic tasks which is able to help implements its duty as the direction of the organization, therefore, helps and supports the process of decision-making. Finally, the explanation done by experts of BI as a term of business management includes application and technology as described for accessing and improving the amount of information with entry into an organization, makes a strategic better decision (Zeng et al 2006).

### **1.9 BIS Infrastructure Flexibility**

In today's rapidly change in business environment, there should have an effective and correct information which is not necessary only for success, as well as it is necessary for survival in a competitive environment. In the mid-90s, business intelligence as mentioned by Granter Group is a term of an umbrella, which contains infrastructure and tools. It also contains applications which enable access and information analysis for improving and optimizing the decision and increasing the degree of performance (Gbosbal, and Kim 1986).

Therefore, BIS infrastructure flexibility is one of the important components of the dynamic capability of organizations. However, the capability of the organizations has been characterized by the ability of the organizations to integrate and reconfigure the threats and opportunities that organizations might confronts in external environment. Undoubtedly, the BIS infrastructure flexibility is one of the best key factors of organizational capability and performance which is critical for the accurate and timely data and information that causes improved performance and decision making in the organization. Nevertheless, BIS infrastructure includes the information and data which are interconnected and sufficiently flexible so that, BIS could be able to capture and analyses the most valuable assets raw data and information that lead to the best decision and improve performance in the light of increasing the capacity of the organization (Azvine et al 2005). Finally, according to (Hovi et al 2009) through the systems of BI, the fragmented information is integrated into an organization with that distributing process for supporting decisions so that it would be the strategic and tactical decision. BI

is addressing and collecting diffused information that has as an objective to decrease the degree of uncertainty in strategic decisions.

### **1.10 Business Intelligence Tools**

The authors and books have been differing from determining business intelligence tools. The enterprise resource planning tools help to do business better. The tools of business intelligence are helping to make business the best. As Rayners mentioned, there is an enterprise (Toll post-Globe) such as enterprise that transformed a loser into a profitable company increased profits to 60 percent. This increases in five years as a result of their application to business intelligence tools that would increase the concentration of companies on the business intelligence solutions.

This led to the amount of software application and tools reduction which companies need. Formerly, each department purchased its own business intelligence solutions which led to a larger number of tools into an organization. However, departments are now beginning to use the same tools from companies among various departments which have worked to get the same standard to analyze and measure data with an improvement of performance.

The analysts at Gartner sees the large software companies that thought in relative position comfortable that is why BI Strategy is used occasionally. Within the platforms and ads which are not representing the best solution, however, it indicates so easy and suffering when an enterprise has used work platforms. Others which are try as long as standardization might better for them in some cases to retain the same vendor (Fardal, H and Sørnes 2008). The Gartner still believes the vendors' tradition that keeping the most market share constantly through the few years to come. But the breadth of competition means they need to be clarified to explain the relevant value-added services they provide. This needs more time and money to get this service or it could be big prospect to transform the competition into another market which refers to the management performance such as vendors' senior try to increase their presentations. The author sees BI become the real business initiative strategy and also the institutional structure occasion as a center of competition like selling techniques. This is not enough without

training users which is the basic factor for success. Therefore BI tools could be new techniques or software programs that help decision maker to avoid costs, reduce the time and decrease the risks from the external environment and make best SD in order to organizations meet their goals.

### **1.10.1 Data Warehouse**

The data warehouse is a new technical trend description of the latest concepts of information system field and this concept is gaining great importance of business applications. This is common especially in large organizations which has a lot of branches and distributors because of an active role in the management of informatics resources and improve the decision making. This is the basis which is doing data warehouse for achieving integration among the data of the organization which has published and distributed through different rules and treatments. The transactions and legacy system and preferred sources of external data which are related to the business so as gaining integrated environment and unification for the historical and current data in the framework in one warehouse (Stair and Reynolds 2003).

The data warehouse is the system of data storage, analysis for supporting decision making, through unification and integration, data organization and storage. After removing the shortage that has been detected, the unification and its standards in structure framework become the effective style in storage and thus return the data. It becomes a suitable place where managers can make a decision through using data warehouse and associated technique tools to diversified report generation. From preference and implementing complication analytically in order to reach the information and knowledge enormously from accumulated data in the organization (Saleem 2010).

### **1.10.2 Operations Extract, Transform, Load (ETL).**

It's designed for tool extraction and integration of data from various sources based on the specific map extract and the process of integration which is the necessity for transforming data. Data transformation is required from an organization regardless of how to store in an operational environment before it is transformed into the data warehouse (Westling 2008). Data integration technologies as a broad classification of technologies for extraction, transport, and load data into the target data warehouse which



can extract, transform and load data (Hammergren 2009). It is one of the important of data integration technologies which has a series of application for extracting data collection from different sources and transforming them into data platform, then implementing a series of operation to prepared and carried over to the data warehouse.

### **1.10.3 Online Analytical Processing (OLAP)**

Online Analytical Processing also called (OLAP), one of the main tools for business intelligence. It would have been the results of modernization constant data by using an online solution system that inflated transactions significantly. Increase changes and modifications in quantity and value leading to a deficit, data analysis tools with the traditional style in doing the traditional functions of the processing and analysis of data and production information.

OLAP appeared because of obstacles that are facing the process of analysis data in data rules. The first one which found the concept of online analytical process and who identified multi-dimensional cognitive model innovators so the term OLAP (Codd et al 1993), this is the way to prepare the user to communicate the data warehouse through facing the graphic users, World Wide Web. World Wide Web is the ability of a large amount of data quantity through the several binoculars and produces data in various forms including graphic.

### **1.10.4 Data Mining**

It is the concept of data exploration which was exactly in the mid-seventies in the USA. It combines statistics and technology that include rules of data, the intelligence of artificial and learning robot. Also, the knowledge of exploration data mining is independent science itself. However, some authors see that there is a relation with information retrieval because this is the last which is considered much older from exploration about data. Therefore most of the authors have seen maturation topics and the term makes an independent science per se. There was considered science responsible for methods and ways to produce information and the knowledge rule through a large amount of data. This amount of data would be linked by science methods, to get out of information or new knowledge (Lloyd 2011).

### **1.10.5 The Review of the Information Technologies**

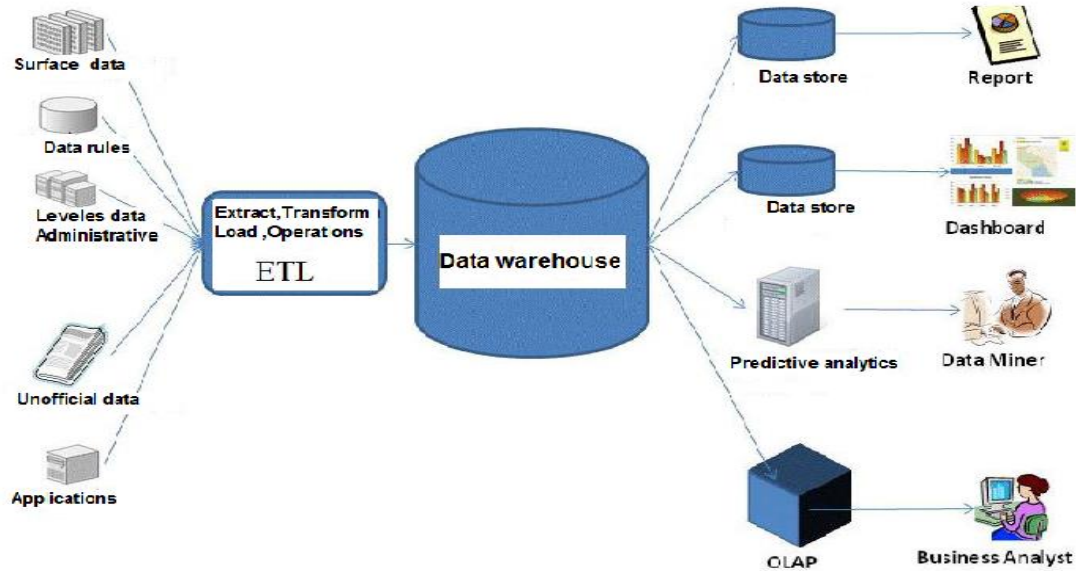
This technique displays information across business intelligence systems through the delivery of outputs of information to the analysts and decision makers. There are several types of these technologies used in various forms, whether individually or nested in line with the targets and also the outcomes. Information technologies are a set of standards which enable senior management to take a quick glance and to understand about business. They are also one of the latest in common entrances performance measurement that suggests the consistent interest for measuring and improving the organizational performance. Their use for a card for performance include panel framework for measurement. It should be a signal to the performance card which is the special type of reports contained in the group from general business measurement (Kelly 2005).

#### **1. Reporting**

This process of creating reports includes the ability to generate a variety of reports for sales, financial situation, queries and that these reports can be a simple as a table or be a complex as the reports that display summaries and can interact with it to get the detail required (Schilling et al 2007).

#### **2. Dashboard**

Dashboard known as the visual presentation tool provides graphic images for the current key Performance indicators in order to activate respond to changes in some aspects such as sales and management of sales relationship, and assess the performance levels of inventory. This includes function: follow-up business activity based the measurement boards, display indicators on the management of organizational performance and derivative of direct information that is obtained from data warehouse (Negash 2004).



**Figure 1.2:** Business Intelligence Architecture: Matei 2010

### 1.11 The Importance of Business Intelligence

Organizations around the world need BI in order to continue operating in a competitive world where they have strategy evolution and get ready for the good knowledge for the future which will be shared in organizations. Organizations should be working on the information by using business intelligence to make best decisions which they need. Business intelligence surrounds all activities in the organization and relating to the staff and what is behind to include consumers and suppliers. To get the business value, it has to be done by using effectiveness form from individuals and investment in, where there is a relationship and correlation among effectiveness and performance in an organization by using BI (Davenport and Harris 2007).

It has the realization and the importance of BI system which will represent the first need in determining the shared vision for this system in organization and also include this stage determined information. According to Rasmussen et al (2002), BI refers to tools for exploring and investigation the weak sign in order organizations grows in mysterious environments with uncertainty. Organizations should be careful about the sign or the risk in such environments where there have developments and enormous size together from the available information. This is described mysterious by business intelligence because of inaccurate and inappropriate information for taking advantage opportunities and to

avoid threats in the organization. BI is related to thought which is sometimes called the systems of thinking. Therefore, this to do with analyzes business and organizes the quantity enormously from information in the environment (Giovinazzo 2003). As it was described, it indicates a set of realistic methods by using the information from the multiple sources in order for the process to get an improvement of decision making (Tabatabaei 2009). The importance of business intelligence appears by using the accurate information from the recruitment and technology which have the high quality of value related to the work area of it, data.

It depends on the large reliability available from several sources which are implementing what they got from experience to improve and develop the quality of the decision. However, the importance of business intelligence is divided into some basic elements which include supporting management standard-based, business intelligence and working to reduce the data deviation and canceled. The importance of business intelligence can achieve the integration from sources of company data followed by the regulations (sources entered). The rules for data access to project data repositories and then presents an overview of works to remove distractions to hold operational systems.

Therefore, business intelligence acting such as the person mediator and helps metrics data standards and make all agree to analyze information as second importance to develop the individuals' efficiency in the first line operation. Business intelligence provides a system of modern and accurate data which was able to identify important resources and reduce the number needed to perform tasks across the full update list tables as well as providing the required landlords for conducting an analysis of the data. Thirdly, supporting organizational infrastructure and pointing the business intelligence has become part of the basic infrastructure of the organization being a source of information.

BI has another importance which is the further expansion and the spread of new business practices. Worthy of note is the organization is based on practices such as customer relationship management, strategic alliances, use of outsourcing, and work teams. This generates an increase in demand for information and here appears the role of business intelligence in these applications and processes of information for the benefit and

success of these practices. Finally, business intelligence contributes for increasing the intelligence of business organization that is illustrated from how to deal with customers, equipped the internal business operations and the ability to build data structures, create the perception of the business and through the use of dimensions that carry common meanings within the organization.

## **2. BUSINESS INTELLIGENCE ON STRATEGIC DECISION MAKING**

### **2.1 Previous Studies**

Tabatabaei in (2009) under the evaluation of business intelligence maturity level in Iranian banking industry title had examined that the aims of BI maturity level as well expectation activities it has related to BI in the Iranian banking. When the study showed that BI is the concept of managerial that in organization helps managers as manage the information although make decisions which called factual. Therefore the study was conducted that the levels of business intelligence maturity at level three of the capability in the Banking industry.

Oyku Isik in (2011) in Belgium entitled the business intelligence success and the role of business intelligence of capabilities title, the aim refers that one of the most reason of failure is the lack or miss understanding the important factors that describe the business intelligence application success, when the capability of business intelligence between those critical factors. when there was presenting in the finding that from the survey of 116 professionals of business intelligence, which it had provided a snapshot of the user satisfaction from various capabilities of BI and although relation among satisfaction of user BI and those capabilities.

In the findings it was suggested that generally users are satisfied with the overall of BI and the capabilities of BI, when the BI capabilities that most satisfied not necessarily ones which are strongly related to the success of BI. The five capabilities which most correlated highly with the overall satisfaction also with the BI, only of them one was specifically related to the data. In findings although shows the users are not highly 46 satisfied with the interaction levels of BI with the other system which is the capability highly correlated with success of BI.

Ahmad (2010) to Malaysia under "Business intelligence for sustainable competitive advantage" title was attempted to the highlights these issues of telecommunication

industry context. The study had conducted via personal key and interview according to participation in making the decisions in their organizations. The content is analyzed the performing extract variables factors and a comprehensive model of business intelligence for sustainable competitive advantage which is developed. The result of the interview identified the nine main of variables which they are affect BI successful that spread the quality of information and quality system and business strategy and BI tools that business intelligence thought to be the major source to acquire the knowledge in competitive advantage sustainable.

Pirttimaki (2007) under the title of business intelligence as managerial tool in large Finnish companies was aimed at examining that BI pointing philosophy managerial as far as it tools could be used to organize and manage just in time and it also helps organization for gathering business information for being more effective in business decisions in the large Finnish companies. The result showed that expanded role of business intelligence until 1990. Therefore using BI is increased from the fifty top companies when in span time was under examination and business intelligence become an integral part of those companies' activities.

Riabacke (2011) entitled the business intelligence as decision support in business process, aimed at discussing the BIS role and perceived value of business from implemented system and involvement in order facilitate the fulfillment of forty-five organization's goal. The investigation of the study is built on a survey which was answered by forty-three respondents of the different huge companies in Scandinavia. The survey used questions to know how BI system support the visions, strategies and although how the business value delivered from such as the system, design and implementation of the issues that influence the solution. The overall conclusion of the study illustrated that there are marked different stages of the problems in the areas. When most of the problems being found in integration of the business intelligence information although in decision process.

Twum (2014) under the title the importance of business intelligence as a decision making tool, the case study was the electricity company that was used, and aims study examined that the raise understanding of the business intelligence critical as a tool for

the decisions that could support Electricity company in Ghana and manage the directors into adaption with business intelligence. Through the purpose, operation warrants makes clear that BI system is necessity to support strategic decision making and found managing the director identified the worth of information and the importance of active information system play production and used information.

Brien (2006) in the South Africa examined that, business intelligence can lead to the higher profit in telecommunication industry. Questionnaire used to the study by the senior staff. The result supporting that BI improves profitability in this industry through support decision system and enhances strategies with the sustainable action.

Mohammad (2013) in Iran under the title analysis business intelligence on strategic decision that was examined which the relation between BIS as the system to support strategic decision making. Used questioner and that was distributed between undersecretaries in the ministry of technology and the research was conceptual. Therefore through six component was analyzed of the BIS to the system to support strategic decision, it was improved efficiency and effectiveness through realization of the cost and the process and optimality.

Fries (2006) in Belgium tried to investigate contribution of the BI to the strategic management. It was illustrated that business intelligence not only contributes to the strategic stage in the organization hence, from the tactical and operational level contributed. Furthermore, concluded that produce or provide intelligence of the strategic decision in the first category was relatively because of the data from internal is processed.

## **2.2 Quality of Information**

The quality of information saves the data in order to collect among knowledge for becoming business intelligence which is providing the competitive advantages or could be able to provide the strategy. In order to know the basis of the quality of information, there is a need to understand what the quality of information is, where the problem lies and how the shortage of the quality of information impacted the BI and finally the



solution of the problem. There should be a describing information quality (Harschnitz and Droogendyk 2002).

Understanding the information quality as the dimension means that there has to be an appropriate analysis and the business knowledge for achieving the high-quality information. That is going happen when both data integrity and data quality gathering are at high levels and the data integrity described as the value of the true data in business rules. Quality data is described as the perfect data structure which is addressing the need of analyzing business (Damiani and Leida 2007).

Finding poor information requires the recognition of two types of the poor information which include the worse poor information and the best poor information. Both of them might make the decision incorrect in business but the worse poor information cannot be recognized and detected until it causes the poor decision. However, the best poor information can be detected immediately and recognized before making the decision.

Furthermore, the poor information quality comes when the available information is not accurate and not also leading. This is happening because of the generated information that was break down in the process and infrastructure. Therefore, the reasons that occur could be the process of creating data and the structure of data in order to analyze the data and transforming the data into information then put it into knowledge to a business action and decision making (Harschnitz and Droogendyk 2002).

To maintain the quality of new information, there is a need for a program called the quality of information comprehensive that leads data into the strong phase and makes the data powerful. The quality of information comprehensive has been seen as the basis of architecture and data management process at the same time using it to solve the problems and the proactive integrity of the data program. After getting rid of the lack data, the quality of information increases and finally put it to the actionable business plan ready to make a decision.

### **2.3 Business Value of Business Intelligence**

In general, the objectives of implemented business intelligence have some purposes which have been described by (Ramakrishna et al 2012). It contains an organization that seeks to gain insight into the business. Sometimes the degree of uncertainty will be increased because of competitive pressure. The author argues that business intelligence system is becoming a necessity and faster in order to address that they have to be dealing with the dynamic business environment through the organization (Ramakrishna et al 2012).

The good point of business intelligence is reducing the degree of uncertainty which includes analyzing access and communication that are captured by BI's ability. It helps the relevant unknown data such as who makes a decision. Also, it indicates the effective intelligence for those who sell the products in particular in the region from the particular consumer segment and branch and expecting from the accurate idea in the future for enforcement business compatible strategy (Kudyba and Richard 2001).

Smith and Lindsay mentioned that business intelligence helps the CIO and become the key activity of business value. This will enable forecasting the behavior of the market at the same time and adopting any changes to the business condition that will happen in an organization and provide a better understanding of the management. To add, business intelligence is about underlying the direction, published and distributed through different rules and treatments. The transactions and legacy systems preferred by the sources of external data which are related to the business value for gaining integrated environment and unification to the historical and current data in framework data warehouse (Stair and Reynolds 2003).

Unification and its standards in structure framework of the effective style in storage and return the data. Data is returned where managers can make a decision by using data warehouse and associated technique tools for a diversified report. Generating from preference and implementing complication in order to reach the information and enormous knowledge from accumulated data in the organization (Saleem 2010).

In addition, perceived value of BI would be added in the light that could increase the abilities to take the best decision and enhance job performance, as it has possible completing the functional task especially when there is an effective strategic decision making. however, perceived of usefulness recognized as it might not be suggested that succinct enthusiasm in order to adapt with the BI according to the communication organization, the value because of clearly was pointing the goals of the organization which was established (Kaasinen 2005).

## **2.4 Strategy and Decision Making**

It has been pointed by many authors that there has to be the necessity of business from categorizing and structuring in the area of research to strategic process (Rouleau and Seguin 1995). A dual approach was proposed to classify the field of strategy process which includes two dimensions. The views of historical research from strategy process when the schools of business in Harvard presented the classical model of strategy decision making process (Andrews 1971). This model which has the formation of strategy is an explicit action and creativity which was implemented by the executive management. Top management perspective of arguments runs along but with many criticisms, this model is unrealistic and unclear (Mintzberg 1978).

However, its reflections stem from many projects the empirical of research which strategies found out were actually realized. Sometimes has not been corresponding with those in original, but somewhat different so that, external perspective that is arguing instead of internal one. Consequently, it is contrary to the strategy assumption as the form analytical process where it has developed the long term goals and work programs that were implemented subsequently.

To identify the strategy with the aims of realizing the well thought out strategies, Mintzberg and colleagues had been identifying two types of strategy. These include intended, unrealized strategies, which is intended but it was non-scaled to implementation and dropped later (Mintzberg and Waters 1985). The second strategy is known as emergent strategy that leads to the pattern of strategy coherently without need in the first place with the intent of explicitly formulated (Kirsch 1997).

Another dimension that was arranged by the authors has a specific phenomenon along the model of strategy alternative process and among others (Burgelman 1983). The building of the organization's agenda was also about strategic decision making and the profoundly decision making which has rooted in the field process of strategy research (Dutton and Duncan 1987). After those thoughts according to (Andrews 1981), the responsibility for participating in strategy has an important issue which was taken by top management and the board, in order to shape the strategies in the organization. However, involvement according to the board is too complicated and multidimensional.

Therefore, participating in strategic could be pointing to the level of interest that has given by top managers to the various areas in the process of strategy and stated that board. Meanwhile the development of covering the corporate mission as it contains conception of strategy, formulation, and evaluation. The purpose of board's participation to take for the evaluation and the various alternative from the proposals and consider options that could be different through involvement in the strategic decision that has long term impact in the organization, there should be understood the overall level of participation which was described by the board. In the formulation, the strategy shows the acceptance of the board's participation in spite of work with the management to ratify the proposals of top management for developing the strategic direction. In the evaluation phase, boards have classified as it has probed top management evaluation according to the allocation resource or accepting simply managements provide (Zahra and Pearce 1989).

## **2.5 Concept of Strategic Decision Making**

The first step was taken in the 1950's about strategic management development when the organization has developed into a systematic approach for identifying the future of business, how it's going to practice and where will organizations going to operate (Ansoff 1984). The strategy is a pattern in decisions, actions and important for the organization so that it includes some key areas which are characterized organization from others.

In this case strategy is described as a set of decisions and actions which have led to strategy formulation and implementation it aims achieve organizational goals (Pearce and Robinson 1985). The basic function in any type of organizations must be carried out by managers and implement making decisions (Nooraie 2011). Each of organizations tries to improve decisions making in the best way.

However, organizations without decisions cannot success to achieve their goals which are planned for. The importance of decisions, actions returns to the style prevailing in organizations which is supposed to be a strategy and few key areas that consist of differentiation from others (Digman 1986). So that it could find many and different concepts of the strategic decision in literature and decision making, with a constant process and consume time by decision makers. The basic point can be referred to managers to play a vital role in the strategic decision and, decision making is most important in an organization.

In recent years, decision-making had explained general behaviors based on selected groups in previous years from the preferred goals that indicate the aim of analyzing strategic decisions. The most authors important thought seem that strategic decision a central activity in the management of large and small organizations (Elbanna and Child 2007). Understanding the process of strategic decisions as an orderly process of gathering information from external and internal source, evaluating and processing information after transforming knowledge information into activities in management (March 1991).

According to Hofer and Schendel (1980) strategic decisions is non-routine, it has a specific importance especially for those who play in central roles that could be top management. The strategic decision also can be described as a range of strategic alternatives to reach the goals in the best way represented.

It's also playing a role which includes the responsibility of senior management and shows the interaction between an organization and environment. It has reflected on the relationship that indicates the way in which organizations are managed (Ginsberg 1988) continue in which organizations use business in the future and this role depends on the strategic decision making.

Strategic decision making has been defined as a gradual and interdependent, which is formed by a variety of impacts contextual to the past events arising in present-day conditions and finally the future views (Quinn 1980). Strategic decision could be described as the mission statement which contains goals and objectives established, in order to find the factors that have influenced the future of organizations and identify trends importance.

This indicates the strengths and weaknesses and has to explore the objectives of the strategy and implementation which needs to keep on the implementation and finally effective evaluation. Streib (1992) said that Strategic decision also can be described as choosing a range of strategic alternatives and that is trying to reach goals in the best way represented. It is playing a role that includes responsibility of senior management and show the interaction between an organization and environment reflection.

Therefore, this relationship indicates the method that organizations are managed. It was proposed that strategic decision contains some points. It does include positioning of strategy, it has high risk, involves several functions in the organization and the representative which is considered the major part of decisions making in the organization (Eisenhardt 1989).

Moreover, strategic decision supposed to be infrequent decisions which influence the health and survival of organization when it made by top management. In what way, strategy decision is recognized in-depth affecting ability, future, and the fate of organization through responsiveness and compatibility between the decisions and environmental requirements. This makes it sure that strategic decision is a decision that deals with long-term variables.

These variables are related to organizational performance or related to the central importance in order to continue the success of an organization (Eisenhardt et al 1997). It would represent a special kind of management decisions in the absence of non-confirmation which includes the decisions and have relation to the complex problems.

Dealing with organizational objectives, its values, and impacts in different managerial levels taken when top management being of high importance requires a great mental effort of senior management and distinct. The experts and consultants are needed solve

the problems to ensure proper and effective decision making (Johnson 1993). However the far-reaching decisions in this content are based on the strategic plans of objectivity and achieve the goals set then taken into account all the possibilities and consequences of the situation.

The scholars have mentioned strategic decision as it's a decision that detects the organization's basic fate, general trends in the light of expected and unexpected variables that occur in the surround environment. The objectives of the organizations direct the distribution of sources and determine the effectiveness of the organization. It is not only the decisions which are made by the entrepreneurs on average in an environment that is more obscure. Taking the decision in the large organization and small organizations by managers are facing a complexity in such a decision- making context.

Often the entrepreneurs are more confronted with complexities than managers in larger organizations (Covin and Slevin 1991). It might have the potential pitfalls, which has the utility of the biases and heuristics in a decision and more complex in order to compare with less complicated settings to the decision making (Pitz and Sachs 1984). The large organizations are helping managers according to the process of decision making to develop the elaborate policies and procedures.

However, those decisions which are playing a role such as the practice of routines confirm that and show simplified routines from complexity and making the decisions which managers are facing, the routines in the large organizations depends on the charts from organizations which identify the field of responsibility in the organization (Nelson and Winter 2009).

## **2.6 Key Elements of Strategic Decision**

The key elements of the strategic decision can be explained how the strategic decision develop the organizations for instance "Jack Welch" from the business world who have succeeded in the management until reached top management in the largest company that was called "General Electric" from 1960 to 1980. The key to his success was as a result of the bold decisions and management that reached the peak of the company after taken

decisions to close dozens of the company's constructions. This was a great obstacle to the integration of a hundred thousand workers in the company in the liquidation process.

This includes nearly four hundred prominent schemes were a matter of pride for the company and it has gone with the curriculum that was made by them, which were hampering the company's significant performance. Less than ten years it became one of the biggest companies in the world such as "Microsoft" and "General Motors". There are certain ways that show the importance of strategic vision in the issuance and implementation of decisions.

### **2.6.1 Customer Care**

The strategy is seeking to increase the customer's satisfaction so that it attempts to attract customers to the organizations by increasing the benefits which provided it and to increase the degree of saturation for that decision-making in all areas to achieve this end. The organization makes a decision to get rid of inventory and follow the uncontrolled "Just-in-time" to reduce the cost of delivery method. Thus increasing their ability to reduce prices, and the intervention of the computer to facilitate the routine work to provide the customer with time and accelerate customer service. The use of the computer, the control quality, the disposal of surplus labor for the client, and entering into new markets are valuable. The evolution of the product and adding new products for the client, designing the organizational structure for the client, are all strategic decisions to put the client in the center, and the standard of success to the satisfaction of the client (Nooraie 2008).

A strategy is seeking to increase the customer satisfaction in an attempt to attract customers to the organizations by increasing the benefits which are provided. This increases the degree of saturation and for that decision-making in all areas to achieve this end. The organization makes a decision to get rid of inventory and follow the uncontrolled delivery methods just in time in order to reduce the costs.

Increase the ability to reduce the price and the intervention of computers to facilitate the routine business of providing the customers with time and to accelerate customer service. Use a computer to the quality control and the disposal of surplus labor for the



client, and interference into new markets. The evolution of the product and the adding of new products for the client, but redesigning the organizational structure for the client, the client-centered strategic decisions is the standard of success that guarantees customer satisfaction.

### **2.6.2 Environment**

The strategy is concerned with predicting changes in the internal and external environments which measure the size and strength of the change, what create the opportunities and the threats. Whether the change is internal and external strategy decision is working to amend the trends so that it has become adapted to expect the current and future changes. In order for management to predicate an opponent movement, they have to make strategic decisions which increase strength.

This addresses the weakness because of opportunities in crescent and facing the threats which give the chance for success in the strategic decision (Nooraie 2012). Consequently, the studies before have been concentrated on the external environment which includes, the dynamism of environment. It was pointing the rate of unpredicted changes when it has an absence of the pattern (Dess and Beard 1984).

The phase “dynamism of the environment” is important in order to influence the process of making SD which had been considered in many kinds literature as some of the authors pointed. When the environment is going to high-velocity level, there is the need to use rational decision making in an effective organization (Bourgeois 1985). Therefore, it was proposed that there is an increase in the dynamic environment that has accompanied from the extent of rational increase in the process of decisions making.

The final strategic decision was described as a positive relation between strategic decision and performance of dynamic environment (Priem et al 1995). Opportunities and threats in SD have a negative relation between rationality and the competitive threats. However, the same relation exists among the flexibility of the strategic decision and the threats of competitiveness.

### **2.6.3 Long Term Impact**

The strategy includes those decisions which have an impact on the long-term such as an entry in the joint ventures or adding the new product so that there are others like open the outlets of distribution. The long-term impact remains too many of them for a long term whether it is complicated to change it without the high costs which have compared to the cost of such a decision to change the rules of attendance and other non-strategic decisions.

Given the seriousness of the strategic decisions taken, it requires regulatory procedures and safeguards to ensure that they are the best as they could, through two entrances. Entrance subscription jobs cross functionally; this means the need for the involvement of those responsible for the functions that will be related to the topic of a strategic decision and the use of outside technical expertise if necessary. Entrance knowledge, interdisciplinary subscription; it means the participation of individuals with different backgrounds and knowledge of the process to make sure that the decision had been discussed and evaluated more than a scientific point of view.

### **2.6.4 Reliance on Competitive Advantages**

The strategic decision depends on the strength point or competitive advantages such as the quality or the timeline of delivery or the ability in order to offer and provide payment facilities. However, the non-strategic decision could not build the strength point in organizations and also it is not able to increase the value. For this reason, it is noted that there are more areas of strategic decisions given. For the organization to compete it must be based on a variety of competitive advantages that distinguish them from other organizations and not a competitive advantage that does not preclude the presence of a major feature supported by another set of complementary advantages.

### **2.6.5 Flexibility**

Contemporary organizations are keen on the choice of strategies that can be modified or even cancellation of the interview reaction of competitors or changing customer and supplier trends, changing external and internal environment. It has become one of the important strategic flexibility standards in preference of some strategies to others and in

general, the provision of an element of flexibility to meet the conditions of uncertainty. This is one of the basic requirements for strategic thought development so that, increasing uncertainty needs to provide an element of flexibility in strategic decisions.

## **2.7 The Model of Strategic Decision Making**

The purpose of the model strategic decision-making process could explain and describe the strategic decision process, it would vary based on the idea of the organizations and there have been different from the conceptualization of the process decision making because it did the classification (Astley and Axelsson 1982).

The process of strategic decision would include the problems of decision existence which the decision maker has been understood to identify the opportunities accurately solve the problems so that, there have several issues to describe decisions which caused impediments to the decision (Cornescu, et al 2003). The model of strategic decision making are divided into two basic models and made it different among the two models (Hitt and Tyler 1991). An analytical rational – model which has started a linear decision and the systematic process of decision, when a behavior management concentration in the pre-explanation goals. The rational decision could be described as a structure or the reasonable thought for the decisive action, therefore making the knowledge which has led to the optional and rational decision that able to support decision making in order to engage the specific open optional.

According to the decision which is related to the high value and the advantage of the tools of operations, the expertise and knowledge (Fahey 1981).The organizations would not be rationally perfect because of the limited information. Because of limited information organizations would not have the capability of addressing perfectly when the most basic of decisions are dependent on the rules of thumb that called the quality of limited information. This implies that organizations are institutionalized which the decision-making use its fragment and routines the process to making the management in the organization (Morgan and Smircich 1980). The basic phases and processes in the rational, analytical decision-making include identifying the problem which could lead to

goals of formulating, developing, selecting the alternatives which identify decision making.

Furthermore, it supports clearly the experiential of research which most of the decisions are following the basic phases that include identifying the problems. After that development and selecting the suitable alternatives, then put it in the plan for making decisions in which case the decisions through different stages have to report. According to Simon, when the situation of the organizations is going deeper, there need various paths for making decisions. Here, organizations participate four phases which contain Intelligence, design, choice and implementation (Simon 1977).

### **2.7.1 Intelligence**

It points out the problem of identification which happens in the organization. However, it shows the effect from the situation which occurs, at the same time as it has refers to the activity for gathering information to identify the problem and where the problem occurs with processing the information about the situation of potential decision then formulating the alternatives in the organization.

### **2.7.2 Design**

This stage indicates the alternatives which have to be involved in decision making as a solution. Those that have developed quickly in particular at this stage of formulating alternatives will describe the alternative identification to explore the need for the satisfaction that is related to the objectives of decision making in the organizing process.

### **2.7.3 Choice**

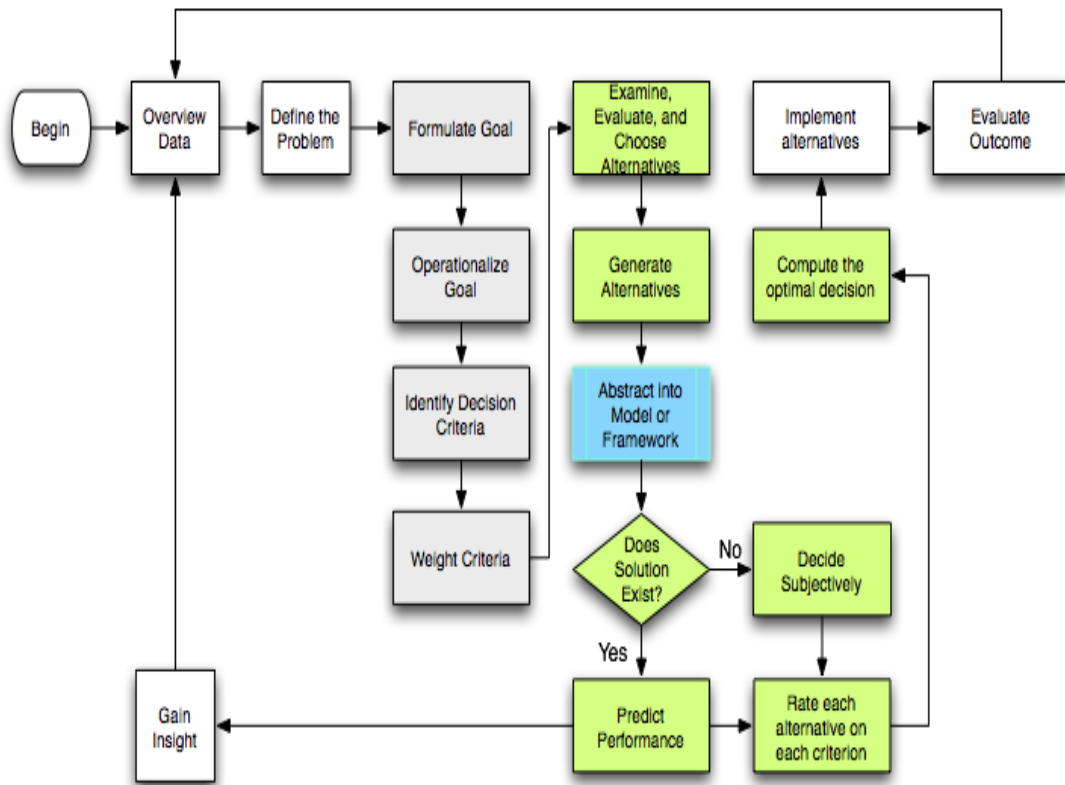
The choice is one of the important stages in selecting the best alternative among the alternatives which are identified. Therefore the use information tools for detecting the threat and opportunities which have been identified in the second stage that is designed might also need the decision support system for development. Especially, when there are more alternatives and complex consequences there is need to use an analytical model more extensively in decision making.

#### **2.7.4 Implementation**

For completing the process of decision making, there needs for implementation which this stage shows the role of manager and how to implement the decisions or make decisions. These stages depend on the reporting system which routine reports has been delivered in order to progress to a specific solution and the system also refers to reporting the difficulties which will be arising. Simon again described the rational decision, such as a multi- step process in order to choose among alternatives which one is the best according to logic and objective. It was mentioned four sequential activities which include.

Goals would be formulated.

1. Standards identification in order to make the decision.
2. The alternatives identification.
3. The analytical perform.
4. Making the decision in final activity



**Figure 2.1 :** The Rational Decision Making Process: Simon 1979

The second model is external control which is point to the external environment that analysis strategic decision making success and concentrate the operations of strategic decision making which have associated with environmental circumstances. However, it was said that the model has been grown through two bases that are separate and supportive which largely includes the organization's theory and the organization's economy of industrial organization.

The theory of organization has assumed that the environment looks like a source from the contingency of critics which also suggested that contingencies are the turbulence of environment have included many large influences on organizations. The economy of industrial organization and theory of organizations are close to each other in conceptual thought while industrial economics suppose to the structure of this industry to identify the profitability of significance in the industry (Hirshleifer 1980). The influential factors which have served by the environmental factors are vital as it occurs in strategic

decision making (Barney and Ouchi 1986). More often, the perspective of this model has been considered inevitably higher deterministic constrained the strategic decision thought the external environment have been considered (Bourgeois and Brodwin 1984). Whereas the two models are similar looking in the conflict potent and supporters moving close of each other so that, there appeared many models of decision making which are stationed among models that were described.

Moreover, the model of decision making have a specific aspect which selected and examined closely and has presents some of the achievement such as, Strategic choice. This explained two models which supposed that senior management could make the decisions through technologies, domains and the structure, about the goals of the organization (Child 1972). The organization's process also is dependent on the environment to adapt the circumstances.

Therefore, the perspective has been pointing out in organization for identifying and interpreting the environment which is able to reply the elements that have been fixed and trying to form the elements which are remaining because of their advantages (Keats and Hitt 1988). So that it seems to represent both models in strategic decision making. Models of the politics-oriented power describe the conflict process and settlement differently and the interests associated with the power that are results of decision making in the center of surveillance (Narayanan and Fahey 1982). Hence, type of this model like behavior-model refers to that displayed the decisions as a result of bargaining and negotiating between sub-units and individuals with conflict visualization, personal stakes and the power which is unequal.

The basic rules are decisions from the models of politics which result from the process and in the case that makes the decision. The various objectives with each other tried to get coalitions and negotiate in order to succeed in decision making. Garbage model has been described as the decision making when it is too vague (Cohen and March 1972).

However, the model explained the way to provide the decision making and it might analyze the appearance of new ideas with more understanding. Often, it has a special role which is acting in diffusing the idle idea, particularly in the randomization process.

Therefore, the result of unplanned decisions has followed some streams which include the selection opportunity such as the occasions that warrant the decision and solution to the problem. The engagement, especially when the individuals are going to pay attention to the problems and finally the individual's problem which has concern within the organizations and outside. This occurs in decision making and could be the process which at first looking for the problems. Thereafter, make a choice on how the solution is going to look like to solve the problem in order to the individual to make the decisions, find out something and then methods for deciding. Instead of the rational model and the power model, garbage model concentrates on the chances of importance so that in the primary stage the garbage model has been focusing on timing and the random combinations opportunity (Levitt and Nass 1989). At the end, all models of decision making: concentrate on the influences of the system and organizational routines and finally, the structure of the process of decision making in organizations.

## **2.8 Characteristics of Success Strategic Decision Making**

The most researches had examined that the importance of the kind decision-making nature which leads to success and failures in the organizations (Miller and Cardinal 1994). Martha and Kingston refer the characteristics of successful strategic decision making to contain two basic phases. First one is comprehensiveness that takes the responsibility to measure how options would be accurate and endeavors that have sought and evaluated.

It has significant establishment among the comprehensiveness and performance of organizations in the descriptive analysis of the planning (Kyrillidou 2002). Whereas, it has referred to the extent of measuring rationality in organizations by trying to be more exhaustive or inclusive in order to integrate the decisions. However, described as the decision of extensiveness as the process which has relating to the threats and opportunities in the short- term (Miller et al 1988).

There is an advantage and positivity if the organizations remain as stable industries, but when the organization's experiences turbulence it will be harmful to those organizations. Thus, there is a positive impact on those organizations which have turbulent industries



and stable industries. The second phase is the "extensiveness" which has been defined as the process of considering the long term in the environment about the threats and opportunities in the organizations which have been associated with the decisions success in the industrial turbulence. However, there is a positive influence according to the long-term planning (Boyd 1991).

it is also the process of decision extensiveness which is related to the threats and opportunities in the long term (Miller and Friesen 1983). Still, both comprehensiveness and extensiveness are the examples of the rational model which identifies the success of making good strategic decisions. Two basic characteristics in comprehensiveness were analyzed, which include synoptic and incremental. Therefore, the basic advantage of the synoptic is that critical issues which make sure concentrate being comprehensive in order to make the strategic decisions integration, with the analytical of characteristics integrative comprehensiveness presented and analyzed.

However, the proponent of this model debated that within the organizations, strategic decision making should have an approximate rational model of economic by trying to be exhaustive in the group of miscellaneous. The activities of decisions making includes integration that could be conscious of the decisions of individuals in order to ensure consistent of the whole. Despite the construction of comprehensiveness, there is a single measure of the extent to which the process of strategy in organizations that would approximate the model of rational and the multifaceted nature which has made the particular value.

In order to understand the strategic decision-making process, look at the ideas of scholars is important. For instance the review of literature in decision making according to (Janis and Mann 1977) it led the process of comprehensive conclusion which is characterized by comprehensive voice screener to the set of wide from alternatives. The set of full objectives that is surveying should be careful about weighing the costs and risks from the different consequences.

Searching for the information intensively so that, the alternative actions in the evaluation the information by objectivity or the opinion from experts on the actions of alternatives

to be reconsider from consequences according to the positives and negatives of the known. Finally, it has to make the details about the plans which contain the contingencies from the explicit consideration in order to implement the chosen action. It was provided by Wrap which identifies the comprehensiveness that was constructed to extent that organizations have been attempting to be exhaustive or inclusive for the strategic decision integration (Wrap 1967).

The comprehensive construction was described in literature because it is the critical issue to strategic decision integration whereas synoptic model differs from the incremental model as it shown in the required comprehensiveness according to integrating strategic decision. The second one is incremental which was discussed by (Greiner Larry and Thomas G. Cummings 2009 p100). The model of incremental from the bottom to top which has high involvement in order to create the strategy as it could be:

1. Development of strategy within an organization, therefore strategic decision making in the daily events which the member's reactions inside the organizations not just on the environment and on the markets.

2. There shouldn't have taken the strategy only from the rational and formal so that, it needs to be taken from the values stems of strategies which individuals have not been rational all the time. It has some interests and certainty from the experience that uses decision making.

3. The strategy could be deeply ingrained of the pattern of behavior that has not been easy to turn it out and turn it on. Therefore in the organizations, it becomes embedded in the practices and activities.

4. Lastly, the appearance of strategy could be seen as the cumulative effects of taking actions and decisions whereas any combination of other decisions could be a logical pattern for its own. Pettigrew refers to making the strategy which involves the members of organizations that are making innumerable decision informally (Pettigrew 1985). Therefore, the comprehensive decisions could increase the performance of

organizations if it is lower the degree uncertainty in environment whatever in the unsuitable environment could be harmful at any time according to performance.

It was in the discussion which the comprehensive decision makes the process of decision-making more complicated when sometimes required (Fredrickson and Mitchell 1984 p 399). When the degree of uncertainty is going to rise in the environment, there is the thought that it is necessary to react faster because of that there seems to be the incremental model more appropriate to do that (Fredrickson & Mitchel 1984 p 405 ).

This model was not only developed as a descriptive model according to decision-making. The model was also used as a normative mechanism which uses it for uncertainty when the individuals' cognition has a limit with basic complex and ambiguity. It directs who makes the decisions have to get rid of problems and small moves towards the solutions instead and also to be ready for any opposite direction from environmental feedback (Lindblom 1959).

While it was identifying the characteristics of the incremental model which includes just a few options consideration, the settlement by the negotiation on the results of decisions. There is a need to make the gradual changes and decisions which are supposing to be the reaction, the political consideration attempting, in particular, determines the outcomes (Allen and Coates 2009). The thought of strategic decision mentioned that the important influence of the future organizations which have required the significant resource and the decisions which have been handled in the manner were determined by both conceptual decision context and content. The table below illustrated both synoptic and incremental concept difference in the process of strategic decision making (Fredrickson and Mitchell 1984).

**Table 2.1:** Process of Synoptic and Incremental

<b>Some Characteristic</b>	<b>Process of Synoptic</b>	<b>Process of incremental</b>
1. The initiation of the motive	Initiate of the operation when it has response to the problem or appearance the opportunities through the surveillance continuous.	It has starting the process of response when there is a problem or the dissatisfaction according to the current state.
2. Goals	It has directed in order to achieve the specific goals in the intended future.	It is trying to achieve a modification which was directed of the current state.
3. Relation among the alternatives means and ends of goals	The relation among the means of alternatives and the ends goal at before identification goals and the analysis of alternatives independent.	Whereas making the decision is an "ends-means" process.
4. The term of choice	Alternatives depend on the contribution in the final choice in order to achieve the goals. The quality of decision is known when only indicates this decision which was provided in order to best means to achieve the specific objective.	Final choice from alternative which is made through gathering (means) of alternatives to consideration, whereas their consequences of the possible to (ends) and chosen the one that yields was most desired outcomes. While the quality of decision is

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		<p>achieved agreement which was judged in order to the alternatives choose, means to the end.</p>
<p>5. The analysis of the comprehensiveness</p>	<p>Individuals make decisions in order attempting the goals identifications, generation and alternatives evaluation which are considered the all factors.</p>	<p>Individuals consider few alternatives in decision making from the current situation as actions of alternative therefore in the range of consequences which is only restricted, that would not consider about all factors.</p>
<p>6. Comprehensiveness of integrative</p>	<p>The attempts of conscious that are made in order to integration of decisions which it compose the strategy overall for insuring it has re in force one another when seeing the strategy as it has developed consciously and the attempts whole</p>	<p>It has made a little attempt in order to integration of consciously for the individual's decisions which could influence one another that possible and seeing the strategy which has loosely decisions linked group being processed</p>

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integrated.

individually.

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## **2.9 Effectiveness of Strategic Decision**

Organizations are continuously making the decisions at every stage and at every level so that the ranges of decision making from the strategic decision, while to the managerial decisions and also to the routine of operational decisions. Whereas in business: the decision making is about choice, selection or compromises to achieve the goals of business. However, the decision making is not always about the right choice of identification and concessions.

Whether it has to be turned into the work which is not the decision, it is a good start (Drucker 1967). Thus, the effect of the decision could be described as a process of what and which alternative is going to be chosen in order to manage and implement the purpose which can achieve the business objectives. The systematic process resulting in the effectiveness of decision, with definite elements of decisions, would clearly treat the sequence - distinct from the steps. There are controversy and debates about strategic decision effectiveness. The effective decision refers to achieving the goals of the organization which is trying to achieve the acceptable level of proportionality between the methods and the goal within a certain circumstantial data. The process of decision making is the backbone of management.

This is one of the most important things that achieved acceptable proportionality between the objectives and the means to achieve the resolution in a particular circumstance. There are predictable rules by which to a degree of proportionality can be achieved between the objectives and the means of a decision made at a time under the shade of certain environmental data, which includes:

1. The level of accuracy and adequacy of information available for the purposes of that resolution. The ability to administrate levels and analysis derived from the experience and understanding of who makes the decision.
2. The level of intellectual creates conflict through participation to reach the most appropriate decisions.
3. The degree of difficulties from reduction that has been faced by the decision-making of the environment when it was described as effectiveness of decision as a process which was used in order to reach the decision making or supposing as the decisions output,

In this case, there could be fewer outcomes that are related to the measurements of effectiveness decision in view of the difficulty that identifies the existence of a causal relationship among the decision and performance (Schilling et al 2007). Measurements are placed which are related to the process of decision effectiveness on the perceived quality of the process of decision making, whereas the process of decision making definitely is associated with the success of decision. Therefore, the evaluation of the effectiveness decision in terms of the process used, in order to reach the decision which is certified widely (Dean and Sharfman 1993).

## **2.10 Business Intelligence Versus Strategic Decision**

There is an explanation about both of them which BI affects strategic decision-making in the organization where BI is going to decrease the time and the costs which were wasted in decision-making. This will increase the competitiveness at the same time and will be able to develop or increase the decision speed (Mahmoudi 2008). However, business intelligence is not only a product or the tool or a system, but it is also recognized as the new approach to the architecture of organizations which is based on analysis and speed of the data.

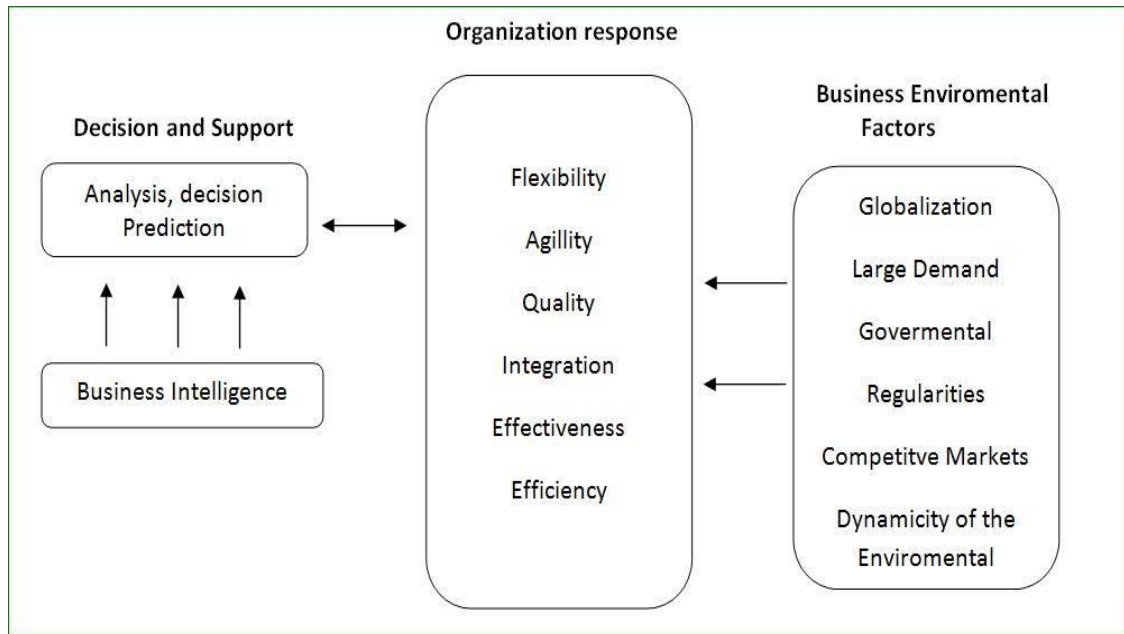
In order to make a smart and an accurate decision in business, another point has to be taken into consideration which will be a solution of BI and supporting decision making at all levels in strategic BI and management. Providing the ability and possibility for an accurate arrangement of the goals and trying to achieve it when BI provides the

possibility to prepare various reports such as the results of a comparative historical review and usefulness of the suggestions.

The effective ways to distribute the information with simulation results which are related to the development and to predict the future based on some assumptions. BI might, at the tactical level creates a main point for the strategic decision making compiled by others which are included in human resources management and financial management. This leads to organizational systems to be more optimistic according to the correct technology. The future life and financial situation or the functions of the organization are important for realizing the objectives of strategy and effectiveness (Mahmoudi et al 2009). Business intelligence is leading the improvement of the overall performance in the organization and increasing decisions profit and optimize the process of organization in order to make the decision more efficient. When it has an impact and improve the performance for the decision-making profit, supporting decisions from the top levels and make facility for the best strategic decision will be achieved.

After that, there would be an important and effectiveness solution for the strategic decision making which is able to lead the quality of the decision by enhancing more integrity. BI is about pointing an increase in the decision making accuracy when it has been used to transform or extract the knowledge of an unstructured data and structured data in order to be more efficient and effective. Also, make a correct strategic decision at the right time from all the factors such as agility and quality finally will be more flexible and integrated.





**Figure2.2 :** Model of Pressure Response Supporting Business Zaman,2005

This model is dynamic for pressuring imposed into an organization where the providing of opportunities impacts the strategic decision. Business intelligence refers to supporting the decisions in the organization that can be the automatic system and intelligent and also able lead to the improvement of organizational responsibility. This can affect the flexibility and alignment of decisions to achieve its goals. Also, it contains the decision accuracy, agility, integrity and the system of DM efficiency and effectiveness (Zaman 2005).

### **3. RESEARCH METHODOLOGY**

#### **3.1 Introduction**

In this chapter, the researcher will discuss methodology. While, the overall of the methodology is pointing about some ways in order to organize and analyze data which is dependent on the nature of the research question (Polit and Hungler 2004 p 233). There should be a precise explanation, according to the methodology because it is necessary for this thesis. Thereafter the research model of the research discussed the questions and hypothesis of the research presented in this chapter. The population, sampling, study tools, data collection and the instrument questionnaires are presented and analysis the validity and reliability of the questionnaires and finally limitation of the research.

#### **3.2 Research Model**

Descriptive method has been chosen for this research.

##### **- Quantitative Model**

This method has been known as the process of the interview, questionnaires, case study for collecting data with analysis and conducts the experiments when the case study will be necessary in order to get the observational and numerical data in the research work. Although both models include quantitative and qualitative research methods, both have their own pros and cons. Therefore, the research of quantitative method will not be like the qualitative approach which is only focused on the specific valuation with its needed hypothesis (Johnson et al 2008).

Descriptive is a kind of quantitative in nature which involves for collecting data in order the hypothesis would be test or answer the questions for the current statues of the topic of the study, The Impact of Business Intelligence on Strategic Decision Making.

Therefore, the survey research has been chosen by the research design for this study. The survey is endeavoring to collect the data from the managers of a population in order to determine the current statuses of population which consist one or more variable with respect (Hadeel 2012). The survey research is the best to collect the data which is valuable and could be able to provide it. It's going to include the careful design and execution for the research component.

### **3.3 Research Questions**

There is a little research on the implementation of practices on business intelligence and how it is affecting the process of strategic decision making (Pettigrew 1985). As a result, in the most organizations business intelligence is highly prioritized by the top management and confirms that business intelligence is not efficient and effectively implemented yet. The main purpose of the research is to exploring the impact of business intelligence on strategic decision making efficiently and effectively in the companies which is important to the managers of the companies in order to make the decision by using business intelligence.

Based on in depth review of the current literature depending on the previous studies which were found in in another countries a set of questions were developed in order to support the general purpose of the research and questions of the research should be support the purpose of the research. The purpose of this work is to contain and produce the holistic approach for the business intelligence of strategic decision execution at the level of the companies.

The study was conducted using a descriptive statistics such as (frequency, percentage, mean, standard deviation and t-test) and inferential statistics such as (correlation coefficient, regression analysis, factor analysis and t-test) in order to investigate the main relationship between variables. The responding variable in this study was Strategic Decision and the independent variable was Business Intelligence then the sample consisted of 120 managers selected from four different companies such as Asia, Zain, Goran, and Nawroz at Sulaymaniyah and Erbil. However only 97 questionnaires were filled in correctly, in additional the questionnaires was used in order to collect data and taken a sample from a population because the population was large and literate and time

for data collection was limited. Finally, computerized data analysis package such as SPSS 17.0 in (2016-2017) and the state were used due to analyzing data.

- **Primary Question(s)**

How business intelligence can be affected on strategic decision making in the companies ?

- **Secondary Question(s)**

1. What is the relationship between type of BI tools and strategic decision making?
2. What is the main relationship between influencing of factors and strategic decision making?
3. What is the main relationship between perceived value of BI and strategic decision making?
4. What is the main relationship between the quality of information with respect to BI and strategic decision making?
5. What is the main relationship between BI use and strategic decision making?
6. What is the main relationship between BIS infrastructure flexibility and strategic decision making?

### **3.4 Research Hypothesis**

1.**H<sub>0</sub>**: Business intelligence could not be able to improve the efficiency and effectiveness in strategic decision making.

**H<sub>1</sub>**: Business intelligence could be able to improve the efficiency and effectiveness in strategic decision making.

2.**H<sub>0</sub>**: Type of BI tools could not be able to improve the efficiency in strategic decision making.

**H<sub>1</sub>**: Type of BI tools could be able to improve the efficiency in strategic decision making.

3.**H<sub>0</sub>**: Influencing of factors could not be able to improve the efficiency in strategic decision making.

**H<sub>1</sub>**: Influencing of factors could be able to improve the efficiency in strategic decision making.

4.**H<sub>0</sub>**: Perceived value of BI could not be able to improve the efficiency in strategic decision making.

**H<sub>1</sub>**: Perceived value of BI could be able to improve the efficiency in strategic decision making.

5.**H<sub>0</sub>**: Quality of information with respect to BI could not be able to improve the efficiency in strategic decision making.

**H<sub>1</sub>**: Quality of information with respect to BI could be able to improve the efficiency in strategic decision making.

6.**H<sub>0</sub>**: BI use could not be able to improve the efficiency in strategic decision making.

**H<sub>1</sub>**: BI use could be able to improve the efficiency in strategic decision making.

7.**H<sub>0</sub>**: BIS infrastructure flexibility could not be able to improve the efficiency in strategic decision making.

**H<sub>1</sub>**: BIS infrastructure flexibility could be able to improve the efficiency in strategic decision making.

### **3.5 Study Population and Sample**

The study population is all vocabulary phenomenon studied by the researcher, the study population is all the individuals and those things that are going to complete the problem of the research. Building the study problem of the research and its goals are those managers who make up the upper management and middle management. The population under study is divided into four communication companies. It includes: Asia, Zain, Newroz and Goran which located in different places in Iraq, arranged according to how they are making strategic decisions and the impact of business intelligence on it. To increase credibility, it's important to choose the sample which represents the population. Participation managers from four companies in Iraq, included top managers, mid-level managers chosen 120 managers. Then 120 questionnaires were distributed, 97 were returned and the answer questions were valid.

### **3.6 Overview of the Companies**

In this section, the researchers try to recognize the companies which were taken to the survey questionnaire. However, the overview of the companies is important, because of the short overviews described here about all the companies and their history.

#### **1. Asia cell**

Asia cell is one of the greatest and biggest companies around Iraq. It was establishing in Sulaymaniyah in 1999. It's a private company also the first telecommunication company in the Iraq. It carried out its first commercial operation in 1999 in Sulaymanyah. After growing in 2004, their employee number reached 2000. By the market research which had done. It was approving that it is the first brand around Iraq. It works more than 18 governors in Iraq. It offering the prepaid service which subscriber participated is 97% in 2012 statistically. Their service is available in more than 6000 points of sale. In 2012, Asia cell's network reached 35 million on the population of Iraq. This indicates that 97% of the population of Iraq is using that. It has shared market about 43% of Iraq. They always develop the innovations and focusing the best quality and lower prices, that is why it has been ranked at the first company in Iraq.

#### **2. Zain**

Zain is the second biggest telecommunications company in the Iraq which is owned by Zain group. The company was established for the first time in Kuwait in 1983. When it made its first appearance in 2007, it purchased Iraqna for 1.2 billion dollars. Zain is located in the capital of Iraq in Baghdad. Zain is a multinational company located in eight countries offering quality services in these countries. It has another branch in Iraq in the same industry. They were focusing cash generated by taking the strategic decision which was made by the group of Zain in 2012. They are also concentrating on the low pricing and good quality. They are giving the best internet service. The number of employees who are works in the company between 1000-5000. The population of Iraq can get the benefit of Zain when it has created the strong trust.

### **3. Newroz Telecom**

Newroz telecom is great telecommunication company which makes communication service both (data and voice) accessible to all people in the area that worked. It was established in 2007 in the north of Iraq in Erbil. That was operating from several companies. Subscribers are widely using Newroz in the north of Iraq because of the quality. The company is focusing on good quality, which day after day becomes reliable and better company. It has near 1200 employees who are working in the company. As soon as possible they are going to offer their services around Iraq because this company has a lot of subscribers and it is fast growing.

### **4. Goran Net**

One of the great private companies is Goran net ISP that was established in 2004 in Sulaymaniyah in the north of Iraq and has got more than 153 employees. It has grown very fast because of the development of their services which they offer day after day. It has effective staffs who are working at the company. The company is trying to always offer the best services. At the same time, they have a plane for going everywhere in the north of Iraq. It has offered the best internet service and wireless. The company is concentrated to offer the best service and high quality with a low price. As soon as the company is opened all around Iraq, it might also invest in other industries as this is possible.

### **3.7 Study Tools and Data Collection**

The present study divided into two folds which includes previous studies and practical when in the previous studies the researcher relied on the scientists that are related to current study. However in the practical part the researcher depend on the on descriptive, analytical method using the practical manner to collect and analyze the data hypothesis test for the research questions (Hadeel 2012). Data collection is manner of analysis and program used in the current study which includes two types: secondary source that contains book, journal, articles and thesis to write the previous studies of the research.

The primary source which include survey questionnaires because the questionnaires suitable for this research it has been conducted through dividing questionnaires to those

companies, Asia, Zain, Newroz and Goran. For collecting sufficient information, the questionnaire was needed to get this information and the researcher is going to use the survey questionnaires for top management and mid-level management from a large group who have experience and have reached the goals of the research. Thus the researcher will use this type of data gathering by questionnaire because it is impossible for collecting data by the interview considering the fact that managers are many to be interviewed individually. Data collection by using the questionnaire is advantageous in that it is not expensive and time-efficient and using these different types of methods is pointing to choose the questionnaire because of the researcher will be able to gather large data from various companies.

### **3.8 The Questionnaire Instrument**

The questionnaire was developed by the research which was used to measure the key variable in order to gather data from the sample population. The research was chosen survey questionnaire because of collecting the large amount data it offers relatively non-costing and quick way makes it a practical and suitable method for the research, in addition, survey questionnaire is directed in a standardized and objective manner also more confidence that is added generalizing the results. The survey was developed which was based on the relevant literature in depth therefore it was divided into three sections in the way that BI impact on SDM. First section which is demography includes age, gender, educational degree, and experience, year service in the company and job title.

Section two is business intelligence and in this section, it was measured BI through (21) items on a likert-type scale such as (Strongly disagreement, disagree, undecided, agree, strongly agree) or (Never, rarely, sometimes, frequently, Always) that the responder should circle for each statement. Using BI in many organization growth to take the better decision therefore, Sergey Kokin (2013) thought that there is a strong relation between BI and organizational dynamic capability in order to attain this goal, there was employed the survey questionnaire that includes BIS infrastructure flexibility, BI use, and organization dynamic capability to obtain the data it was targeting the population. Moreover, used BI to the effect mobile on organization managerial decision, the survey questionnaire held that contains BI tools, perceived value of BI, quality of information



with respect to BI, influencing factors. therefore it was indicated that Mobile BI play an important role that influences managerial decision making in a way that managers make the best decisions in the organization (Yasser 2014).

The section three is strategic decision making, the different dimension of the combination from process of strategic decision-making would involves to best understand which those factors that could influence the process of strategic decision making, top managers and board of directors are responsible for strategic decision making, whenever the strategic decision is formal or informal the survey questionnaires used in order to know the impact business environment and board director on strategic decision making (Maria 2008). Thereafter, from this section it was measured (SDM) through (21) items on Likert-type scale in involvement SDM and Politicization follows like (Strongly disagreement, disagree, undecided, agree and strongly agreement) and (Absolutely no involvement, not so much involvement, Undecided, Some involvement and Active Involvement and influence) and because of that in the process of SDM the responder should choose one statement.

### **3.9 Limitations of the Research**

The researcher faced some limitations in carrying out this research. Vehemently some people refused to share questionnaires. However, having administered questionnaires, some respondents failed to return those questionnaires. Also, some respondents did not answer all questions in all the fields that were mandatory.

To add, most of the companies that were designated for this research were found at the center of Iraq which was not accessible because of political instability. Even those companies which were accessible didn't have adequate BI departments. Furthermore, the researcher could not find most needed books in the libraries and do research on the internet was not an easy task because the required information was hardly gotten.

## 4. DATA ANALYSES AND FINDINGS

### 4.1 Data Analyses

The sample was composed of 97 from 120 managers in the four companies being Asia, Zain, Goran and Nawroz. This chapter will include the result of data through the application of statistical procedure which were manipulated and interpreted based on the response of the sample to the test. And also all results will be obtained from the primary research and statistical software will be utilized to derive the final conclusions.

**Table 4.1 :** Distribution of the Sample According to Age

Age distribution	Frequency	Percentage %	Mean $\pm$ S.D
Less than 30	16	16.5	
30-39	62	63.9	
40-49	18	18.5	35.2 $\pm$ 5.8
50 and more	1	1.1	
Total	97	100.0	

It is noticed in the table (4.1) that of the total responses, 63.9% were age of 30 to 39 years old, 18.5% were age of 40 to 49 years old, 16.5% were age of less than 30-39 years old, merely 1.1% were age of 50 and more years old.

**Table 4.2 :** Distribution of the Sample According to Gender

<b>Gender</b>	<b>Frequency</b>	<b>Percentage %</b>
Male	82	84.5
Female	15	15.5
<b>Total</b>	<b>97</b>	<b>100.0</b>

It can be seen in the table (4.2) that 84.5% of the total responses were male: otherwise merely 15.5% were Female.

**Table 4.3 :** Distribution of the Sample According to Education Level.

<b>Education level</b>	<b>Frequency</b>	<b>Percentage %</b>
High School	9	9.3
Bachelor	73	75.2
Master	15	15.5
PHD	0	0.0
<b>Total</b>	<b>97</b>	<b>100.0</b>

As it is shown in the table (4.3) that of the total respondents, 75.2% had bachelor degree, 15.5% had master degree and also 9.3% had high school. However, 0.0% of them were PhD degree.

**Table 4.4 :** Distribution of the Sample According to Professional Experience.

<b>Professional experience</b>	<b>Frequency</b>	<b>Percentage %</b>
5 and less	13	13.4
6-10 years	35	36.1
11-15 years	34	35.1
16 and more	15	15.5
<b>Total</b>	<b>97</b>	<b>100.0</b>

It is clear in the table (4.4) that 36.1% of the total participation had 6 to 10 years of professional experience, 13.4% of the total sample had 5 years and less of professional

experience. Moreover, 35.1% of them had 11 and 15 years of professional experience. Finally, merely 15.5% of total respondents had 16 years and more of professional experience.

**Table 4.5 :** Distribution of the Sample According to Time Working on the Company.

<b>Time working on the company</b>	<b>Frequency</b>	<b>Percentage %</b>
5 and less	33	34.0
6-10 years	34	35.1
11-15 years	28	28.9
16 and more	2	2.0
<b>Total</b>	<b>97</b>	<b>100.0</b>

As it shown in the table (4.5) 35.1% of the total participation have been working during 6 to 10 years, 34.0% of total sample have been working during 5 years and less. In addition, 28.9 % of them have been working during 11 and 15 years. Finally, merely 2.0% of total responses have been working during 16 years and more.

**Table 4.6 :** Distribution of the Sample According to Job Tittle

<b>Job tittle</b>	<b>Frequency</b>	<b>Percentage %</b>
Top-level management	14	14.4
Mid-level management	83	85.6
<b>Total</b>	<b>97</b>	<b>100.0</b>

It can be seen in the table (4.6) that 85.6% of the total response have been working as mid-level management, while 14.4% of them have working as top-level management.

- **Business Intelligence**

**Table 4.7 :** Use of Business Intelligence.

<b>business intelligence</b>	<b>Frequency</b>	<b>Percentage %</b>
Strategic decision making	26	26.9
Operational decision making	35	36.1
Financial decision making	8	8.2
Group decision making	17	17.5
Independent decision making	4	4.1
Structure decision making	4	4.1
Unstructured decision making	3	3.1
Total	97	100.0

As it is shown in table (4.7) 36.1% of the total participation had operational decision making in business intelligence which were the large frequency comparing to other parts of business intelligence, 26.9% had strategic decision making, 17.5% had group decision making, 8.2% had financial decision making, 4.1% had both independent and structure decision making. Finally, only 3.1% of them had unstructured decision making which were the lest frequent in business intelligence.

**Table 4.8 :** Describing Respect to the Various Levels of Business Intelligence.

<b>respect of business intelligence</b>	<b>Frequency</b>	<b>Percentage %</b>
Unfamiliar	6	6.2
Newcomer	12	12.4
Beginner	33	34.0
Average	25	25.8
Advance	21	21.6
Expert	0	0.0
Total	97	100.0

It is noticed that in table (4.8) above, 34.0% of the total participation had a beginner in respecting business intelligence and 25.8% of the total participation had an Average and

21.6% of the total participation had an advance and 12.4% of the total participation had a Newcomer also 6.2% of the total participation had a Unfamiliar. Unfortunately, there was no participation that had expert in respecting business intelligence.

**Table 4.9:** Type of BI Tools.

Type of BI tools	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
Data warehouse	10	20	25	18	24	3.26	1.31	24.4	0.00
	10.3	20.6	25.8	18.6	24.7				
Dash boards	10	15	27	24	21	3.31	1.26	25.89	0.00
	10.3	15.5	27.8	24.7	21.6				
Data mining	7	12	27	36	15	3.41	1.11	30.12	0.00
	7.2	12.4	27.8	37.1	15.5				
Online analytics tools	6	12	33	25	21	3.44	1.14	29.60	0.00
	6.2	12.4	34.0	25.8	21.6				
Reporting tools	3	7	14	31	42	4.05	1.07	37.2	0.00
	3.1	7.2	14.4	32.0	43.3				
<b>Total</b>	<b>36</b>	<b>66</b>	<b>126</b>	<b>134</b>	<b>123</b>	<b>3.49</b>	<b>1.17</b>		
	<b>7.4</b>	<b>13.6</b>	<b>25.9</b>	<b>27.6</b>	<b>25.5</b>				

It appears from the table (4.9) that the higher frequency of type of business intelligence is reporting tools and least frequent problem solving is data warehouse. Moreover, the total response, 25.5% said always business unit extent of current use, 27.6% said frequently 25.9% said sometimes, 13.6% said rarely and also merely 7.4% said never. In regard to severity, the highest severe items are “reporting tools (M= 4.05, SD= ±1.07, p

< 0.001) and the least severe of type of business intelligence item is data warehouse (M= 3.26, SD= ±1.31, p < 0.001).

**Table 4.10:** How Factors Influence Decision Making.

Influence decision making	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
Organization strategy influence decision making	3	2	18	56	18	3.86	0.84	44.8	0.00
	3.1	2.1	18.6	57.7	18.6				
The senior management has been helpful in the use of the BI for decision making	2	10	18	43	24	3.79	0.99	37.4	0.00
	2.1	10.3	18.6	44.3	24.7				
In general the organization has been supported or encouraged the use of BI for decision making	1	4	24	44	24	3.88	0.86	44.3	0.00
	1.0	4.1	24.7	45.4	24.7				
<b>Total</b>	<b>6</b>	<b>16</b>	<b>60</b>	<b>143</b>	<b>66</b>	<b>3.84</b>	<b>0.89</b>		
	<b>2.1</b>	<b>5.4</b>	<b>20.6</b>	<b>49.2</b>	<b>22.7</b>				

It can be seen in the table (4.10) that the higher frequency of factors influences decision making. In general, the organization has supported or encouraged the use of BI for decision making “because it had the biggest mean and also the least impact factor is. The senior management has been helpful in the use of BI for decision making because it had the least mean. Moreover, of the total response, 22.7% were strongly agree, 49.2% were agree, 20.6% were undecided, 5.4% were disagree and also merely 2.1% were strongly disagree with the influencing factors of decision making. In regard to severity, the highest severe items are. In general the organization has supported or encouraged the use of BI for decision making (M= 3.88, SD= ±0.86, p < 0.001) and the least severe of factors

influence decision making item is The senior management has been helpful in the use of the BI for decision making (M= 3.79, SD= ±0.99, p < 0.001).

**Table 4.11:** Perceived Value of BI.

Perceived value of BI	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
Using BI enhance my job performance	3	2	17	46	29	3.98	0.91	42.7	0.00
	3.1	2.1	17.5	47.4	29.9				
Using BI would enable me to complete job tasks more quickly	1	3	20	48	25	3.95	0.82	47.1	0.00
	1.0	3.1	20.6	49.5	25.8				
Using BI would enhance my effectiveness at work	2	0	24	46	25	3.94	0.83	46.6	0.00
	2.1	0.0	24.7	47.4	25.8				
<b>Total</b>	<b>6</b>	<b>5</b>	<b>61</b>	<b>140</b>	<b>79</b>	<b>3.95</b>	<b>0.85</b>		
	<b>2.1</b>	<b>1.7</b>	<b>20.9</b>	<b>48.1</b>	<b>27.1</b>				

It is clear in table (4.11) that the higher frequency of perceived value of BI is Using BI enhance my job performance because it had the biggest mean and also the least item is Using BI would enhance my effectiveness at work because it had the least mean. Moreover, of the total response, 27.1% were strongly agree, 48.1% were agree, 20.9% were undecided, 1.7% were disagree and also merely 2.1% were strongly disagree with perceived value of BI. In regard to severity, the highest severe items is Using BI enhance my job performance (M= 3.98, SD= ±0.91, p < 0.001) and the least sever of type of perceived value of BI item is Using BI would enhance my effectiveness at work (M= 3.94, SD= ±0.83, p < 0.001).



**Table 4.12:** Quality of Information with Respect to BI.

Quality of information with respect to BI	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
The quality of information is critical for my abilities to make any decision using BI	5	1	16	50	25	3.91	0.96	39.9	0.00
	5.2	1.0	16.5	51.5	25.8				
Accuracy information relevance is critical for me to make any decisions using BI	1	4	16	47	29	4.02	0.85	46.4	0.00
	1.0	4.1	16.5	48.5	29.9				
Up-to-date information is a necessity for me to make decisions using BI	2	2	15	53	25	4.0	0.82	47.5	0.00
	2.1	2.1	15.5	54.6	25.8				
<b>Total</b>	<b>8</b>	<b>7</b>	<b>47</b>	<b>150</b>	<b>79</b>	<b>3.97</b>	<b>0.87</b>		
	<b>2.7</b>	<b>2.4</b>	<b>16.1</b>	<b>51.5</b>	<b>27.3</b>				

As shown in table (4.12) the higher frequency of quality of information with respect to BI is. Accuracy information relevance is critical for me to make any decisions using BI because it had the biggest mean and also the least item is. The quality of information is critical for my abilities to make any decision using BI because it had the least mean. Moreover, of the total response, 27.3% were strongly agree, 51.5% were agree, 16.1% were undecided, 2.4% were disagree and also merely 2.7% were strongly disagree with quality of information with respect to BI. In regard to severity, the highest severe items are accuracy information relevance is critical for me to make any decisions using BI” (M= 4.02, SD= ±0.85, p < 0.001) and the least sever of quality of information with respect to BI item is. The quality of information is critical for my abilities to make any decision using BI (M= 3.91, SD= ±0.96, p < 0.001).

**Table 4.13: BI Use.**

BI use	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
My organization uses BI to extract values of key performance indicators (KPI)	1	8	26	47	15	3.69	0.87	41.7	0.00
	1.0	8.2	26.8	48.5	15.5				
My organization uses BI to compare and contrast different aspects of the data	0	11	27	43	16	3.65	0.87	41.7	0.00
	0.0	11.3	27.8	44.3	16.5				
My organization uses BI to share insights based on data within the organization	0	10	29	42	16	3.64	0.88	40.5	0.00
	0.0	10.3	29.9	43.3	16.5				
<b>Total</b>	<b>1</b>	<b>29</b>	<b>82</b>	<b>132</b>	<b>47</b>	<b>3.66</b>	<b>0.87</b>		
	<b>0.3</b>	<b>9.9</b>	<b>28.2</b>	<b>45.4</b>	<b>16.2</b>				

As illustrated in the table (4.13) above the higher frequency of BI use is. My organization uses BI to extract values of key performance indicators (KPI) because it had the biggest mean and also the least item is. My organization uses BI to share insights based on data within the organization because it had the least mean. Moreover, of the total response, 16.2% were strongly agree, 45.4% were agree, 28.2% were undecided, 9.9% were disagree and also merely 0.3% were strongly disagree with BI use. In regard to severity, the highest severe items are “My organization uses BI to extract values of key performance indicators (KPI) (M= 3.69, SD= ±0.87, p < 0.001) and the least sever of BI use item is. My organization uses BI to share insights based on data within the organization (M= 3.64, SD= ±0.88, p < 0.001).

**Table 4.14: BIS Infrastructure Flexibility.**

BIS infrastructure flexibility	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
My organization has a high degree of information systems interconnectivity	2	8	16	45	26	3.87	0.97	41.11	0.00
	2.1	8.2	16.5	46.4	26.8				
Information systems in my organization are sufficiently flexible to incorporate electronic connections to external parties	2	6	26	46	17	3.72	0.89	39.3	0.00
	2.1	6.2	26.8	47.4	17.5				
Data is captured and made available to everyone in my organization in real time using information systems	3	6	33	41	14	3.58	0.92	40.3	0.00
	3.1	6.2	34.0	42.3	14.4				
Information technology standards are well established and implemented at the enterprise –wide level in my organization	3	4	23	52	15	3.74	0.88	41.8	0.00
	3.1	4.1	23.7	53.6	15.5				
<b>Total</b>	<b>10</b>	<b>24</b>	<b>98</b>	<b>184</b>	<b>72</b>	<b>3.72</b>	<b>0.92</b>		
	<b>2.5</b>	<b>6.2</b>	<b>25.2</b>	<b>47.4</b>	<b>18.7</b>				

It is clear in table (4.14) that the higher frequency of BIS infrastructure flexibility is My organization has a high degree of information systems interconnectivity because it had the biggest mean and also the least item is. Data is captured and made available to

everyone in my organization in real time using information systems because it had the least mean. Moreover, of the total response, 18.7% were strongly agree, 47.4% were agree, 25.2% were undecided, 6.2% were disagree and also merely 2.5% were strongly disagree with BIS infrastructure flexibility. In regard to severity, the highest severe items are My organization has a high degree of information systems interconnectivity (M= 3.87, SD= ±0.97, p < 0.001) and the least sever of BIS infrastructure flexibility item is Data is captured and made available to everyone in my organization in real time using information systems (M= 3.58, SD= ±0.92, p < 0.001).

**Table 4.15:** Formation of New Strategic Decisions.

Formation of new strategic decisions	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
The board is usually not involved with the formation of strategic decisions	25	29	30	12	1	2.32	1.07	24.4	0.00
	25.8	29.9	30.9	12.4	1.0				
The board usually ratifies strategic proposals that are formed solely by top management	2	12	37	41	5	3.32	0.84	25.8	0.00
	2.1	12.4	38.1	42.3	5.2				
The board usually asks probing questions and then ratifies Strategic proposals that are formed primarily by top management	0	6	39	46	6	3.44	0.7	30.1	0.00
	0.0	6.2	40.2	47.4	6.2				
The board usually helps to form strategic decisions with top management within and	1	9	32	47	8	3.43	0.81	29.6	0.00
	1.0	9.3	33.0	48.5	8.2				

between board meetings									
The board usually forms strategic decisions separate from Top-management	4	13	49	30	1	3.32	0.8	22.3	0.00
	4.1	13.4	50.5	30.9	1.0				
<b>Total</b>	<b>32</b>	<b>69</b>	<b>187</b>	<b>176</b>	<b>21</b>	<b>3.2</b>	<b>0.84</b>		
	<b>6.5</b>	<b>14.2</b>	<b>38.5</b>	<b>36.3</b>	<b>4.5</b>				

It can be seen in table (4.15) that the higher frequency of Formation of new strategic decisions is. The board usually asks probing questions and then ratifies strategic proposals that are formed primarily by top management because it had the biggest mean and also the least item is. The board is usually not involved with the formation of strategic decisions because it had the least mean. Moreover, of the total response, merely 4.5% were strongly agree, 36.3% were agree, 38.5% were undecided, 14.2% were disagree and also merely 6.5% were strongly disagree with Formation of new strategic decisions. In regard to severity, the highest severe items are the board usually asks probing questions and then ratifies Strategic proposals that are formed primarily by top management (M= 3.44, SD= ±0. 7, p < 0.001) and the least sever of Formation of new strategic decisions is The board is usually not involved with the formation of strategic decisions (M= 2.32, SD= ±1.07, p < 0.001).

**Table 4.16:** Evaluating the Prior Strategic Decision

Evaluating the prior strategic decision	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
The board is usually not involved with monitoring the progress of strategic decisions.	10	20	38	27	2	2.9	0.99	29.3	0.00
	10.3	20.6	39.2	27.8	2.1				
The board usually	1	11	45	35	5	3.32	0.78	49.1	0.00

determines the timing and criteria of evaluation, but that information is supplied by top management and it is rarely challenged by the board	1.0	11.3	46.4	36.1	5.2				
The board determines the timing and criteria of evaluation and it is often request additional information after receiving the progress report from top management	2	7	37	48	3				
	2.1	7.2	38.1	49.5	3.1	3.44	0.76	42.6	0.00
The board usually collects its own information about the progress of the strategic decision in addition to top-management reports	3	8	36	44	6				
	3.1	8.2	37.1	45.4	6.2	3.43	0.85	38.2	0.00
<b>Total</b>	<b>16</b>	<b>46</b>	<b>156</b>	<b>154</b>	<b>16</b>	<b>3.27</b>	<b>0.84</b>		
	<b>4.1</b>	<b>11.8</b>	<b>40.2</b>	<b>19.8</b>	<b>4.1</b>				

As it illustrated in the table (4.16) the higher frequency of evaluating the prior strategic decision is the board determines the timing and criteria of evaluation and it is often request additional information after receiving the progress report from top management because it had the biggest mean and also the least item is The board is usually not involved with monitoring the progress of strategic decisions”because it had the least mean. Moreover, of the total response, merely 4.1% were strongly agree, 19.8% were agree, 40.2% were undecided, 11.8% were disagree and also merely 4.1% were strongly disagree with evaluating the prior strategic decision. In regard to severity, the highest severe items are The board determines the timing and criteria of evaluation and it is

often request additional information after receiving the progress report from top management ( $M= 3.44$ ,  $SD= \pm 0.76$ ,  $p < 0.001$ ) and the least severe of evaluating the prior strategic decision is The board is usually not involved with monitoring the progress of strategic decisions ( $M= 2.9$ ,  $SD= \pm 0.99$ ,  $p < 0.001$ ).

**Table 4.17:** Determine the Cause of the Problem.

<b>Cause of the problem</b>	<b>Frequency</b>	<b>Percentage %</b>
No specific individual or group	17	17.5
One specific individual	17	17.5
Two people jointly	7	7.2
An existing committee of three or more	29	29.9
A specially formed group of three or more	27	27.8
Total	97	100.0

It can be seen in (4.17) that of the total respondents, 29.9% determined An existing committee of three or more, 27.8% determined A specially formed group of three or more, 17.5% determined both No specific individual or group and One specific individual and also merely 7.2% determined two people jointly as the cause of the problem by the company.

**Table 4.18:** Attempting of Determining Cause of the Problem.

<b>Attempting of determining cause of the problem</b>	<b>Frequency</b>	<b>Percentage %</b>
Not be willing to rely on outsiders for any assistance	23	23.7
Be willing to rely on one or two outsiders to provide limited assistance	24	24.7
Be willing to rely on one or two outsiders for moderate assistance	19	19.6
Be willing to rely on outsiders significant assistance	18	18.6

Rely entirely on outsiders if necessary	13	13.4
Total	97	100.0

As it shown in table (4.18) of the total respondents, 24.7% determined Be willing to rely on one or two outsiders to provide limited assistance, 23.7% determined Not be willing to rely on outsiders for any assistance, 19.6% determined Be willing to rely on one or two outsiders for moderate assistance, 18.6% determined Be willing to rely on outsiders significant assistance and also merely 13.4% determined Rely entirely on outsiders if necessary as an attempt to determine the cause of the problem.

**Table 4.19:** Possible Problem Causes Identifying Primarily Through.

<b>possible problem causes identifying primarily through</b>	<b>Frequency</b>	<b>Percentage %</b>
The ideas of a single individual	8	8.2
Informal discussions among managers	15	15.5
Scheduled meetings among managers	24	24.7
Scheduled meetings and some analysis	35	36.1
Scheduled meetings and extensive analysis	15	15.5
Total	97	100.0

It is clear in table (4.19) that of the total participations, 36.1% determined Scheduled meetings and some analysis, 24.7% determined Scheduled meetings among managers, 15.5% determined both Informal discussions among managers and Scheduled meetings and extensive analysis, 8.2% determined The ideas of a single individual as possible problem causing identification primarily through.



**Table 4.20: Hierarchical Decentralization.**

hierarchical decentralization	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
Owner-main shareholder	2	7	16	28	44	4.08	1.04	39.6	0.00
	2.1	7.2	16.5	28.9	45.4				
Chief Executive Officer	1	0	20	32	44	4.21	0.84	22.1	0.00
	1.0	0.0	20.6	33.0	45.4				
First level directors	1	3	16	46	31	4.06	0.83	19.7	0.00
	1.0	3.1	16.5	47.4	32.0				
Middle management	4	9	20	38	26	3.75	1.08	28.3	0.00
	4.1	9.3	20.6	39.2	26.8				
<b>Total</b>	<b>8</b>	<b>19</b>	<b>72</b>	<b>144</b>	<b>145</b>	<b>4.02</b>	<b>0.95</b>		
	<b>2.1</b>	<b>4.8</b>	<b>18.5</b>	<b>37.1</b>	<b>37.5</b>				

As it illustrated in table (4.20) the higher frequency of hierarchical decentralization is Chief Executive Officer because it had the biggest mean and also the least item is Middle management because it had the least mean. Moreover, of the total response, 37.5% were strongly agree, 37.1% were agree, 18.5% were undecided, 4.8% were disagree and also merely 2.1% were strongly disagree with hierarchical decentralization. In regard to severity, the highest severe items are Chief Executive Officer (M= 4.21, SD= ±0. 84, p < 0.001) and the least sever of hierarchical decentralization is Middle management (M= 3.75, SD= ±1.08, p < 0.001).

**Table 4.21: Lateral Communication.**

Lateral communication	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
Finance-Accounting	11	7	20	37	22	3.53	1.24	38.3	0.00
	11.3	7.2	20.6	38.1	22.7				
Production	3	12	25	39	18	3.58	1.02	49.1	0.00
	3.1	12.4	25.8	40.2	18.6				
Marketing-Sales	1	5	21	36	34	4.0	0.93	47.6	0.00
	1.0	5.2	21.6	37.1	35.1				
Purchasing	1	14	25	38	19	3.61	0.99	34.2	0.00
	1.0	14.4	25.8	39.2	19.6				
<b>Total</b>	<b>16</b>	<b>38</b>	<b>91</b>	<b>150</b>	<b>93</b>	<b>3.68</b>	<b>1.04</b>		
	<b>4.1</b>	<b>9.7</b>	<b>23.4</b>	<b>38.6</b>	<b>24.2</b>				

It can be seen in table (4.21) that the higher frequency of lateral communication is Marketing-Sales because it had the biggest mean and also the least item is Finance-Accounting because it had the least mean. Moreover, of the total response, 24.2% were strongly agree, 38.6% were agree, 23.4% were undecided, 9.7% were disagree and also merely 4.1% were strongly disagree with lateral communication. In regard to severity, the highest severe items are Marketing-Sales (M= 4.0, SD= ±0. 93, p < 0.001) and the least sever of lateral communication is Finance-Accounting (M= 3.53, SD= ±1.24, p < 0.001).

**Table 4.22: Politicization.**

Politicization	1	2	3	4	5	Severity			
	Fre.	Fre.	Fre.	Fre.	Fre.	Mean	S.D	t-test	P-value
	%	%	%	%	%				
Coalition formation	1	9	35	47	5	3.47	0.77	28.1	0.00
	1.0	9.3	36.1	48.5	5.2				
Negotiation taking place among major participants	1	4	44	40	8	3.51	0.75	34.3	0.00
	1.0	4.1	45.4	41.2	8.2				
External resistance encountered	6	5	42	38	6	3.34	0.91	42.1	0.00
	6.2	5.2	43.3	39.2	6.2				
<b>Total</b>	<b>8</b>	<b>18</b>	<b>121</b>	<b>125</b>	<b>19</b>	<b>3.44</b>	<b>0.81</b>		
	<b>2.7</b>	<b>6.2</b>	<b>41.5</b>	<b>42.9</b>	<b>6.7</b>				

It is indicated in table (4.22) that the higher frequency of politicization is Negotiation taking place among major participants because it had the biggest mean and also the least item is External resistance encountered because it had the least mean. Moreover, of the total response, 6.7% were strongly agree, 42.9% were agree, 41.5% were undecided, 6.2% were disagree and also merely 2.7% were strongly disagree with politicization. In regard to severity, the highest severe items are Negotiation taking place among major participants (M= 3.51, SD= ±0. 75, p < 0.001) and the least sever of politicization is External resistance encountered (M= 3.34, SD= ±0.91, p < 0.001).

### Validity and Reliability

Validity is scores of an instrument that are going to be accurate indicators of the measuring variable and although leads that the researcher enables drawing good interpretations. The questionnaire was taken from the research study by Plano (2015) and modified for the research purpose. Validity of the questionnaire has been checked through different ways, which is worth to mention that nearly most items were adapted

from the similar studies which were checked already. Since some items were changed which the researcher checked validity through, it has checked and although assessed by the experts that called the face of validity. Hardesty & Bearden (2004) have well-defined face validity in terms of its grade of quantity intention about a rating item and identified that face validity is vital to have the valid operationalization of the construct. To assure the clarity and effectiveness of the questionnaire as well as the questions was understandable by managers, a pilot test is conducted with the group selected that twenty managers in one of the companies some adjustments and modification of the questions were done.

The reliability recognized as the scores from an instrument which are stable and consistent, therefore the scores need to be nearly the same when the researchers' manage the instrument several times to the same participation. In this case one of the most important which used reliability techniques in the researches is the Cronbach's alpha for the internal consistency (Plano 2015). Therefore table below illustrated the use of Alpha Cronbach in order to get the reliability of the questionnaires.

**Table 4.23:** Reliability and Validity.

<b>Methods</b>	<b>Result</b>
<b>Alpha Cronbach</b>	<b>0.863</b>
<b>Correlation Coefficient</b>	<b>0.611***</b>
<b>Validity</b>	<b>0.652</b>

It can be seen in the table (3. 1) that Alpha Cronbach as a statistical method was used in order to get the final result of the reliability, thus the result of reliability was 0.863 and result of validity was 0.652. Correlation coefficient shows the relation between variable was 0.611.

#### 4.24: Reliability Statistics for Business Intelligence

Cronbach's Alpha	N of Items
.834	21

It can be seen in the table 4.24 that the results of alpha cronbach's were 0.834 for all items in business intelligence

#### 4.25: Item-Total Statistics For Business Intelligence

	Scale Mean if Deleted	Scale Variance if Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Deleted
Data warehouse	75.2577	112.360	-.150	.865
Dash boards	74.0928	96.960	.400	.828
Data mining	74.5979	99.493	.327	.832
Online analytics tools	74.5464	97.480	.431	.826
Reporting tools	74.4536	98.730	.444	.825
Organization strategy influence decision making	74.4227	100.205	.362	.829
The senior management has been helpful in the use of the BI for decision making	73.8144	97.694	.517	.822
In general the organization has been supported or encouraged the use of BI for decision making	74.0000	103.917	.300	.831
Using BI increase my abilities to make better decisions and enhance my job performance	74.0722	98.359	.528	.822
Using BI would enable me to complete job tasks more quickly from anywhere anytime	73.9794	101.000	.465	.825
Using BI would enhance my effectiveness of decision when effective decisions lead to optimality in DM and accomplish goals	73.8763	98.526	.573	.820
The quality of information is critical for my abilities to make any decision using BI	73.9072	100.814	.501	.824
Accuracy information relevance is critical for me to make any decisions using BI	73.9175	99.764	.562	.822

Up-to-date information is a necessity for me to make decisions using BI	73.9485	103.466	.277	.832
My organization uses BI to extract values of key performance indicators (KPI)	73.8454	99.632	.555	.822
My organization uses BI to compare and contrast different aspects of the data	73.8660	100.784	.502	.824
My organization uses BI to share insights based on data within the organization	74.1753	99.417	.556	.821
My organization has a high degree of information systems interconnectivity	74.2062	98.811	.579	.820
Information systems in my organization are sufficiently flexible to incorporate electronic connections to external parties	74.2062	101.749	.413	.827
Data is captured and made available to everyone in my organization in real time using information systems	73.9897	99.781	.469	.824
Information technology standards are well established and implemented at the enterprise –wide level in my organization	74.1443	100.333	.483	.824

#### 4.26: Reliability Statistics for Strategic Decision Making

Cronbach's Alpha	of Items	N
.563		20

It can be seen in the table 4.24 that the result of alpha cronbach's were 0.563 for all items in strategic decision

#### 4.27: Item-Total Statistics for Strategic Decision Making

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The board is usually not involved with the formation of strategic decisions	66.9278	41.713	.024	.575

The board usually ratifies strategic proposals that are formed solely by top management	65.8969	39.552	.266	.539
The board usually asks probing questions and then ratifies Strategic proposals that are formed primarily by top management	65.7216	39.349	.365	.531
The board usually helps to form strategic decisions with top management within and between board meetings	65.7216	38.245	.413	.520
The board usually forms strategic decisions separate from Top-management	66.1443	42.708	-.025	.576
The board is usually not involved with monitoring the progress of strategic decisions	66.3505	41.813	.023	.574
The board usually determines the timing and criteria of evaluation, but that information is supplied by top management and it is rarely challenged by the board	65.9278	40.984	.147	.555
The board determines the timing and criteria of evaluation and it is often request additional information after receiving the progress report from top management	65.8144	38.528	.420	.522
The board usually collects its own information about the progress of the strategic decision in addition to top-management reports	65.8247	37.271	.489	.508
Owner-main shareholder	65.9278	40.526	.019	.590
Chief Executive Officer	66.5258	42.023	-.045	.599
First level directors	65.9072	39.189	.175	.552
Middle management	65.1753	40.188	.136	.557
Finance-Accounting	65.0412	38.436	.376	.524
Production	65.1959	38.617	.361	.527
Marketing-Sales	65.5052	39.273	.196	.548
Purchasing	65.7216	38.286	.212	.545
Coalition formation	65.6701	38.078	.312	.529
Negotiation taking place among major participants	65.2577	38.277	.340	.526.
External resistance encountered	65.6392	42.608	-.039	.583

- **Factor Analyses for Business Intelligence**

**Table 4.28:** KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.805
Bartlett's Test of Sphericity	Approx. Chi-Square	882.878
	Df	210
	Sig.	.000

It can be seen from table (4.23) that the two statistical methods (kaiser-meyer-olkin and bartlett's test) were used in order to determine appropriating of factor analysis. The range of kaiser-meyer-olkin is between zero to one and also recommends accepting values of kaiser-meyer-olkin greater than 0.5. Moreover, the value of kaiser-meyer-olkin was 0.805 which fell into the range being great and bartlett's test of sphericity was statistically significant because the p-value were less than the common alpha  $\alpha$  0.05. As a result, the factor analysis is appropriate test for these data because the value of kaiser-meyer-olkin is acceptable and the test of Bartlett was statistically significant.



**Table 4.29:** Communalities.

<b>Factors</b>	<b>Initial Extraction</b>	
Data warehouse	1.000	.669
Dash boards	1.000	.713
Data mining	1.000	.575
Online analytics tools	1.000	.680
Reporting tools	1.000	.726
Organization strategy influence decision making	1.000	.720
The senior management has been helpful in the use of the BI for decision making	1.000	.659
In general the organization has been supported or encouraged the use of BI for decision making	1.000	.522
Using BI increase my abilities to make better decisions and enhance my job performance	1.000	.701
Using BI would enable me to complete job tasks more quickly from anywhere anytime	1.000	.629
Using BI would enhance my effectiveness of decision when effective decisions lead to optimality in DM and accomplish goals	1.000	.627
The quality of information is critical for my abilities to make any decision using BI	1.000	.757
Accuracy information relevance is critical for me to make any decisions using BI	1.000	.741
Up-to-date information is a necessity for me to make decisions using BI	1.000	.589
My organization uses BI to extract values of key performance indicators (KPI)	1.000	.765
My organization uses BI to compare and contrast different aspects of the data	1.000	.705
My organization uses BI to share insights based on data within the organization	1.000	.824
My organization has a high degree of information systems interconnectivity	1.000	.706

Information systems in my organization are sufficiently flexible to incorporate electronic connections to external parties	1.000	.601
Data is captured and made available to everyone in my organization in real time using information systems	1.000	.737
Information technology standards are well established and implemented at the enterprise –wide level in my organization	1.000	.755

It is shown in table (4.24) of communalities before and after extraction and also principal component analysis can be worked with the initial assumption of variance like the value of initial communalities are going to be one before extraction. In the result of extraction, 66.9% of the variance associated with data warehouse is common. In more details, the communalities can be described as proportion of variance explained by the underlying factors.

**Table 4.30:** Total Variance Explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.464	30.779	30.779	6.464	30.779	30.779	2.898	13.798	13.798
2	2.658	12.659	43.438	2.658	12.659	43.438	2.685	12.788	26.585
3	1.566	7.455	50.893	1.566	7.455	50.893	2.417	11.511	38.097
4	1.422	6.774	57.667	1.422	6.774	57.667	2.371	11.293	49.389
5	1.166	5.552	63.219	1.166	5.552	63.219	2.141	10.197	59.586
6	1.125	5.358	68.577	1.125	5.358	68.577	1.888	8.990	68.577
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
18	.258	1.228	97.095						
19	.221	1.050	98.145						
20	.211	1.005	99.150						
21	.179	.850	100.000						

It is indicated in table (4.25) that the lists of eigenvalues associated with linear component (after extraction, before extraction and after rotation). The eigenvalue represents the variance which was explained by the linear component. For instance, 30.779% of the variance was explained by the first factor that explained large amount of variance and 12.659% of the total variance was explained by the second factor. In addition, the six factors were selected because the eigenvalues for those were less than 1. In general, 68.577% explained of the variance by all factors.

**Table 4.31:** Rotated Component Matrix.

Factors	Component					
	1	2	3	4	5	6
Data warehouse	.778	.081	-.099	-.004	-.105	.192
Dash boards	.745	-.125	.075	.320	-.041	.184
Data mining	.725	.115	-.020	.051	.173	.057
Online analytics tools	.777	-.088	.194	-.015	.164	-.058
Reporting tools	.488	.258	-.074	.133	.622	-.106
Organization strategy influence decision making	-.234	.736	.111	-.091	.276	.161
The senior management has been helpful in the use of the BI for decision making	-.033	.560	-.025	.350	.339	.327
In general the organization has been supported or encouraged the use of BI for decision making	-.030	.227	.277	.265	.564	.065
Using BI increase my abilities to make better decisions and enhance my job performance	.139	.675	.398	.259	.033	.013
Using BI would enable me to complete job tasks more quickly from anywhere anytime	.084	.702	.115	.278	.028	.195
Using BI would enhance my effectiveness of decision when effective decisions lead to optimality in DM and accomplish goals	.185	.530	.412	.188	.295	-.142

The quality of information is critical for my abilities to make any decision using BI	-	.004	.823	.032	.156	.170
Accuracy information relevance is critical for me to make any decisions using BI	.211	.272	.734	.025	.288	-.002
Up-to-date information is a necessity for me to make decisions using BI	.072	.383	.618	.209	-.029	.101
My organization uses BI to extract values of key performance indicators (KPI)	.022	.181	.291	.774	.084	.204
My organization uses BI to compare and contrast different aspects of the data	.252	.296	.118	.727	.005	.110
My organization uses BI to share insights based on data within the organization	.046	.086	-.106	.792	.415	-.057
My organization has a high degree of information systems interconnectivity	-.045	.157	.309	.109	.631	.417
Information systems in my organization are sufficiently flexible to incorporate electronic connections to external parties	.224	.036	.234	.071	.575	.399
Data is captured and made available to everyone in my organization in real time using information systems	.218	.027	.262	.226	.263	.707
Information technology standards are well established and implemented at the enterprise –wide level in my organization	.112	.253	-.020	.029	.036	.822

Table (4.26) illustrates the rotated factor matrix also called the rotated component matrix that kind of matrix of factor loadings for each variables including in the factors. Moreover, the factor loadings of less than 0.4 cannot be taken as an important factor loading. The first factor is an important factor because it was an explained variance more than other factors. In first factor

$$\text{Business intelligence} = 0.778X_1 + 0.745X_2 + 0.725X_3 + 0.777X_4$$

Where:

X1: Data warehouse

X2: Dash boards

X3: Data mining

X4: Online analytics tools

Additionally, four variables in first factor had a positive impact on business intelligence in different results. For instance, data warehouse in the best variable because the impact of it on the business intelligence was more than other variables. In more detail, the coefficients of warehouse is approximately 0.778. This means that the business intelligence will increase by 77.8% if data warehouse is exist in the company then online analysis is the second important variable and so on.

### Factor Analyses for Strategic Decision

**Table 4.32:** KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.658
Bartlett's Test of Sphericity	Approx. Chi-Square	549.728
	Df	190
	Sig.	.000

It can be seen in table (4.27) that the two statistical methods (kaiser-meyer-olkin and bartlett's test) was used in order to determine appropriating of factor analysis. The range of kaiser-meyer-olkin is between zero to one and also recommends accepting values of kaiser-meyer-olkin greater than 0.5. Moreover, the value of kaiser-meyer-olkin was 0.658 which fell into the range below mediocre and bartlett's test of sphericity was statistically significant because the p-value were less than the common alpha  $\alpha$  0.05. As a result, the factor analysis is appropriate test for these data because the value of kaiser-meyer-olkin is acceptable and the test of Bartlett was statistically significant.

**Table 4.33:** Communalities.

Factors	Initial Extraction	
The board is usually not involved with the formation of strategic decisions	1.000	.542
The board usually ratifies strategic proposals that are formed solely by top management	1.000	.573

The board usually asks probing questions and then ratifies Strategic proposals that are formed primarily by top management	1.000	.618
The board usually helps to form strategic decisions with top management within and between board meetings	1.000	.651
The board usually forms strategic decisions separate from Top-management	1.000	.564
The board is usually not involved with monitoring the progress of strategic decisions	1.000	.621
The board usually determines the timing and criteria of evaluation, but that information is supplied by top management and it is rarely challenged by the board	1.000	.517
The board determines the timing and criteria of evaluation and it is often request additional information after receiving the progress report from top management	1.000	.433
The board usually collects its own information about the progress of the strategic decision in addition to top- management reports	1.000	.565
Owner-main shareholder	1.000	.752
Chief Executive Officer	1.000	.588
First level directors	1.000	.710
Middle management	1.000	.653
Finance-Accounting	1.000	.713
Production	1.000	.759
Marketing-Sales	1.000	.520
Purchasing	1.000	.650
Coalition formation	1.000	.603
Negotiation taking place among major participants	1.000	.637
External resistance encountered	1.000	.747

Table (4.28) above shows communalities before and after extraction and also principal component analysis can be worked with the initial assumption of variance like the value of initial communalities are going to be one before extraction. In the result of extraction, 54.2% of the variance associated with the board is usually not involved with the formation of strategic decisions is common. In more details, the communalities can be described as proportion of variance explained by the underlying factors.

**Table 4.34:** Total Variance Explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.933	19.664	19.664	3.933	19.664	19.664	2.808	14.040	14.040
2	2.585	12.925	32.589	2.585	12.925	32.589	2.183	10.916	24.956
3	1.914	9.568	42.157	1.914	9.568	42.157	2.033	10.164	35.120
4	1.480	7.402	49.559	1.480	7.402	49.559	1.916	9.580	44.700
5	1.343	6.717	56.276	1.343	6.717	56.276	1.758	8.792	53.491
6	1.161	5.807	62.083	1.161	5.807	62.083	1.718	8.592	62.083
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
17	.353	1.763	96.218						
18	.288	1.438	97.657						
19	.264	1.320	98.977						
20	.205	1.023	100.000						

It is indicated in table (4.29) that the lists of eigenvalues associated with linear component (after extraction, before extraction, and after rotation). The eigenvalue represents the variance which was explained by the linear component. For instance, 19.664% of the variance was explained by the first factor that explained large amount of variance and 12.925% of the total variance was explained by the second factor. In addition, the six factors were selected because the eigenvalues for those were less than 1. In general, 62.083% explained of the variance by all factors.



**Table 4.35:** Rotated Component Matrix.

Factors	Component					
	1	2	3	4	5	6
The board is usually not involved with the formation of strategic decisions	- .068	- .114	.020	.696	.028	.195
The board usually ratifies strategic proposals that are formed solely by top management	.561	- .122	- .059	.444	- .113	.175
The board usually asks probing questions and then ratifies Strategic proposals that are formed primarily by top management	.762	- .075	.104	.059	- .122	- .042
The board usually helps to form strategic decisions with top management within and between board meetings	.737	- .050	.250	- .056	.187	- .068
The board usually forms strategic decisions separate from Top-management	.209	- .108	.126	.340	- .025	.613
The board is usually not involved with monitoring the progress of strategic decisions	.087	.075	.124	.656	- .391	- .095
The board usually determines the timing and criteria of evaluation, but that information is supplied by top management and it is rarely challenged by the board	.318	.426	.403	.120	.226	- .077
The board determines the timing and criteria of evaluation and it is often request additional information after receiving the progress report from top management	.554	.111	.152	.007	.302	.006
The board usually collects its own information about the progress of the strategic decision in addition to top-management reports	.700	.237	.033	- .025	.121	.055
Owner-main shareholder	.019	- .046	.088	- .046	.857	- .067
Chief Executive Officer	.235	.281	.006	- .119	.654	.111
First level directors	.213	.694	- .100	.142	.390	.033
Middle management	- .023	.793	.091	.065	.101	.034
Finance-Accounting	.053	.008	.163	.323	.043	.760

Production	.180	-.056	.417	.144	-.041	.726
Marketing-Sales	.362	.503	.230	-.272	.006	.097
Purchasing	-.087	.627	.288	-.343	-.175	.137
Coalition formation	.355	.097	.638	-.199	-.003	.147
Negotiation taking place among major participants	.118	.134	.726	.087	-.009	.265
External resistance encountered	.029	.111	.664	.511	.160	-.078

Table (4.30) illustrates the rotated factor matrix (also called the rotated component matrix) that kinds of matrix of factor loadings for each variables including in the factors. Moreover, the factor loadings of less than 0.4 and cannot be taken as an important factor loading. The first factor is an important factor because it explained variance more than other factors. In first factor:

$$\text{Strategic Decision making} = 0.561X_2 + 0.762X_3 + 0.737X_4 + 0.554X_8 + 0.70X_9$$

Where:

X2: The board usually ratifies strategic proposals that are formed solely by top management

X3: The board usually asks probing questions and then ratifies Strategic proposals that are formed primarily by top management

X4: The board usually helps to form strategic decisions with top management within and between board meetings

X8: The board determines the timing and criteria of evaluation and it is often request additional information after receiving the progress report from top management

X9: The board usually collects its own information about the progress of the strategic decision in addition to top- management reports

Additionally, five variables in first factor had a positive impact on business intelligence in different results. For instance, the board usually ratifies strategic proposals that are formed solely by top management is the best variable because the impact of it on the business intelligence was more than other variables. In more detail, the coefficients of warehouse is approximately 0.762.

This means that the business intelligence will increase by 76.2% if the board usually ratifies strategic proposals that are formed solely by top management which exists in the company. The second important variable is that the board usually helps to form strategic decisions with top management within and between board meetings.

**Table 4.36:** Correlation coefficient

		<b>Correlations</b>						
		Strategic Decision	Type of BI tools	Influencing of factors	Perceived value of BI	respect BI to BI use	BIS	
Strategic Decision	Pearson Correlation	1	.368**	.358**	.429**	.335**	.467**	.554**
	Sig. (2-tailed)		.000	.000	.000	.001	.000	.000
	N	97	97	97	97	97	97	97
Type of E tools	Pearson Correlation	.368**	1	.110	.251*	.144	.302**	.326**
	Sig. (2-tailed)	.000		.282	.013	.161	.003	.001
	N	97	97	97	97	97	97	97
Influenci of factor	Pearson Correlation	.358**	.110	1	.580**	.446**	.449**	.496**
	Sig. (2-tailed)	.000	.282		.000	.000	.000	.000
	N	97	97	97	97	97	97	97
Perceived value of BI	Pearson Correlation	.429**	.251*	.580**	1	.569**	.525**	.419**
	Sig. (2-tailed)	.000	.013	.000		.000	.000	.000
	N	97	97	97	97	97	97	97

respect to BI	Pearson Correlation	.335**	.144	.446**	.569**	1	.319**	.453**
	Sig. (2-tailed)	.001	.161	.000	.000		.001	.000
	N	97	97	97	97	97	97	97
BI use	Pearson Correlation	.467**	.302**	.449**	.525**	.319**	1	.403**
	Sig. (2-tailed)	.000	.003	.000	.000	.001		.000
	N	97	97	97	97	97	97	97
BIS	Pearson Correlation	.554**	.326**	.496**	.419**	.453**	.403**	1
	Sig. (2-tailed)	.000	.001	.000	.000	.000	.000	
	N	97	97	97	97	97	97	97

It can be seen in the table (4:36) that there were statistically significant relations between all items because p-value for all items were less than 0.05. There were strongly positive relationship between BI and Strategic Decision.

**Table 4.37** The Relationship Between Parts of Business Intelligence and Strategic Decision

Variables	Strategic Decision			
	Unstandardized Coefficients		Test	
	B	Std. Error	t	Sig.
Constant	2.008	0.204	9.851	0.00
Type of BI tools	0.059	0.034	3.521	0.048
influencing of factors	-0.007	0.051	-0.14	0.889
perceived value of BI	0.062	0.056	1.09	0.277
quality of information with respect to BI	0.006	0.049	0.12	0.898
BI use	0.095	0.046	2.058	0.042
BIS infrastructure flexibility	0.176	0.049	3.57	0.001

It is clear in table (4.31) that the parameter for  $\alpha$  (2.008) indicates the predicted consumption when all explanatory variables are equal to zero and also the  $\beta$  parameters indicate the average change in consumption that is associated with each unit increase in the explanatory variable. For instance, for each unit increase of type of BI tools then Strategic Decision increases by 0.059. There was statistical significance because the p-value of t-test is less than the common alpha 0.05. In addition, for each unit increase of BI use then Strategic Decision increases by 0.095.

There was statistical significance because the p-value of t-test is less than the common alpha 0.05. Moreover, for each unit increase of BIS infrastructure flexibility then Strategic Decision increases by 0.176. There was statistical significance because the p-value of t-test is less than the common alpha 0.05. On the other hand, other independent variables such as (influencing of factors, perceived value of BI and quality of information with respect to BI) were not statistical significant relationship with Strategic Decision because the p-value of those were greater than the common alpha 0.05.

#### 4.38 The Relationship Between Business Intelligence and Strategic Decision

Variables	Strategic Decision								
	Unstandardized Coefficients		Test				Model Summary		
	B	Std. Error	T	Sig.	F	Sig.	R-Square	R	Adjusted R Square
Constant	1.915	0.207	9.2	0.00		0.00			
Business intelligence	0.417	0.055	7.5	0.00	56.4	0.00	0.62	0.61	0.60

It can be seen in table (4.32) that the result of determination of variation (R- Square) is (0.62) which means that 0.62% of the total response variable were explained by the explanatory variables. Moreover, the parameter for  $\alpha$  (1.915) indicates the predicted consumption when all explanatory variables are equal to zero and also the  $\beta$  parameters indicate the average change in consumption that is associated with each unit increase in the explanatory variable. For instance, for each unit increase of Business intelligence then Strategic Decision increases by 0.417. There was statistical significance because the

p-value of t-test is less than the common alpha 0.05. Moreover, the F-statistic is equivalent to the t-statistic ( $F = \sqrt{t}$ ) which is often quoted in statistical output). Finally, the result of correlation coefficient was 0.6. This means that the relationship between Strategic Decision and Business intelligence were strongly positive.

#### **4.2 Result of Hypotheses Test**

1. Business intelligence could be able to improve the efficiency and effectiveness in strategic decision making under information quality in four communications companies at level ( $\alpha = 0.05$ ).
2. The type of BI tools could be able to improve the efficiency in strategic decision making under information quality in four communications companies at level ( $\alpha = 0.05$ ).
3. Influencing of factors could not be able to improve the efficiency in strategic decision making under information quality in four communications companies at level ( $\alpha = 0.05$ ).
4. Perceived value of BI could not be able to improve the efficiency in strategic decision making under information quality in four communications companies at level ( $\alpha = 0.05$ ).
5. Quality of information with respect to BI could not be able to improve the efficiency in strategic decision making under information quality in four communications companies at level ( $\alpha = 0.05$ ).
6. BI use could be able to improve the efficiency in strategic decision making under information quality in four communications companies at level ( $\alpha = 0.05$ ).
7. BIS infrastructure flexibility could be able to improve the efficiency in strategic decision

#### **4.3 Findings**

As expected, the results of simple and multiple regressions provided evidence that the relationship between business intelligence and strategic decision were strongly positive and statistically significant. In more detail, for each unit increase of business intelligence the strategic decision increase by 0.417. In the first hypothesis, the null hypothesis is

rejected otherwise the alternative hypothesis is accepted meaning business intelligence could be able to improve the efficiency and effectiveness of the SDM. In addition, the results of the relationship between parts of business intelligence and decision making were different such as type of business intelligence tools. Business intelligence use and BIS infrastructure flexibility were having statistical significant relationship with decision making. Meaning types of business intelligence tools, business intelligence use and BIS infrastructure flexibility could be able to improve the efficiency of the SDM in this environment.

However, the influence of factors, perceived value of business intelligence and quality of information with respect to business intelligence were not having statistical significant relationship on SDM. This means that the influence of factors, perceived value of business intelligence and quality of information with respect to business intelligence could not be able to improve the efficiency of the SDM in this environment. Finally, managers of the companies should be focused on data warehouse, dashboard, and data mining, and online analysis tools in order increase the business intelligence. Managers should also focuses on the board by frequently asking probing questions and the ratifies strategic proposals that are formed primarily by top management, and the board determining timing and criteria's of evaluation but with information that was supplied by top management and also often request additional information after receiving the progress report by top management, and the board collect its own information about the progress of strategic decision in addition top management report and the board usually helps to form strategic decisions with top management within and between board meetings due to have a good SDM.

## **5. CONCLUSION AND RECOMMENDATIONS**

### **5.1 Conclusion**

The strength of technology as a tool makes it clearer to understand and helps managers to achieve the organizational goals which recruit work on the proper and effective phase. It happened as desired by all aspects of these processes, the available data that is converted to information is necessary for decision making, senior management, board directors and even mid-level managers need it, too. It is maintained that business intelligence is one of the most important and most desirable aspects of the communication industry in the business world especially when it comes to decision making and strategic decision in the domain that it had adapted to the rational approach in its literature and assessing the effects on SDM.

Decision making which has higher quality depends on the analysis of the information and then it takes appropriate decision in the interest of labor and improves the performance in making strategic decisions. To that effect, the material appeared in style and how these establishments are intended to do business which is the application of BI with the aim of achieving greater profitability in more communities in the field of strategic decision making. Based on the findings, it was realized that the degree of the relation between BI and SDM is deep and included some features that contained recognizing strategy, decision making and conducting the deep description of the process of SDM.

The result clearly supported the relation between BI and SDM which was positive and met the main purpose of the study, as expected an increase of units in business intelligence would be an a increase in strategic decision making units and in order to upsurge the units BI the companies should focus on the main key factors which are found and includes Data warehouse, Data mining, OLAP and Dashboard to increase



business intelligence in the main that could be able to collect large amount of data and although by using these tools analyze the data and transform the data into information then put it into knowledge that decision making depends on. In contrast in previous BI as the system used to support the SDM and improved the efficiency and effectiveness in other industries through other factors such as realization of the cost, process and optimality therefore it illustrated that the relation between BI and SDM was positive.

In more details in this study BI led to different results such as the BIS infrastructure flexibility having a positive relation with strategic decision making through the information which is interconnected and sufficiently flexible that took the most valuable assets of raw data to decision making. It also raises the capacity of the company's performance through integrate, reconfigure threaten and opportunities in the domain confronting the external environment, therefore it improved the efficiency of SDM in the companies. BI use took it to extract the key value of performance indicator and cares to share the insights of the data within the companies and usually collects business data from internal and external that indicated how the organizations able to generate the knowledge and ultimate value in the best way, Therefore, using BI could be for empowering the decision makers in all levels of the organization and make the better strategic decision when BI Use improved the SDM.

Thereafter the needs of companies to transform data into information for the SDM are increased, however it's important to demonstrate that BI tools have positive relation with strategic decision making in the light of BI tools confirming to decrease the lack time, avoid the costs and reduce risk although BI tools used to share and compare the different amount of data and information in order to make strategic decision that improved the efficiency of SDM in the companies. Despite of the fact in previous BI tools could be used to as a major key for the competitive advantage sustainable in strategic decision making.

However some parts couldn't able to improve the efficiency of SDM such as perceived value, influencing factor and quality information in this environment which companies work on, in contrast in previous spread it the quality information to be a major sources to acquire the knowledge in competitive advantage in decision making and used perceived

value of business to implement the system for participating so that the fulfillment in the organization even used the BI as a system to support the strategies, vision and how business value delivered from the system it's influencing the solution when most of the problems found in integration of the BI and decision making.

Moreover the managers of the companies should also concentrate on the key factors which were found in this research in the involvement of the formation and evaluation of SDM, those are consisted of such as the board probing questions and ratify the proposal that is formed by the top management, determining timing and criteria of evaluation with information that was supplied by top management and also often request additional information after receiving the progress report by top management. The board always collects its own information about the progress of strategic decision in addition top management report and finally the board helps top management to form the strategic decision within and between board meetings due to have a good strategic decision. Therefore using the board by having a good SDM enables managers to reflect on the business intelligence positively and strongly according to the companies and although gain SDM units.

After all, managers would need to justify the investments in business intelligence or managing the process of BI and value the contributions of BI greatly in order to decrease the uncertainty in decision making. Also, devalue the author's contribution as fulfilling shared understanding of the symbolic value of the business intelligence because its outputs are traditionally viewed as functionalist and it has been guessed that BI leads to make the best decision. It would also lead to failure to make a better decision at this point which indicates that the outputs of BI has failed or it could not use the process of decision correctly for making the better decision. It is possible to make a decision which is consistent with the goals of the organization when there is just real information that leads the best decision.

Therefore, using BI could be for providing access to the full information used to make the best decisions at the right time and in the light of organizations to achieve their goals. The important fact is that organizations are getting ready to make decisions with or without the use of BI. While the aim of designing BI for extracting information has

been useful after gathering data and transforming it by the system of software. This study seeks to explore the impacts of BI on strategic decision making in an organization.

Certainly, BI would have a significant impact on strategic decision making and managers' skills in SDM will be improved. Managers would also be able to make an effective strategic decision to take companies where they are now to where they are going to. This would mean that companies are carrying out their everyday operations smoothly. The effect would be that companies' total assets and profits will be increased and world's economy will start experiencing a boom.

## **5.2 Recommendations for the Further Research**

Most of the organizations are against change and new technologies. As a result, supporting upper management is one of the critical and important factors for succeeding in BI. Thus, those who are going to take the responsibility should be involved in BI and should also convince the senior executives of its benefits. The senior management must encourage the use of the active system of BI instead of thinking about the management interactive resources at the last. Culture of trust and joint cooperation comprehensiveness between the organizations is vital for exchange of knowledge and is most effective. After that, transform knowledge for an individual then into organizational knowledge. Therefore, the companies have to build strategy alliances and they must establish cooperation with the main of customers and suppliers, which could be on the basis of cooperation and trust in order to maximize and take advantage of the utilization of resource.

Companies should be able to apply the process of BI including the instructions for planning, forecasting, and cooperating. The companies although should build an integrated model in order to increase the net profit by using strategic decision-making. Managers should best estimate and analyzes data for many scenarios and alternatives to make the best choice. This would lead to appropriate net profit in the light of the relationship of business intelligence and strategic decision-making. Furthermore, managers of company should conduct case studies when each of them wants to build the model for increasing the benefits of the strategic decision-making in the companies.

Also, the researcher recommends that BI should be applied and more investigations and research should be conducted according to the impacts and capabilities of BI on the strategic decision for getting more achievements from the competitive performance. Each of the companies should build or open new BI departments according to the needs of the companies and for the purpose of conducting more research on BI.

Regarding the rapid increase in the quest for BI specialists in companies, universities should endeavor to train more students in BI subject. The more students learn this subject, the more they will make research and improve the quality of BI in companies across the globe. Most managers lack the power to make strategic decisions and the effect is highly negative and so severe on companies nowadays. Graduate students are recommended to make a lot more research on this field of study to find more solutions managers need to make significant decisions in their management tasks.

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## APPENDIX

### Appendix A: Demographic Information.

#### 1. What is your age?

No.	Category	Response
1.	25-34 years old	
2.	35-44 years old	
3.	45-54 years old	
4.	55-64 years old	

#### 2. What is your gender?

No.	Category	Response
1	Female	
2	Male	

#### 3. What is your last educational degree?

No.	Category	Response
1.	High School	
2.	Bachelors	
3.	Master	
4.	PhD	

TOTAL

#### 4. What is your total professional experience?

No.	Category	Response
a.	5 years or Less	
B.	6 – 10 years	
C.	11 – 15 years	
D.	16 or more	

#### 5. How long have you been working on that company?

No.	Category	Response
1.	5 years or Less	
2.	6 – 10 years	

3.	11 – 15 years
4	16 or more

**6. What is your job title?**

No.	Category	Response
1.	Top Level Management	
2.	Mid-level management	

**Appendix B : Business Intelligence.**

In questions 7-8, please select only one choice by circling corresponding letter

**7. I used Business Intelligence in (choose one below)**

- A. Strategic decision making
- B. Operational decision making
- C. Financial decision making
- D. Group decision making
- E. Independent decision making
- F. Structure decision making
- G. Unstructured decision making

**8. How would you describe yourself in respect to the various levels of Business intelligence and BI usage? (Choose one)**

- A. Unfamiliar: I have no experience with BI technology.
- B. Newcomer: I have attempted to use BI technologies, but I still require help on a regular basis.
- C. Beginner: I am able to perform basic functions in a limited number of BI applications.
- D. Average: I demonstrate a general competency in a number of BI applications.
- E. Advance: I have acquired the ability competently use a broad spectrum of BI technologies.
- F. Expert: I am extremely proficient in using a wide variety of BI technologies.

**Type of BI tools/components deployed in your organization/business unit Extent of current use:** Indicate your choice by selecting only one level of by circling one number

<b>1. Never</b>	<b>2. Rarely</b>	<b>3. Sometimes</b>	<b>4. Frequently</b>	<b>5. Always</b>
9. Data warehouse			<b>1</b>	<b>2</b>
			<b>3</b>	<b>4</b>
				<b>5</b>

10 Dash boards	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
11 Data mining	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
12 Online analytics tools	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
13 Reporting tools	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

In following questions (14-30), indicate your choice **by** selecting only one level of agreement or disagreement by circling one number

**The following question will evaluate how factors such as organization strategy, goals and objectives influence decision making in your organization.**

*1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree*

14.	Organization strategy influence decision making	1	2	3	4	5
15.	The senior management has been helpful in the use of the BI for decision making.	1	2	3	4	5
16.	In general the organization has been supported or encouraged the use of BI for decision making.	1	2	3	4	5

**The following questions will evaluate Perceived Value of BI by selecting only one appropriate answer for each statement.**

17.	Using BI increase my abilities to make better decisions and enhance my job performance	1	2	3	4	5
18.	Using BI would enable me to complete job tasks more quickly from anywhere anytime.	1	2	3	4	5
19.	Using BI would enhance my effectiveness of decision when effective decisions lead to optimality in DM and accomplish goals.	1	2	3	4	5

**The following questions will evaluate the quality of information with respect to BI by selecting only one appropriate answer for each statement.**

20.	The quality of information is critical for my abilities to make any decision using BI	1	2	3	4	5
21.	Accuracy information relevance is critical for me to make any decisions using BI.	1	2	3	4	5
22.	Up-to-date information is a necessity for me to make decisions using BI.	1	2	3	4	5

**BI Use**

23.	My organization uses BI to extract values of key performance indicators (KPI)	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
24.	My organization uses BI to compare and contrast different aspects of the data	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

25.	My organization uses BI to share insights based on data within the organization	1	2	3	4	5
<b>BIS Infrastructure Flexibility</b>						
26.	My organization has a high degree of information systems interconnectivity	1	2	3	4	5
27.	Information systems in my organization are sufficiently flexible to incorporate electronic connections to external parties	1	2	3	4	5
28.	Data is captured and made available to everyone in my organization in real time using information systems	1	2	3	4	5
29.	Information technology standards are well established and implemented at the enterprise –wide level in my organization.	1	2	3	4	5

## Appendix C: Strategic Decisions

### Involvement in the Strategic Decision-Making

Please, indicate to what extent you believe that, the board has been involved in the formation, evaluation of the strategic decision. In following questions (30-38), indicate your choice **by** selecting only one level of agreement or disagreement by circling one number

*1-Strongly Disagreement    2-Disagree    3-Undecided    4-Agree    5-Strongly Agreement*

### Formation of new strategic decisions

30.	The board is usually not involved with the formation of strategic decisions	1	2	3	4	5
31.	The board usually ratifies strategic proposals that are formed solely by top management	1	2	3	4	5
32.	The board usually asks probing questions and then ratifies Strategic proposals that are formed primarily by top management	1	2	3	4	5
33.	The board usually helps to form strategic decisions with top management within and between board meetings	1	2	3	4	5
34.	The board usually forms strategic decisions separate from Top-management	1	2	3	4	5

### Evaluating the prior strategic decision

35.	The board is usually not involved with monitoring the	1	2	3	4	5
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		progress of strategic decisions				
36.	The board usually determines the timing and criteria of evaluation, but that information is supplied by top management and it is rarely challenged by the board	1	2	3	4	5
37.	The board determines the timing and criteria of evaluation and it is often request additional information after receiving the progress report from top management	1	2	3	4	5
38.	The board usually collects its own information about the progress of the strategic decision in addition to top- management reports	1	2	3	4	5

### **Strategic decision making process**

#### **Rationality / Comprehensiveness**

Q: Please, indicate what YOUR Company would do to determine the cause of the problem

To answer the following questions, please check the one choice that best describes what would be done in YOUR Company.

39. In your company primary for determining the problem cause would be assigned to **(choose only one)**:

- A. No specific individual or group
- B. One specific individual
- C. Two people jointly
- D. An existing committee of three or more
- E. A specially formed group of three or more

40. In attempting to determine the cause of the problem your company would **(choose only one)**:

- A. Not be willing to rely on outsiders for any assistance
- B. Be willing to rely on one or two outsiders to provide limited assistance
- C. Be willing to rely on one or two outsiders for moderate assistance
- D. Be willing to rely on outsiders significant assistance
- E. Rely entirely on outsiders if necessary

41. In your company possible problem causes would be identified primarily through **(choose only one)**:

- A. The ideas of a single individual
- B. Informal discussions among managers
- C. Scheduled meetings among managers
- D. Scheduled meetings and some analysis
- E. Scheduled meetings and extensive analysis

#### **Hierarchical decentralization**

Please, indicate to what extent the following individuals or groups participate in the strategic decision- making process (**1=no involvement, 5=active involvement and influence**).

*1-Absolutelu no involvement 2-Not so much involvement 3-Undecided 4-Some involvement 5-Active Involvement and influence*

42.	Owner-main shareholder	1	2	3	4	5
43.	Chief Executive Officer	1	2	3	4	5
44.	First level directors	1	2	3	4	5
45.	Middle management	1	2	3	4	5

**Lateral communication**

Please, indicate to what extent that the following departments of your company are involved in the strategic decision- making process.

*1-Absolutely no involvement 2-Not so much involvement 3-Undecided 4-Some involvement 5-Active Involvement and influence.*

46.	Finance-Accounting	1	2	3	4	5
47.	Production	1	2	3	4	5
48.	Marketing-Sales	1	2	3	4	5
49.	Purchasing	1	2	3	4	5

**Politicization**

Please, indicate the extent to which you believe that your organization follows the following politicization procedures in the strategic decision-making process.

*1-Strongly Disagreement 2-Disagree 3-Undecide 4-Agree 5-Strongly Agreement*

50.	Coalition formation	1	2	3	4	5
51.	Negotiation taking place among major participants	1	2	3	4	5
52.	External resistance encountered	1	2	3	4	5



Evrak Tarih ve Sayısı: 24/03/2016-1652




T.C.  
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24/03/2016

Sayın SANGAR ABDULKAREEM HASAN HASAN

Enstitümüz Y1312.130059 numaralı İşletme Ana Bilim Dalı İşletme Yönetimi(İngilizce) Tezli Yüksek Lisans programı öğrencilerinden SANGAR ABDULKAREEM HASAN HASAN'ın "THE IMPACT OF BUSINESS INTELLIGENCE ON STRATEGY DECISION MAKING AND EMPIRICAL STUDY IN THE COMPANY KOREK TELECOM IN IRAK, ERBİL" adlı tez çalışması gereği "Demographics Information", "Business intelligence" ve "Strategic Decisions" ile ilgili ankelleri 01.03.2016 tarih ve 2016/04 İstanbul Aydın Üniversitesi Etik Komisyon Kararı ile etik olarak uygun olduğuna karar verilmiştir.  
Bilgilerinize rica ederim.

  
Prof. Dr. Zafer UTLU  
Müdür

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