



# The Impact of Business Intelligence On the Performance Indicators of the Strategic Map: Extracted Research

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## Abstract

*The study dealt with important variables for the present business organizations represented in business intelligence and indicators of the strategic map. Where business intelligence is one of the modern topics that have been widely popular in many organizations, as it makes the organization in continuous communication with customers, knowing their requirements, producing and providing appropriate goods and services to them, which increases the organization's opportunities for competition. On the other hand, the strategic map is a model for clarifying the organization's strategy as it aims to facilitate the translation of the strategy into a practical reality and achieve linkage between the work of employees and the overall objectives of the organization and identifies performance indicators in four areas represented in the financial, marketing, internal operations, and of learning and growth. The study aimed to determine the nature of the relationship between business intelligence and its reflection on the extent of adoption of the strategic map indicators. The study was built on a number of main hypotheses that reflect the relationship between intelligence and its impact on the extent of adoption of the strategic map indicators.*

*To test the validity of these hypotheses, a number of retail stores belonging to international business organizations operating within the city of Dohuk and Erbil were chosen to conduct the field side of the study. The final study sample included (100) workers in the researched organizations, and the data were analyzed using a set of statistical methods using the program ) Spss-18-For ( windows.*

*The most important results of the study were the existence of a significant positive correlation between the variables of the study and a positive significant relationship between them. The study concluded that some recommendations were presented to enhance the levels of business intelligence and indicators of the strategic map in the surveyed organizations.*

**Keywords:** *Business Intelligence, Balanced Scorecard, Strategic Map.*

## Introduction

Managers of business organizations in today's world are increasingly needing the necessary information for effective decision-making, which requires them to increase the volume of information stored and the variety of applications used to access, process, and benefit from data sources by retrieving them to reach the required information for use in supporting the required decisions in all activities of organizations and on Different administrative levels, the information possessed by organizations is a wealth used to rationalize and support administrative decisions. Although the use of computers and management information systems has greatly facilitated the acquisition of a huge and diverse amount of data, processing it accurately and quickly,

\* This article was submitted in March 2023 and accepted for publishing in May 2023.

© Arab Administrative Development Organization- League of Arab States, 2023, pp 335-356. DOI: 10.21608/AJA.2023.202497.1418



and providing information according to the characteristics required by decision-makers, only information systems. The administration is deficient in providing information about within and outside the scope of the organization and controlling all the needs of managers and achieving integration between the sub-systems, which led to the need for other alternative mechanisms for collecting and processing data and storing and delivering information, whether they are from inside or outside the organization, for the purpose of supporting the decisions they make. One of the modern approaches adopted by organizations is business intelligence which is based on data collection, processing and organization, and providing information and knowledge by providing an information base, a data warehouse, and a set of applications that help improve administrative decisions and enable organizations to learn and adapt to new situations (Power, 2007: 142).

On the other hand, the special literature indicates different points of view regarding the indicators that are adapted to measure performance. From the point of view of accounting or finance, it is preferable to adopt financial indicators, revenues and expenses. As for the point of view of production, it focuses on indicators of operation and efficiency of operations, while the point of view of marketing is preferred over market indicators. And customer management, while the human resources point of view looks closely at growth indicators, learning curves, and human resource efficiency (Howson, 2008: 83). From here the most comprehensive and complete solution for measuring the performance of organizations is only by adopting the four points of view and combining them and reconciling their indicators in one comprehensive framework, which is called the strategic map. Whereas, through Kaplan-Norton research, they went to a new innovation, instead of choosing integrated indicators that reflect what is happening in the four areas: financial - operating - marketing – learning, and growth, and by monitoring them to ensure that the strategy is on the right track. Where instead of choosing measurement indicators, we start by choosing the variables that we want to implement in the four basic areas, and then we proceed to set hypothetical indicators. When we achieve them, we make sure that we are on the right path, and thus we move from measurement to management, and from monitoring indicators to formulating the strategy.

## **Study Methodology**

The selected research philosophy for the research process is positivism. It is a social science approach where the phenomena is measured through questionnaire. The positivism approach is directed toward the fact that the best way to collect data about research topic is through scientific data collection (Al-Ababneh, 2020, 78). Due to the scientific approach of positivism, is mainly applied to quantitative research, which involves collecting numerical datasets.

Positivism also allowed the use of statistical analysis methods such as hypothesis testing, correlation analysis, and the assigning of p-values (Gall et al., 1996). Using this method, the link between the effect of (independent variable) business intelligence on the (dependent variable) strategic map was estimated; for this research, a description of the link between the reliant and self-reliant items was achieved.

## **Study Significance**

The current study focused on crucial elements for modern business organizations represented by business intelligence and strategic map. Business intelligence is one of the contemporary subjects that has gained a lot of attraction in numerous organizations because it keeps a company in direct contact with its clients, helps it to understand their needs, helps it to produce and deliver the right goods and services to them, and gives it more opportunities to compete.

Strategic map, on the other hand, serves as a framework for articulating the organization's strategy because it aims to make the strategy more easily applicable and achieve a connection between employees' work and the organization's overarching goals. It also identifies performance indicators in four areas, including financial, marketing, internal operations, and external relations.

### ***Study Problem***

The problem of the study is the need for organizations to constantly measure their performance in order to know what their activities have reached, make adjustments to the negative aspects of performance and enhance the positive aspects of them in order to ensure survival and continuity. And the need for information, as organizations seek to rationalize their decisions by using the available information, but on the condition that there is integration between information or branching databases, applications, and technologies necessary for data processing, which leads to exacerbation of the problem and the emergence of many new problems. Accordingly, the problem of the present study can be identified in the following questions::

- 1- What is the level of business intelligence adoption by the organization?
- 2- Do the surveyed organizations measure their performance? And if it does, what are the indicators that it relies on?
- 3- What is the nature of the correlation between business intelligence and strategic map ?
- 4- Does business intelligence affect the dependence of the organizations on the performance indicators of the strategic map?

### ***Study Objectives***

- 1- The study aims to provide a theoretical presentation that combines what the writers and researchers presented to clarify the main study concepts (business intelligence , the strategic map) and its various dimensions, and an indication of the similarities and differences between the researchers' ideas by classifying these ideas within specific entries.
- 2- Determinign the level of business intelligence application in the researched organizations.

### ***Hypotheses of the Study***

In light of the study problem questions and its hypotheses, the following hypotheses were formulated

**The first main hypothesis:** There is a significant correlation between business intelligence and the performance indicators of the strategic map, from which the following hypotheses branch out:

- 1A- There is a significant correlation between business intelligence and financial indicators
- 1B - There is a significant correlation between business intelligence and marketing indicators
- 1C There is a significant correlation between business intelligence and operational indicators
- 1D-There is a significant correlation between business intelligence and indicators of learning and growth

**The second main hypothesis:** business intelligence significantly affects the performance indicators of the strategic map, from which the following sub-hypotheses branch out:

- 1A-Business intelligence significantly affects financial indicators
- 1B-Business intelligence significantly affects marketing indicators
- 1C- Business intelligence significantly affects operational indicators
- 1D- Business intelligence significantly affects learning and growth indicators

### ***Study Sample***

The study sample consists of companies and stores in the Family Mall commercial complex in Erbil Governorate, in addition to commercial companies that work in the field of retail trade and that own an agency or franchise for an international brand in Dohuk Governorate. The researcher distributed (137) questionnaires, retrieved (100) questionnaires , i.e. (72.9%). The researcher was an M , C , and A in compa-

nies and stores in order to understand and comprehend the forms and how to fill them out by the sample. In the light of the results of subjecting the questionnaire to tests of apparent validity and comprehensiveness, modifications were made to it so that it became its final form, and the stability of the questions was chosen according to the Grounbach Alpha test , so the stability percentage was 88.12%, and this percentage is acceptable.

### ***Study Limits***

The study deal with two important variables that have a significant on the performance of organizations, business intelligence which consider a competitive advantage for organizations, and the indicators of strategic map the show the way ahead to the mangers in dealing with environment .

### **Statistical Analysis Methods:**

Based on the nature of the orientations of the study objectives and the contents of its hypotheses, a group of statistical tools was used as follows:

- 1- Frequencies, percentages, arithmetic averages, and standard deviations: for use in describing and diagnosing study variables.
- 2- Simple Correlation: It is used to determine the strength and nature of the relationship between two variables, and it has been used to determine the internal consistency of the requirements of total quality management and financial performance.
- 3- Multiple Correlation Coefficient: used to determine the strength and nature of the relationship between a group of independent variables as well as a dependent variable.
- 4- Multiple regression: used to measure the significant effect of the independent variables on the dependent variable
- 5- Stepwise regression to show the extent to which the independent variables vary in the strength of their influence on the dependent variables.

In order to obtain the necessary data to achieve the objectives of the study and to test its model and hypotheses, the researcher relied in collecting the data required to implement the theoretical side on many sources represented by scientific references such as books, magazines, research, studies and letters related to the subject, whether available inside or outside the country, either by correspondence Arab or foreign countries. As for the field aspect, the researcher used the following methods to collect the data required for the study:

- 1- Personal interviews.
- 2- Questionnaire form.

### ***The Concept of Business Intelligence***

There is no complete agreement among researchers regarding the term business intelligence, for some, it may mean marketing research or competitive intelligence, and for others, it may mean reports (Howson, 2008,2). While others use public or private intelligence: as the private includes business intelligence and organizations Non-profit, and the general refers to the collection of information about local, regional, and governmental concerns (Søilen, 2008,7). Business intelligence was first used as a generic name to describe concepts and methodologies for improving business decisions using facts and information from assistive systems in 1989 by Howard Dresner (Power, 2007, 200). . In order to give a clear perception of the concept, the researcher considers it necessary to list a set of definitions. Table (1):

**Table (1) The concept of business intelligence**

T	Researcher ,year and page	definition
1	(Nadeem & Jaffri, 2007: 24)	It is the process of collecting data with high and good quality on the topic of the event in which it was researched ,which will help individuals to analyze information ,draw conclusions and make suggestions.
2	(Wells, 2008: 21)	It is the organization's ability to understand ,clarify ,plan ,predict ,solve problems ,think shorth and, understand, Transform ,learn to increase organizational knowledge ,provide information for decision processes ,enable effective actors ,and help establish and achieve business goals
3	(Olsson & Sandell, 2008: 25)	A set of concepts and methods for improving business decision-making using fact-based support systems
4	(Folorunso et al., 2010: 17)	A term that includes a broad range of analysis software and solutions that are used to collect, integrate ,analyze ,and provide access to information in a way that enables company stakeholders to make better decisions.
5	(Tabatabaei, 2010: 18)	It is a set of perceptions ,methods, and processes to improve management decisions ,use information from multiple sources ,apply experiences ,and add hypotheses to develop a correct understanding of business dynamics.

Business intelligence is both a process and a product and explains the process as the collection of technologies gathered by which an organization develops useful information or intelligence that helps it survive. As for business intelligence as a product, it is the information that will allow the organization to predict the behavior of (competitors, suppliers, customers, technology, markets, products) with a degree of certainty , without the presence of individuals who translate and transform the data To information and work accordingly, business intelligence does not achieve anything. Therefore, business intelligence is related to creativity and innovation more than technology. Technology helps business intelligence, but sometimes, excessive focus on technology may lead to neglecting the components of business intelligence.

### ***The Importance of Business Intelligence***

The great importance of "business intelligence" concept which helps to understand the prevailing situation of the work environment, which is characterized by intense competition, which has become more complex as a result of the great speed of its change, with constant momentary monitoring, and an attempt to anticipate the direction that the field of work can take in the future, in an attempt to try to improve the position Business organization within the work environment or at least continue to compete. (Hannula & Pirttimäki, 2002, 7) provides a set of benefits:

- a- Highlight important information
- b- Exploitation of inside information
- c- Efficiency in obtaining information
- d- benefit measurement

The value of business intelligence for business is expressed by the fact that such systems care and highlight the information that serves within the foundations for implementing major changes in the organization such as establishing new cooperation, obtaining new consumers, building new markets, offering products to consumers (Olszak & Ziemia, 2007: 135). Business intelligence contributes to the development and transparency of information flow and knowledge management, and it also enables organizations to do the following: (Liataud & Hammaond, 2002: 89) (Moss & Alert, 2003: 11):

- 1- Follow up on the profitability of the products sold
- 2- Expense analysis
- 3- Monitor the organization's environment

The attractiveness of business intelligence provides the organization with quick tools for storing, modeling, and analyzing large amounts of information about the organization's operations and information from external sources (Herschel & Jones, 2005: 45-55). Companies can control and monitor their operations through the application of business intelligence analysis processes and thus Add factors that affect their performance. The data collected from different sources in the companies must be transferred to a body and be deposited in data warehouses and analyzed in order to obtain better decisions, and in order to be efficient for these companies, and with the existence of this benefit, organizations can make better decisions (Dobbs et al., 2002: 235) (Folorunso et al., 2010: 18) believes that the primary importance is to integrate analytics with management functions so that analytics becomes an important part of how managers and employees perform their work, as information is collected from Different operational systems for data integration. (Thomas, 2001: 48) believes that business intelligence provides value for the development of systemic processes, which include competitors, new technology, public policy, and market forces. Business intelligence surrounds all activities in the organization and goes beyond that. To include consumers and suppliers, it also provides value to the business only when it is used effectively by individuals, as there is a correlation between the effectiveness in the use of business intelligence and the performance of the organization (Davenport & Harris, 2007: 45).

### ***Business Intelligence Applications***

(Hurbean, 2006: 309-311) identifies two types:

- 1- application with functional criteria: For the creation of a simple, multi-dimensional OLAP, as it is usually used for this model, which contains a predefined set of multi-dimensional models for the analysis of various types of data. Such as Oracle, Microsoft .
- 2- The development of more complex models: in order to demonstrate the unique mix of objectives and factors of the organization in influence, which is a good option when the functional standards do not match the application standards and there is a desire for full integration with the procedures, methodology, and tools of planning, control and/or knowledge management in the organization.

### ***Areas of Using Business Intelligence Applications***

There are three areas in which business intelligence applications can be adopted, namely:

(Olszak & Ziemba, 2003: 857-860) , (Kaplan & Norton, 1996: 239) .

#### **1- Administrative areas**

The idea of business intelligence systems provides integrated analysis and evaluation of the organization in ways that exploit financial-non-financial indicators. Such a complex approach helps shape both the development of the network and its market opportunities. It seems that the concept of the balanced scorecard (BSC) is based on assumptions that have the ability to achieve goals developed by the organization and which discusses the four basic dimensions.

#### **2- Technical areas**

It includes methods of generating knowledge, its sources in order to effectively exploit knowledge in the decision-making process, as it must be stored based on research methods that have been tested, and solutions based on artificial intelligence include intelligence, logic, and operations. Where it provides solutions to new problems by adopting solutions that were presented to solve the same problems previously. GSS and CRM collective support systems provide valuable resources for the organization by generating new ideas and flexible exchange of knowledge among employees (Turban & Aronson, 2008: 76) . Business intelligence generation systems require correct and accurate information tools, which is DW , which is the

core of the system. Business intelligence. Such repositories arrange and operate historical data and take into account that repositories may be ROLAP rational realistic or multidimensional MOLAP Where it is built on the foundations of the system of database relationships and management, while providing an effective mechanism for OLAP operations , and data warehouses are designed and multi-dimensional tables are used that contain processed and collected data from multiple sources (Olszak & Ziemba, 2003: 861).

### 3- **Regulatory Areas**

The formation of a business intelligence system is a complex process that requires many activities that include, first, defining business objectives in the organization. These goals set the framework for the current and future demand for information in the organization. And then analyze and design the main processes, cases, responsibilities and how information flows (Karagiannis et al., 1996: 2). Before providing a business intelligence system to the beneficiary, the standardization process is necessary, and this process means providing the information that is necessary for the correct functioning of the system (Olszak & Ziemba, 2003: 862). Then comes the role of training the beneficiaries to develop their skills in identifying, modeling, encoding, and modifying information and its need for storage, use and expansion of knowledge. From another point of view, business intelligence applications can be used in (Howson, 2008: 3) (Rivest et al., 2005: 33-17).

#### A- **Administrative Control**

Business intelligence provides managers with knowledge of what is happening in the organization , whereas without business intelligence, managers are without an idea or foresight until the emergence of financial indicators.

#### B- **Business Performance Improvement**

It allows the organization to improve performance. Business performance is measured by a set of financial indicators, for example: revenue, profitability, and costs. In marketing, performance is achieved by improving the response rate to advertising campaigns by identifying consumer attributes, and by eliminating ineffective campaigns, it saves millions for the company each Years. In manufacturing, business intelligence facilitates gap analysis to understand why some projects operate more effectively than others.

#### C- **Improve Customer Service**

The quality of service provided to the customer is very important for organizations, as business intelligence helps companies to provide high customer service by providing timely order procedures, loan approval, and problem-solving.

### ***Stages of Building Business Intelligence Systems***

The book presents two important stages as an introduction to building the system (Dresner et al., 2007: 187):

The first stage: creating business intelligence takes the most time, and this stage needs a larger part of the financial and human resources in the life cycle of the system. The formation of business intelligence consists of ( Olszak & Ziemba, 2007: 140) :

- a- Define and define business intelligence strategies
- b- Define and configure data sources
- c- Choosing business intelligence tools
- d- Design and application of business intelligence
- e- Disclosure of new information needs and other business applications and practices

The second stage: the use of business intelligence is related to the applications of the final beneficiary, in this stage it shows its great role in promotion and generalization practices that are related to data analysis and business intelligence systems. This stage may be divided into steps according to the needs and tasks of the beneficiaries and includes (Linoff & Bert, 2002: 136) (Olzask & Ziemba, 2007: 140):

- 1- Logistics analysis, which enables the identification of supply chain partners quickly
- 2- Access, control and fact analysis
- 3- Develop decision alternatives
- 4- Changing the impact of the organization's performance

The completion of the last phase of building and applying business intelligence does not mean that all problems related to Business intelligence has been dealt with in the company. The cycle is natural, interactive , and thus has become a kind of continuous cycle that requires more analyzes of information needs, re-evaluation of existing solutions, modifications, and optimization.

From the point of view of other writers, the stages of building business intelligence are as follows (Blotnicki & Wawrzynek, 2006: 81) (Olzask & Ziemba, 2007: 142) (Poul et al., 2003: 4) .

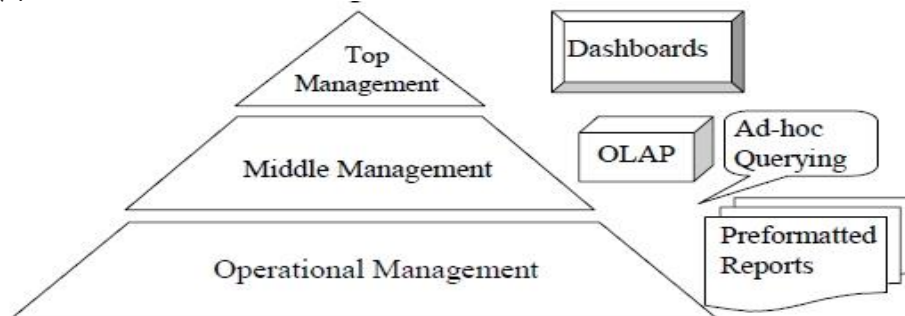
#### A- Define and Configure Data for Business Intelligence Systems

In the stage of identifying and preparing data, it is necessary to diagnose the data sources that will be used to support business needs, and such a diagnosis requires finding internal sources (intellectual sources, information technology sources, paper files) and external sources (suppliers, customers, stakeholders) with Determining the realism and form of transformation. The significance of the stage requires assistance provided by decision makers, operational workers, IT departments, knowledge management departments and strategic customers.

#### A- Choosing Business Intelligence Tools

The selection of business intelligence tools is a difficult task, and during the selection of tools it is necessary to take into account the following criteria, reliability or functionality, complexity of solutions, and twins. The next few years. At this stage, the market for new knowledge of business intelligence is required . Providers of ERP and MRP are constantly using their products with business intelligence models such as SAP, Oracle, Microsoft , and so their products are more practical and analytical. OLAP and data mining techniques have been applied in IBM, Oracle, Microsoft database systems. It should also be mentioned Many of the suppliers that provide business intelligence solutions are specialists who usually satisfy the needs of customers. Such products incorporate the best practices of the specific sector with future solutions. (Olzask & Ziemba, 2007: 143).

Figure (1) shows the three levels of tools used in the three administrative levels:



Source: Hurbean, Luminița, Business Intelligence: Applications, Trends & Strategies, Ale University, Romania, 2006, P. 308.

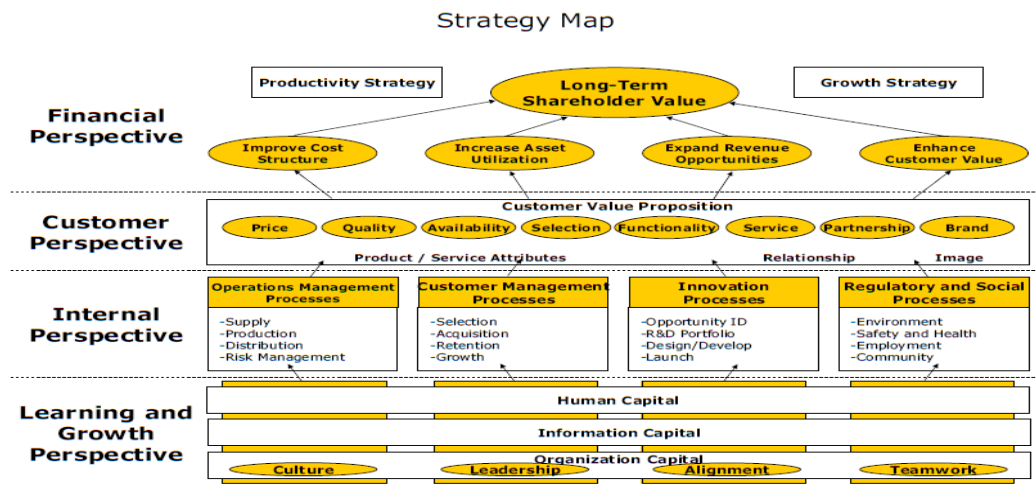
**Figure (1) Tools Used in the Three Administrative Levels**



### The Concept of the Strategic Map

The term strategic map was used in the literature differently from each other, as Norton & Kaplan used the term strategic map, but (Neely & Boune, 2000: 3-5) used the term success map, although the definition of the two terms is close. The strategy map is defined as a visual framework for the cause-and-effect relationships between the components of the organization’s strategy, and it is used to integrate the four areas of the balanced scorecard, and it provides a unified and consistent way to describe the strategy in order to manage the goals and measures of the balanced scorecard (Kaplan & Norton, 2004: 10).

It was seen as a visual representation of the organization’s critical success factors and the cause-and-effect relationships between them (Juha et al., 2010: 1). It is also defined as: It is a form that describes how the organization builds value by linking strategic objectives with clear cause-and-effect relationships with each other. Within the four areas of the balanced scorecard (Dror & Barad, 2006: 530). The strategic map is a model for thinking and designing strategies, whether planned or emergency, and programs around the learning process, feedback and strategic renewal, and seeks to help the organization to focus on strategies in a systematic and comprehensive manner (Norton & Kaplan, 2000: 167-176).



Source: Kaplan, Robert S., Norton David P., strategy maps: converting intangible assets into tangible outcomes, Harvard Business School Press, Boston, 2004.p:11.

Figure (2) The Strategic Map

The strategy map has added a second layer of detail that illustrates the dynamics of the time-based strategy. It has also added a level of detail that is clear and focused. Many approaches are used to formulate strategy in practice, and regardless of the approach used, the strategy map provides a unified and coherent way in which goals and metrics can be established and managed. It also provides a standard examination of the components of strategy and internal relationships. A strategy map shows the links between the critical success factors of an organization. It can be used to show how an increase in employee motivation leads to improved productivity and profitability, or to illustrate how the operational activities of employees contribute to achieving the goals of the organization (Juha et al., 2010: 1).

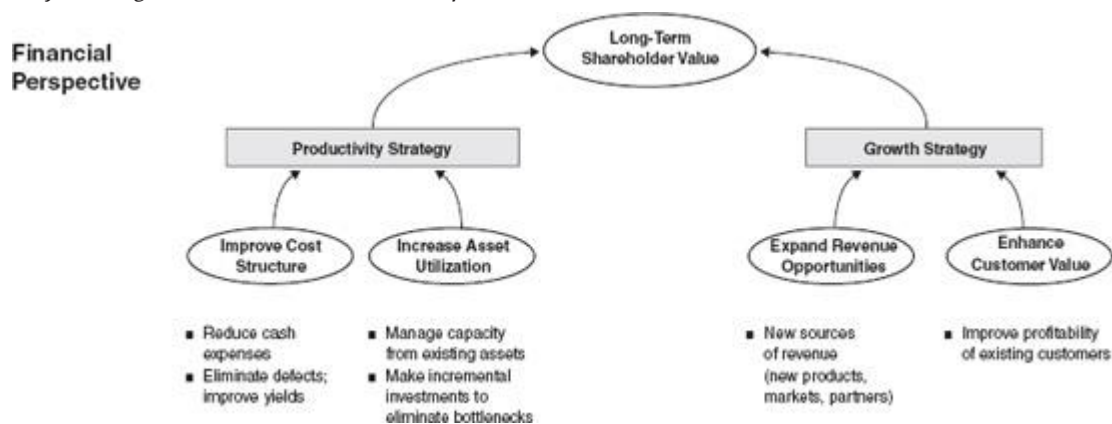
Norton & Kaplan presented their first idea of the balanced scorecard as a performance measurement tool. Subsequently, they argued that financial metrics alone are not the only performance indicators to describe the ability or health of an organization. In order to achieve long-term performance, other areas such as customers, internal operations, and learning and growth must be measured (Wibowo, 2009: 1) (Norton & Kaplan, 1992: 71-79). But in their second book, the balanced scorecard, the two authors showed that there is a new system for measuring strategic performance, which includes planning, implementation, and phase control, as Norton & Kaplan showed that in order to achieve good performance, the organi-

zation must, when using the balanced scorecard, need compatibility and focus where it allows For the organization to integrate together its sources, executive teams, business units, support groups, information technology, mobilizing and equipping employees to focus on them accurately when implementing strategies, as they explained and documented this in their book the strategy-focused organization in 2001 (Norton & Kaplan, 2001: 167-176). The concept of the strategy map came about after Norton & Kaplan noticed that managers who use the balanced scorecard first draw cause-and-effect relationships between the strategic objectives in the four domains. The strategic map helps the organization to integrate the strategic direction of the organization with the implementation of the strategy, in other words, it helps the executives to better manage their strategy as it appears visible to the managers, because now everyone sees where and how they can contribute to the performance of the organization (Wibowo, 2009:1).

### ***Performance Indicators of the Strategic Map***

#### ***First - Financial Perspective***

The strategy balances the contradictory forces in the long term rather than the short term. The financial areas are considered the main objectives for organizations that aim to maximize profitability (Kaplan & Norton, 2001: 100). The financial performance measures whether the organization’s strategy, including its implementation, contributes to improvement. The financial goals are related to profitability, for example, operating income and return on investment, the strategies are simple and you can make more money through two main entrances (Kaplan & Norton, 2004: 36):



Source: Kaplan, Robert S., Norton David P., strategy maps: converting intangible assets into tangible outcomes, Harvard Business School Press, Boston, 2004.p:33.

**Figure (3) The Financial Perspective**

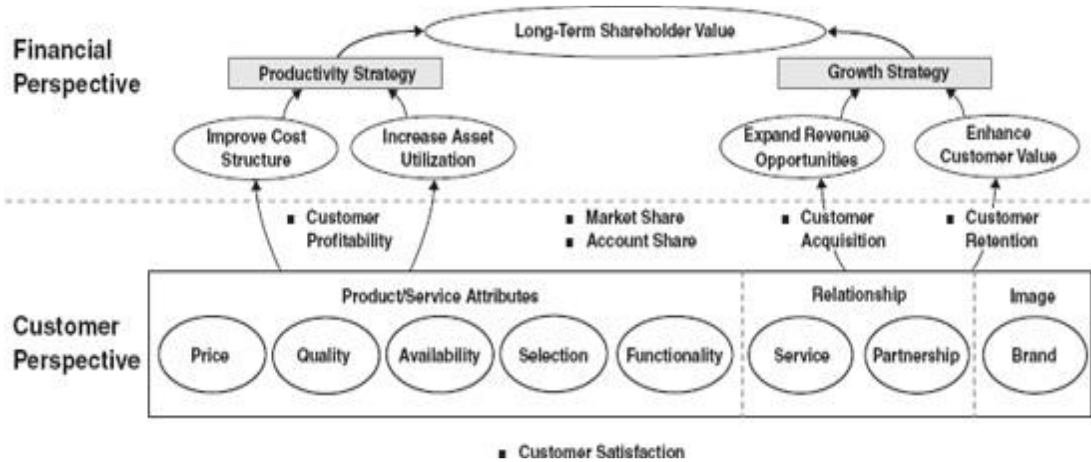
As in Figure 3, organizations can generate revenue growth by deepening the relationship with existing customers, and this will enable them to sell more products and sell new ones. As for growth in productivity, it can be achieved through two methods: First, reducing Costs by reducing direct and indirect expenses, and such a reduction will enable the organization to produce the same amount of output with less expenditure on individuals, materials, energy, and suppliers. Secondly, organizations utilize their financial and material assets more effectively and reduce working and fixed capital ( Kaplan & Norton, 2004: 38). Building the strategic map begins with a financial strategy to increase the value of taking interest. Organizations have two levels of their financial strategies: productivity and revenue growth, and in turn they consist of two components: revenue from new markets, new customers, and increasing the value of existing customers by relying on relationships with them through expanding sales. Also, the productivity strategy achieves or seeks to achieve results faster than the growth strategy. But one of the principles that contribute to the strategic map is highlighting opportunities to enhance financial performance through revenue growth, not

only through reducing costs and improving asset utilization, but also, balancing between The two strategies to help ensure that costs are reduced (Norton & Kaplan, 2000: 3-4).

**Secondly - Customer Perspective**

Strategy based on differentiation of value proposition to customers The revenue growth strategy requires a specific value proposition, and in the area of customers, it describes how the organization will generate distinct, coherent value for the target segment.

Within the customer domain, managers define the segmentation of target customers in which the business units will compete and measure the performance of the units.



Source: Kaplan, Robert S., Norton David P. 2004., Strategy Maps: converting intangible assets into tangible outcomes, Harvard Business School Press, Boston, USA. p:45.

**Figure (4) Customers Perspective**

Through the spoken word, new customers are attracted, and by retaining customers, the organization can increase the share of business and the accounting share when it has loyal customers. By combining attracting customers and increasing business with existing customers, this will lead to an increase in market share. Finally, retaining customers will lead to Increase in customer profitability, since the cost of retaining customers is usually lower than attracting new customers or replacing customers. All organizations try to improve these indicators, but retaining or attracting customers is rarely a strategy. Once the company understands who the target customers are, it can Determine the goals and measures of the value provided that you intend to provide. The value provided defines the organization’s strategy for the customer by describing the unique mix of price, service, product, relationships and mental image that the organization provides to the target division of customers (Kaplan & Norton, 2004: 40).

The basis of any strategy is the value proposition to the customer, which describes the unique combination of product characteristics, customer relations, and the image of the organization. As it defines how the organization differentiates itself from competitors in order to attract, retain, and deepen relationships with target customers, the value provided to the customer Necessary because it helps the organization in connecting internal processes with improving outputs for customers (Norton & Kaplan, 2000: 3-4).

**Third - Internal Operations Perspective**

Value is built through internal business processes, and once the organization gets a clear picture of the financial goals, the goals of the internal domain and learning and growth describe how to accomplish the strategy. The organization manages its internal operations and develops human, informational, and organizational capital in order to deliver the value provided to customers And the distinction in performance of these two perspectives is what drives the strategy. Internal operations are classified into four types:

**A- Operational Management Processes**

They are the daily operations through which organizations produce their products and deliver them to customers, and their operations include:

(Obtaining raw resources from suppliers, converting raw resources into products, distributing products to customers, risk management)

**B- Customer Management Operations:**

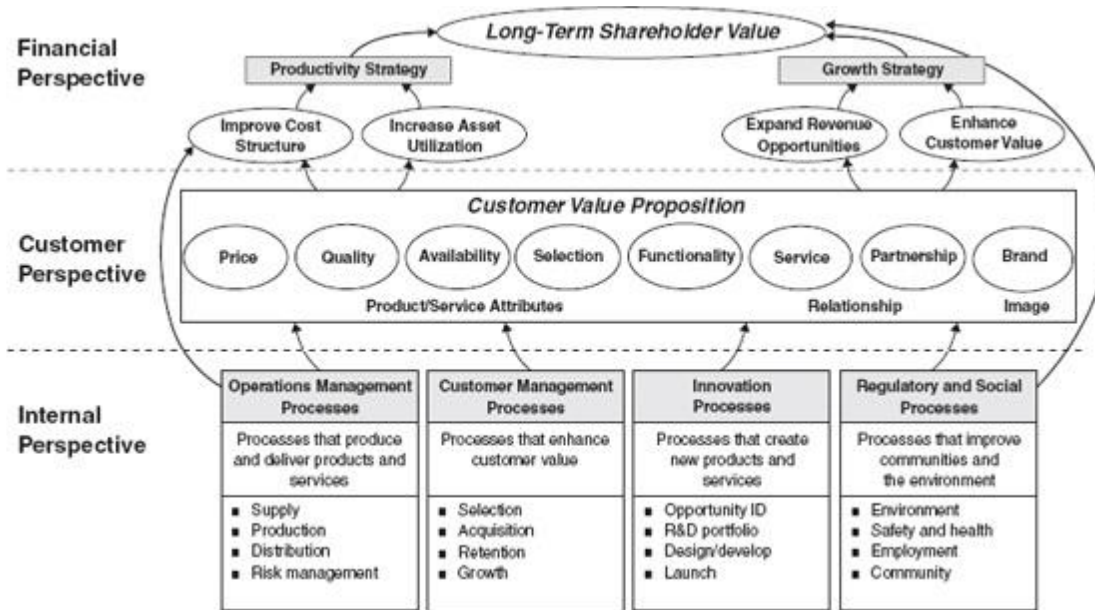
It means relationships with customers, and includes: (selecting target customers, obtaining target customers, retaining target customers, developing relationships with target customers)

**C- Creativity Processes:**

It includes the development of new products, services, and processes that usually enable the company to penetrate new markets and new segments for customers, and include: (identifying opportunities for new products, managing the research and development portfolio, designing and developing new products, bringing products to the market)

**D- Social Restrictions and Processes:**

where the organization helps to entitle the right to work in the societies and countries in which it operates and produces, many organizations try to meet these conditions and sometimes go so far as they hope to provide more than standards or restrictions in order to obtain and develop Good reputation in the workplace. Organizations prepare reports that include the following dimensions: (environment, health and safety, employment practices, community investments).



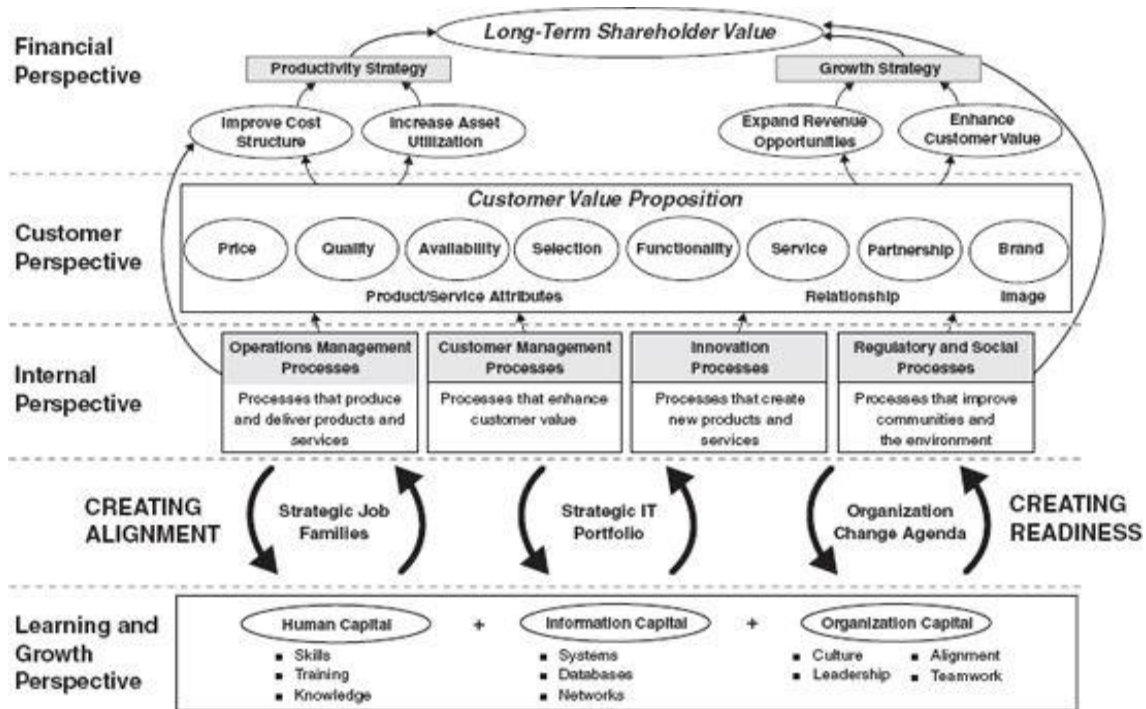
Source: Kaplan, Robert S., Norton David P. 2004., Strategy Maps: converting intangible assets into tangible outcomes, Harvard Business School Press, Boston, USA. p. 51.

**Fourth - Learning and Growth Perspective**

It expresses the strategic compatibility of intangible assets and their role in the strategy and is classified into (Norton & Kaplan, 2004, 22): human capital, information capital, organizational capital.

The foundation of any strategy map is the learning and growth dimension, which identifies, defines, and articulates the skills, techniques, and culture of the organization required to assist the organization's

strategy. These objectives enable the organization to integrate its human resources and information technology together. The organization must determine how it will satisfy its needs through the parameters. Critical internals, outstanding value proposition, customer relations. Although executive teams know and understand the importance of learning and growth, they often struggle with defining objectives. (Norton & Kaplan, 2000: 6). The field of learning and growth in the strategic map sheds light on the compatibility role of the organization's intangible assets within its strategy. The field of learning and growth shows how the balanced scorecard shows how the organization can integrate its intangible assets into the strategy. The three types of these assets must be integrated with the objectives of internal operations and integrated with each other so that synergies appear between them (Kaplan & Norton, 2006: 19).



Source: Kaplan, Robert S., Norton David P. 2004., Strategy Maps: converting intangible assets into tangible outcomes, Harvard Business School Press, Boston, USA. p:200.

Figure (5) The Field of Learning and Growth

### *The Relationship between Business Intelligence and Strategic Map Performance Indicators*

Business intelligence is one of the most important applications that help the departments of the organizations present to conduct an analysis of the organizational performance, as these applications enable the departments of the organizations to follow up, understand, and manage their performance. By providing information stored in the organization's databases and data warehouses, and legacy systems. Business intelligence provides an environment in which organizations' managers can obtain accurate, up-to-date information (Olszak, 2002: 163). Some point out that organizations are increasingly turning towards business intelligence tools, because these tools help improve the financial performance of those organizations as they increase the return on investment. (Tabatabaei, 2010: 23) The book confirms The attractiveness of business intelligence and organizations' reliance on its applications is because it provides quick tools for storing, modeling, analyzing relatively large amounts of information about the organization's operations and at the same time from external sources, so that it can rely on that information in conducting performance analysis (Herschel & Jones, 2005: 45-55).

Business intelligence can provide business value only when it is used effectively by employees in the organization, as there is a correlation between the effectiveness in the use of business intelligence and the performance of the organization (Davenport & Harris, 2007: 45).

From a technological perspective, business intelligence systems provide an integrated set of tools, technologies, and software products that are used to collect data from various sources for integration and analyze data on key performance indicators of the strategic map to make them available to organizations, and among those tools, technologies and programs are the following (Olzask & Ziemba, 2007: 138) (Olszak & Ziemba, 2003: 856-857):

- 1- ETL (extract, transform, load): It is responsible for converting data from transactional systems and the Internet into a DW .
- 2- Data warehouse: Where it provides space for comprehensive classifications and analyzes conducted on data and the sharing of information that is stored.
- 3- OLAP : allows users to access, analyze and model business problems, and share information stored in data warehouses.
- 4- Data mining: where it enables the beneficiaries to discover the various entrances, design, generalize, organize, and set rules in the data sources.
- 5- Ad-hoc inquiring: It allows the generation and exploitation of various reports

Based on the foregoing, we conclude in the end that the strategic map, by providing a comprehensive and clear description of the organization's strategy, gives the executors a wide ability to implement their strategies. The strategic map solves this problem by providing a simple framework, one page visible for the cause-and-effect relationships between the goals For each of the outputs and drivers of the strategy, it also enables everyone in the organization to have a comprehensive understanding of the strategy, as it facilitated performance by allowing administrative operations to be linked to the specified strategy. They help bridge the performance gap between goals and current performance, which are the main drivers of change.

### ***Description of the Study sample's Opinions towards the Business Intelligence Variable***

Table (2) reflects the business intelligence variable at the level of the overall indicator and at the level of each of its dimensions. It is clear that (68.72%) of the study sample, who constitute the majority, agreed on adopting business intelligence in the organizations in which they work, while (21.13%) did not agree. On that, while (10.48%) of the sample did not specify their position on that. The previous result supports the value of the arithmetic mean of the respondents' answers, which amounted to (4.77). It also showed that most of the respondents agreed on the availability of the four dimensions of the business intelligence variable in the organizations in which they work. Where (77.5%) agreed on the availability of the business intelligence dimension, compared to (13.99%) who did not agree. Accordingly, with an arithmetic mean of (4.11) and a standard deviation of (1.235), as (75%) of the respondents agreed on the availability of the business intelligence dimension, and (18.06%) of the respondents did not agree on that, while the percentage of those who agreed on the availability of an intelligence support dimension was Their percentage was (70.5%), while (21%) did not agree on the availability of this dimension. As for the business intelligence application dimension, the percentage of those who agreed on the availability of this dimension was (52%) compared to (33.5%) who did not agree on that, with a mean of Its value is (3.24) and a standard deviation (1.449). Based on the above, it is clear that most of the respondents agreed on the availability of the business intelligence variable as well as in each of its dimensions, and for the purpose of describing and diagnosing the respondents' answers to the paragraphs that measure each dimension of business intelligence, the results were as follows :

**Table (2) Diagnosing Business Intelligence and its Dimensions**

Dimensions	response scale										Arithmetic mean	standard deviation
	Strongly agree		I agree		neutral		I do not agree		Strongly disagree			
	T	%	T	%	T	%	T	%	T	%		
Processes	54.8	0.54	22.7	0.22	5.7	0.05	4.44	0.04	9.55	0.09	4.11	1,253
levels	39.25	0.39	35.75	0.35	9.25	0.09	9.81	0.09	8.25	0.08	3.90	1,210
the support	39.5	0.39	31	0.31	12.5	0.21	9	0.09	12	0.12	3.73	1,348
Applications	31.67	0.31	20.33	0.20	14.5	0.14	7.33	0.07	26.17	0.26	3.24	1,449
the average	41.28		27.44		10.48		7.64		13.99			
aggregate index	68.72				10.48				21.13		4.77	1,315

### *Describe the Opinions of Study towards Strategic Map*

Table (2) reflects the strategic map variable at the level of the overall indicator and at the level of each of its dimensions. It is clear that (57.63%) of the study sample, who constitute the majority, agreed to adopt the strategic map in the organizations in which they work, while (27.57%) did not agree to That, while (14.8%) of the sample did not specify their position towards it. The previous result supports the value of the arithmetic mean of the respondents' answers amounting to (2.5) and a standard deviation of (0.699). It is also clear that most of the respondents agreed on the availability of the four indicators of the strategic map variable in the organizations in which they work. Where (60.75%) agreed on the availability of some financial indicators compared to (25%) did not agree on that, with an arithmetic mean of (2.46) and a standard deviation of (0.706), and (64.38%) of the respondents agreed on the availability of some marketing indicators and did not agree on that (25.3%) of the respondents, while the percentage of those who agreed on the availability of the operational indicators dimension was (46.1%), while they did not agree on the availability of this dimension (20.1%) with an arithmetic mean of (2.26) and a standard deviation of (0.749). After learning and growth indicators, the percentage of those who agreed that this dimension was available was (59.31%), compared to (14.5%) who did not agree.

**Table (3) Diagnosis of the Strategic Map**

Dimensions	response scale						Arithmetic mean	standard deviation
	Yes		no		without answer			
	T	%	T	%	T	%		
Financial indicators	60.75	0.60	25	0.25	14.3	0.14	2.46	0.706
Marketing indicators	64.38	0.64	25.3	0.25	10.3	0.1	2.87	0.651
Operational indicators	46.1	0.46	33.8	0.33	20.1	0.2	2.26	0.749
Learning and growth indicators	59.31	0.59	26.2	0.26	14.5	0.14	2.41	0.690
the average	57.63		27.57		14.8		2.5	0.699

### *Analyzing the Correlations between Business Intelligence and Strategic Map Indicators*

- 1- At the level of the overall indicator, a significant positive correlation appeared between the business intelligence variable (the overall indicator) and the strategic map performance indicators (the overall indicator), where the value of the correlation coefficient between them was (0.366\*\*), which is a significant value at the level of (0.05), which indicates that the organizations that High levels of business intelligence are those that rely at the same time on the performance indicators of the strategic map better than other organizations in evaluating their performance. Based on this result, the study hypothesis, which states that there is a significant correlation between business intelligence and the performance indicators of the strategic map, is validated.
- 2- The results show that the relationship of each dimension of business intelligence individually with the performance indicators of the strategic map (the overall index) is significant at the level (0.05), which indicates that organizations that adopt high levels of business intelligence operations and

levels of its use, support and applications tend more than others to rely On the performance indicators of the strategic map for the purpose of evaluating its performance.

- 3- It was found that there is a significant and positive correlation between the variable of business intelligence (the overall indicator) and the two indicators of the performance of the strategic map alone, the financial and marketing performance, as the values of the correlation coefficient between them reached (0.296\*\*), (0.393 \*\*) respectively , which indicates that the organizations that High levels of business intelligence are those that depend at the same time on the performance indicators of the strategic map better than other organizations represented in financial performance, marketing performance .
- 4- It was found that there is no significant correlation between the business intelligence variable (total indicator) and between the two indicators of the performance of the strategic map alone, operational performance, learning and growth, as the values of the correlation coefficient between them reached (0.161), (0.174), respectively, and both values are not significant at the level of (0.05), which indicates The organizations that adopt high levels of efficient response to the consumer do not have to be the ones that rely at the same time on the performance indicators of the strategic map better than other organizations represented in operational performance, learning and growth .
- 5- It was found that there is a significant and positive correlation between the dimension of business intelligence operations and the two indicators of the performance of the single strategic map, the financial performance and the marketing performance, as the values of the correlation coefficient between them were (0.237) and (0.364), respectively, and both values are not significant. While the correlation between the dimension of business intelligence operations and each of the indicators of operational performance and learning and growth was weak, as the values of the correlation coefficient between them reached ( 0.095 ) and ( 0.092 ), respectively, and both values are not significant, and based on the nature of these results, the high levels of operations Business intelligence is positively reflected in the financial and marketing performance, while this is not reflected in the operational performance, learning and growth in those organizations, and the researcher believes that the reason for this is due to the fact that the consumer is in more contact with the marketing activity of the organization, and the performance of the financial activity of the organization depends a lot on its revenues from selling goods and services for which the consumer is the main source.
- 6- The results revealed significant and positive correlations at a significant level (0.05) between the dimension of the levels of business intelligence and the performance indicators of the strategic map (marketing, operational, learning and growth performance) individually, based on the values of the correlation coefficient between them (0.235), (0.220), and (0.220) (0.205), respectively, while a weak correlation was found between the use of business intelligence levels and the financial performance index, as the value of the correlation coefficient between them reached ( 0.186 , and this value is not considered significant at the level of (0.05) . Depending on the nature of these results, the high levels of business intelligence levels are positively reflected in the level of dependence of the surveyed organizations in evaluating their performance on indicators of marketing performance, operational performance, learning and growth, while this is not reflected in the dependence of those organizations on the financial performance index.
- 7- It was found that there is a significant and positive correlation between the business intelligence support dimension and the two indicators of the performance of the single strategic map, the financial performance and the marketing performance, as the values of the correlation coefficient between them reached ( 0.270 ), ( 0.271, respectively, and both values are not significant at the level of (0.05) . While the correlation between business intelligence support dimension and each of the indicators of operational performance and learning and growth was weak, as the values of the correlation coefficient between them reached (0.144 ) and ( 0.104), respectively, and both values are not significant, and based on the nature of these results, the high levels of availability Business intelligence sup-



port is positively reflected in the financial and marketing performance of the surveyed organizations, while this is not reflected in operational performance, learning and growth.

- 8- By following up the values of the correlation coefficient between the dimension of business intelligence applications and each indicator of the strategic map individually, it is clear that the relationship of the dimension of business intelligence applications is significant only with the marketing performance index, as the value of the correlation coefficient between them was ((0.236) , which is Significant at the level (0.05) . While the weak correlation between business intelligence applications dimension and other strategic map performance indicators (financial, operational, and learning and growth) was shown to be weak, each of the operational performance and learning and growth indicators, and based on the nature of these results, the high levels of availability of business intelligence applications are reflected positively in performance Marketing of the surveyed organizations, while this is not reflected in the financial and operational performance, learning and growth.

**Table (4) Correlation Coefficients between Business Intelligence Factors and Strategic Map Performance Indicators**

business intelligence Strategic map	business intelligence factors				
	Processes	levels	the support	Applications	aggregate index
Financial performance	0.237*	0.186	0.270**	0.131	0.296**
Marketing performance	0.364*	0.235*	0.271*	0.236*	0.393**
operational performance	0.095	0.220*	0.144	0.183	0.161
Learning and growth	0.092	0.205*	0.104	0.075	0.174
aggregate index	0.279**	0.224*	0.291**	0.225*	0.366**

\*\* Significant at (0.01) level      \* Significant at (0.05) level

**Analyzing Business Intelligence Influence Relationships on Strategic Map at Macro Level**

The results of table (5) refer to the results of the regression analysis between the business intelligence variable (the overall indicator) and the performance indicators of the strategic map (the overall indicator). The table shows the following:

- a- Beta between the two variables was (0.148), which is significant at the level of significance of the study, which is (0.05), in terms of the value of the calculated and (T) value (3.893), which is greater than its tabular value of (1.661) at a degree of freedom (99), which indicates that business intelligence ( The aggregate index) significantly affects the performance indicators of the strategic map (the aggregate index).
- b- The value of the determination coefficient R<sup>2</sup> was (0.13), and it indicates Business intelligence explains its percentage ( 13 %) of the changes that occur in the efficient response to the consumer, while the rest of the percentage is explained by other factors (98,1).

**Table (5) The Impact of Business Intelligence on the Strategic Map at the Macro Level**

the independent variable The dependent variable (strategic map)	business intelligence								The calculated significance level
				F		T			
	b	b <sub>1</sub>	R2	calculated	Tabular	calculated	Tabular		
aggregate index	1,869	0.148	0.13	15,157	3,938	3,893	1,661	0.000	

0.05 P≤, DF(F)=(1,98) DF(T)=(99) N=100

**Analysis of the Impact of Business Intelligence on the Indicators of the Strategic Map at the Micro Level**

In order to test the impact of the business intelligence variable on each indicator of the performance of the strategic map, a simple regression measure was adopted to identify the effective relationship of business intelligence in each indicator independently, the results of which were collected in Table (5-27), and these effects can be explained as follows :

- a- It was found that there is a significant impact relationship of business intelligence in financial performance indicators, as the value of ( F calculated was (9.423), which is greater than its tabular value of (3.938) at two degrees of freedom (1,98), and the significance of the relationship confirms the value of ( T calculated and amounting to ( 3.070), which is greater than its tabular value of (1.661), and is considered significant at the level of significance of the study, which is (0.05) . The value of the determination coefficient ( R<sup>2</sup> refers to the interpretation of business intelligence (9%) of changes in financial indicators.
- b- It was found that there was a significant effect of business intelligence on marketing performance indicators, where the calculated ( F value was (17.855), which is greater than its tabular value of (3.938) at two degrees of freedom (1.98), while the calculated ( T ) value was ( 4.226), which is greater than its tabular value of (1.661), and is considered significant at the level of significance of the study, which is (0.05) . As for the percentage of interpretation of the change in marketing performance resulting from the change in business intelligence, it is explained by a value based on the value of the coefficient of determination ( R<sup>2</sup>, which indicates that its percentage (15%) of the change in marketing performance indicators is due to business intelligence.

With this result, the sub-hypothesis is accepted, which states that (there is a significant effect of business intelligence on marketing performance indicators).

- c- It was found that there was no significant effect of business intelligence on operational performance indicators, as the calculated F value was (2.596), which is smaller than its tabular value of (3.938), while the calculated T value was (1.611), which is also smaller than its value. The tabular value of (1.661)) is not considered significant . And based on the value of the determination coefficient R<sup>2</sup>, its percentage (3%) of the change in performance indicators of operational operations is due to business intelligence, which is a very small percentage, which means **rejecting the hypothesis (there is a significant effect of the business intelligence variable in operational performance indicators)**.
- d- It is clear that there is no significant impact of business intelligence on learning and growth indicators, as the calculated F value was (3.064), which is smaller than its tabular value of (3.938), and the calculated T value was (1.075), which is smaller than its tabular value. The amount is (1.661), and it is not considered significant at the level of significance of the study. And based on the value of the coefficient of determination R<sup>2</sup>, its percentage (3%) of the change in the indicators of learning and growth is due to business intelligence, which is a very small percentage, and with this result, the **hypothesis is rejected (there is a significant effect of the business intelligence variable in the indicators of learning and operational growth)**.

**Table (6) The Effect of Business Intelligence on the Indicators of the Strategic Map at the Micro Level**

the independent variable The dependent variable (strategic map)	business intelligence							The calculated significance level
				F		T		
	b	b	R2 -	calculated	Tabular	calculated	Tabular	
Financial performance	1,667	0.214	0.09	9,423	3,938	3,070	1,661	0.003
Marketing performance	1,856	0.183	0.15	17,855	3,938	4,226	1,661	0.000
operational performance	1,864	0.106	0.03	2,596	3,938	1,611	1,661	0.110
Learning and growth	2,089	0.088	0.030	3,064	3,938	1,075	1,661	0.083

0.05 P<, DF(F)=(1,98) DF(T) =(99) N=100

## Conclusions

- 1- The adoption of business intelligence applications in the present business organizations is imperative as a response to the environmental changes that are characterized by rapid change and to achieve the integration, operation and analysis of the huge amounts of data that come from different sources,

which will serve some areas to reveal new knowledge and provide the needs of the decision-maker with information that contains destinations. A different view that enables him to make decisions under various circumstances, follow up the performance of the organization, and monitor competitors.

- 2- The study findings reveal that there is a significant positive correlation between the study variables.
- 3- Business intelligence represents the highest levels of systems that deal with information. It includes all types of management information systems, decision support systems, expert systems, data mining, and covers most of the tools, rules, applications, methodologies, and processes that are used to convert data into information and decisions and then into action. It also includes its applications are various areas that business organizations deal with, and it also covers all types of intelligence that business organizations can deal with today, such as competitive intelligence, operational intelligence, and market intelligence, and it focuses on all parties related to the organization such as customers, suppliers, competitors, and capital owners. .
- 4- Despite the emergence of specialized systems of management information systems according to administrative levels or according to types of decisions, business intelligence supports decision-making at all administrative levels, where at the strategic level it provides reports on profitability, distribution effectiveness, and forecasting, and at the tactical level it provides information to decision makers. Decision within the areas of marketing, operations, and finance, and at the operational level, it helps in analyzing data and making decisions in the various daily activities of the organization.
- 5- The strategic map represents a chart that shows the organization's strategy and provides a unified and coherent way to describe that strategy, and shows the missing links between strategy formulation and implementation.
- 6- The main objective of adopting the strategic map is to maximize the value of the organization by integrating all the organization's intangible assets together with the tangible assets and with the strategy and focusing on the critical success factors of the organization.
- 7- The agreement of most of the study sample on their use of business intelligence in the performance of their activities at high levels and the continuous development of business intelligence and the inclusion of its use by most employees in the organization.
- 8- Most of the sample indicated that the departments of the surveyed organizations provide appropriate support for the adoption of business intelligence in those organizations, whether financially or morally, or through the provision of experienced human staff or the use of consultants, as well as creating an organizational culture that supports the adoption of business intelligence.
- 9- The surveyed organizations show great interest in evaluating their performance by adopting financial performance indicators, as there is a relative increase in the level of costing, inventory turnover, and the rate of return on investment.

### **Recommendations :**

The study recommendations were presented to enhance the levels of business intelligence and indicators of the strategic map in the surveyed organizations

- 1- To improve the capabilities of business intelligence in the surveyed organizations with regard to obtaining and processing data and providing information, the researcher suggests the following:
  - a- Determine appropriate periodic periods for data collection and according to specific forms for this purpose
  - b- Using modern technologies in data processing to ensure accuracy and speed in obtaining information and delivering it to the beneficiaries

- 2- Work to attract human staff with experience in the field of business intelligence from academic institutions or other organizations to work in the researched organizations and seek the help of the expertise of consultants in this field.
- 3- The need for the surveyed organizations to periodically and regularly conduct an evaluation of their performance by adopting the performance indicators of the strategic map in the four areas to ensure an accurate and comprehensive evaluation of the performance of those organizations.
- 4- For the purpose of benefiting from the indicators of the strategic map in evaluating organizational performance, it is necessary to conduct a strategic analysis during the construction of the strategic map, and the design of the strategic map and the selection of performance indicators must be in line with the organization's strategy so that the strategic map is a means that helps to communicate the organization's strategy to all employees and facilitate implementation

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