

The Role of Business Intelligence in Enhancing Organizational Excellence Evidence from Real Estate Tax Authority in Grater Cairo

Author Details:

Prof. Dr. Wageeh A. Nafei

University of Sadat City, Menoufia, Egypt

Abstract

The objective of the research is to examine the influence of Business Intelligence (BI) on Organizational Excellence (OE). The research population consists of all employees at Real Estate Tax Authority in Grater Cairo. The researcher adopted a sampling method to collect data for the study. The appropriate statistical methods such as Alpha Correlation Coefficient (ACC), Confirmatory Factor Analysis (CFA), Multiple Regression Analysis (MRA), were used to analyze the data and test the hypotheses.

The research has reached a number of results, the most important of which are (1) organizations do not rely on BI applications and technologies as a repository of data and immediate analytical processing, (2) the organizations operate in a competitive framework, represented by other organizations operating in the Egyptian environment, which makes the organization's environment suitable for using BI and competitive intelligence applications, (3) the low level of the organizations' infrastructure to deal with the field of software that supports BI. Perhaps this is due to the organizations' tendency to deal with technologies that work to accomplish the traditional activities of the organization, (4) the interest in BI was limited to certain aspects, the most important of which is the use of BI in reviewing and completing operations within the organization, while the lesser concerns were related to various aspects, the most important of which is cooperation with individuals inside and outside the organization, and the search for new knowledge, and allowing individuals to learn in multiple locations, (5) attention has been focused on the practice of BI in specific aspects, the most important of which is the focus on ensuring that workers in the organization understand the importance of BI for the success of the organization and considering this concept as part of the organization's culture.

The study referred to a number of recommendations, the most important of which are (1) the necessity of attracting workers with experience and skill in dealing with BI techniques, as well as the possibility of developing workers in the technical field by directing them to participate in training courses in this field, (2) the use of the data warehouse as the most prominent techniques that provide analytical information through which administrative decisions are made, in addition to the analytical and immediate processing of the data and presenting it in an appropriate manner, (3) the necessity of integrating BI techniques in a manner that achieves the highest level of efficiency in exploiting and analyzing data, in order to achieve the highest level of decisions in light of the use of cost-benefit analysis, (4) identify the applications of BI in organizations operating in the same field in order to benefit from them and achieve the highest levels of benefit in this field, (5) the need to pay attention to amending the services provided by banks to their customers, with the aim of making use of BI systems in developing the performance of employees, which leads to the survival, growth, and distinction of the banking sector while it is in the process of providing services to its customers, (6) the necessity to invest in all available resources in a manner that meets the needs and desires of customers on a daily basis, and to work on increasing and diversifying the services provided.

Keywords: Business Intelligence, Organizational Excellence

1. Introduction

The term BI appeared in 1958 when Hans Peter adopted the idea of building an automated system for disseminating information at the level of the organization (Luhn, 1958). However, the real interest in BI began in the late 1980s, as it was the beginning of the shift from focusing on reporting and information to managers to focusing more on situational analysis about how the organization has performed in the past, current performance, and future performance (Ionescu & Podaru, 2014).

Howard Dresner, Chief Executive Officer at Hyperion, is considered the father of the term BI in 1989, which he described as the concepts and methods that are used in the process of improving decision-making at work through the use of supportive systems based on facts (Evans, 2010).

The term BI has been used instead of decision support systems, executive information systems, and management information systems, and in some literature the term BI and analytics (Abai et al., 2016).

Reports indicate that investments in BI tools are expected to double at the service level (Tabbitt, 2013).

In the context of the decision support environment, BI systems have improved the effectiveness of decision-making at different levels in various areas, including the industrial sector in airlines, banking, insurance, finance, securities, manufacturing, and communications (Propovic et al., 2012, Ramakrishnan et al., 2012).

Although many organizations have successfully implemented BI systems in organizational decision-making, decision-making and performance, some organizations have not achieved this (Henshen, 2008).

Researchers have viewed BI from different perspectives, with some researchers studying BI as a tool from a technical perspective (Elbashir, et al., 2008), while others have viewed BI as an approach or a means to support decision-making (Moss & Atre, 2007).

The effectiveness of BI lies in its ability to support the decision-making process within the organization and to provide decision-makers with appropriate and timely information (Massa & Testa, 2005).

Most organizations are striving to understand the increasing diversity, speed, and volume of data that is being produced from internal and external sources. The importance and role of BI in understanding the huge volume of data and helping organizations improve their performance appears (Isik et al., 2013).

A critical component of an organization's success is its ability to make use of all available information (Cody et al., 2002). The ability to collect and analyze data and turn it into information that can be used in a timely manner is not only a necessity for success, but also a necessity for survival (Pirttimaki et al., 2006).

Investing in BI has a high priority in all organizations worldwide (Gartner, 2016), and its global market is expected to reach 22.8 billion dollars in 2020 (Ghosh, 2018).

In the era of globalization and openness that characterizes the world today, Organizational Excellence (OE) has become the subject of wide concern and debate by various researchers. This is because the age of knowledge and information no longer recognizes a typical workforce governed by the traditional job specifications that prevailed in the old bureaucratic hierarchy, but rather depends on the elements that are distinguished by the diversity of knowledge and its diversity as heads and subordinates. The organization's achievement of performance excellence requires its members to move away from everything that is typical and routine in performance and behavior of most organizations and to adopt vital and effective systems (Shelton, et al., 2010).

The tremendous revolution in science and technology, the advancement of communication and information systems, globalization and the increase in competition are among the most important features of the modern era in various fields, whether social, political, economic or administrative. This imposed on the organizations the necessity to strive for excellence in all their activities and operations to ensure their survival and growth (Shelton, et al., 2010).

The distinguished organizations are those organizations that consistently outperform the best global practices in the performance of their tasks, as they link with their clients and dealers with support and interaction relationships, and know the capabilities and capabilities of their competitors and their strengths and weaknesses as well as identify the opportunities and threats that surround them (Gilgeous, 1997).

Distinguished organization is one that is able to collect, manage and use information in order to ensure the achievement of desired goals. The distinguished organization is crystallized through its ability to study the current situation of the organization and external variables through strategic analysis processes, define the foundations and strategic directions, formulate the mission and vision of the organization, define the strategic objectives and lay the foundations and standards for measuring results, and the preparation of strategic plans in light of the objectives in order to exploit opportunities and avoid threats, and develop mechanisms for follow-up and identification of environmental variables and their potential impacts on the organization (Martensen, et al., 2007).

OE is the ability of organizations to contribute strategically by excelling in their performance, solving their problems, and then achieving their goals in an effective manner that distinguishes them from other organizations (Hesslbein & Gohanston, 2002).

2. Literature Review

2.1. Business Intelligence

2.1.1. Business Intelligence Concept

The concepts presented by researchers regarding the term BI have varied and varied, depending on the scientific background or the viewpoint through which this concept is viewed.

Intelligence is the mental energy that we apply to our prior knowledge in order to generate ideas, discover relationships between things, draw conclusions, and solve problems. Intelligence has transferred to organizations and their actions, and organizations have turned to BI or the use of information systems to collect and analyze information from internal and external sources in order to make efficient and effective decisions (Chen, 2016).

BI is the leveraging of software and services to transform data into actionable vision and support strategic and tactical business decisions of the organization (Pratt & Fruhlinger, 2019).

BI is a term that encompasses analytical applications and infrastructure, as well as best practices in creating benefit (Gartner, 2019).

BI is the technologies, applications, and practices for collecting, integrating, analyzing and presenting business information to support better and faster decision-making (Balachandran & Prasad, 2017)

BI is an umbrella term that includes a variety of information technology applications that are used in analyzing the organization's data and communicating it to users (Maheshwari, 2015).

BI is the use of analytical methods with the purpose of using them both now and in the past to predict the future (Alawin & Mayteh, 2014).

BI is a set of technological tools and processes that help convert data into information, information into knowledge, and knowledge transfer to help the organization's strategy for planning and facing competitors (Loshin, 2013).

BI is a set of technologies that help to discover the best data from the huge amount of data to improve the production process (Naraina, 2013).

BI is the process of transforming raw data into useful information in order to create strategic and operational vision on the one hand, and decision-making on the other hand, with the aim of achieving real business benefits (Duan & Xu, 2012).

BI is a set of tools and techniques that help convert a large amount of data from different sources into meaningful information to support decision-making and improve organizational performance (Ramakrishnan et al., 2012).

BI is the computer-based technologies used in identifying, extracting and analyzing business data and using it in making various decisions in an organization with the aim of improving its performance (Kumar, 2012).

BI is the use of technology in the process of retrieving, extracting and analyzing the organization's data in order to produce concise and meaningful information to support decision-making, and this type of intelligence is usually presented in the form of a written report, summary or presentation with diagrams (Barbieri, 2012).

BI is the core of the organization's system, which is based on a series of strategic and tactical steps implemented by technology in terms of providing data and producing analytical results to generate an efficient and effective decision-making process in the business sector, at a time when many organizations seek to explore the vast amount of data. (Karim, 2011).

BI is a term that includes tools, databases, data warehouses, and performance management, all of which are combined into a unified software package (Turban & Volonino, 2011).

BI is a set of processes, tools, and technologies that deal with data and turn it into information, and information into knowledge, and this accumulated experience, as well as the accumulated knowledge, are transformed into sections that are managed intelligently and used in decision-making, building appropriate strategies and tactics (Turban et al., 2011).

BI is a process that focuses on supporting a variety of business functions, and using advanced analytics to create real benefit (Glancy & Yadav, 2011).

BI is a group of programs that collect and analyze data in order to assist workers in the field of making decisions efficiently and effectively (Chaudhuri et al., 2011).

BI is the approach followed by the management of an organization that allows identifying useful information relevant to its decisions (Lloyd, 2011).

BI is a set of tools and practices that help managers and users control business activities, improve organization performance and maintain competitiveness (Matei, 2010).

BI is the use of technologies, applications, and processes to collect, store and analyze data with the purpose of helping its users reach appropriate decisions (Wixom & Watson, 2010)

The steps in analyzing BI systems are to process data with the aim of producing the necessary information for its users. These steps are data collection, data storage, information dissemination and use of information (Kaplan & Norton, 2010).

BI is a set of perceptions, methods, and processes to improve managerial decisions, use information from multiple sources, and apply experiences to develop a correct understanding of business dynamics (Tabatabaei, 2010).

BI is an integrated set of tools, technologies and software used to discover, simplify and analyze information from various sources (Yeoh & Koronios, 2009).

BI is a large group of application programs that are used in data collection, analysis, and storage with the purpose of assisting business practitioners in making better decisions (Watson, 2009).

BI is a set of data repositories related to customers, competitors, the competitive environment and internal processes of the organization, which gives the organization the ability to make decisions efficiently and effectively (Dayal et al., 2009).

BI is a technological method that is used in business management to manage data in order to make better decisions (Rubio et al., 2008).

BI is a description of the applications that are used to collect, analyze and provide data and information in the organization for the purpose of making business decisions in the best possible way (Wu et al., 2007).

BI is the process of properly collecting the right information in the right way and at the right time and delivering the right results to the right people for the purpose of making appropriate decisions (Xu & Kayci, 2007).

BI is a package of new technologies such as data warehouse, real-time analytical processor, and data search that are used in structured data processing and analysis (Haag et al., 2007).

BI is the umbrella that brings together the architecture, tools, database, analytical tools, applications, and methodologies (Turban et al., 2007).

BI is a set of tools and methods that improve executive decision-making, business activities, and increase value in an organization (Zeng et al., 2006).

BI is all that is related to obtaining, accessing, understanding, analyzing and converting one of the basic and valuable assets of the organization, which is raw data into effective information for the improvement of business and decision-making process in the organization (Azvine et al., 2006).

BI is a management philosophy and an essential tool that helps organizations manage and improve information in order to make more effective decisions (Lonnqvist & Pirrtimaki, 2006).

BI is a set of approaches and processes by which raw information is converted into final information that is used in support of strategic, tactical and operational plans in a manner that leads to improved decision-making (Kimball et al., 2005).

BI is a set of software used to rationalize decisions within an organization and increase its effectiveness. This is in addition to providing the latest information on the various commercial actors (Pirrtimaki, 2004).

BI is a set of analytical tools used to understand the capabilities available to the organization, trends in the market, technology used in the environment and the work of competitors, with the aim of providing the necessary information to planners and decision-makers within the organization, with the aim of converting information into a competitive advantage for the organization (Negash, 2004).

BI is a group of processes that convert data into information, as well as convert information into knowledge (Golfarelli et al., 2004).

BI is an information system that allows users to look at data in databases easily and quickly (Turban, 2002).

BI is a purposeful analytical process to collect and accurately analyze information about competitors, markets, and customers to support business decisions or convert data, information and knowledge into actionable value (Kalakota & Robinson, 2000).

2.1.2. Business Intelligence Importance

BI analyzes help to discover important trends, identify the opportunities that can be exploited, as well as the threats that must be faced, and BI helps shape SI analyzes (Fleisher & Bensoussan, 2007).

The benefits of BI are tangible and intangible, and that is why companies invest in it in the hope of a quantum leap in the future (Negash, 2004).

The tangible benefits of BI are to reduce the overall infrastructure costs in the organization by eliminating the data extraction processes that are widespread in the organization that may contain duplicate data. Accessing data from multiple sources in a centralized, single format (Watson & Wixom, 2007).

BI plays an important role in improving organizational performance (Trieu, 2018). It also contributes to improving the operational efficiency of operations, raising the dynamic capabilities necessary to innovate new products or services, enhancing organizational intelligence, and the dynamic organizational structure (Moreno et al., 2018).

BI also helps in making appropriate strategic and operational decisions since it eliminates the method of guessing, in addition to that BI provides more accurate data on various business aspects such as financial data, production, and customers, which helps management in making decisions that are based on reality. It is not just a guess (Moreno et al., 2018).

2.1.3. Business Intelligence Dimensions

There are three dimensions of BI. They are technology, people, and strategic alignment (Torres et al., 2018; Knabke & Olbrich, 2017; Yeoh & Popovič, 2015; Sangari & Razmi 2015; Cosic et al., 2012).

2.1.3.1. Technology

Technology refers to the technological components of a BI system, and includes extracting accurate data from various process systems to be integrated into the data ware house, and using interactive reporting technology to address structural problems.

In addition to that, the use of data mining technology to deal with non-structural problems, and display information according to the user's request for the system, in addition to the necessity of integrating the BI system with other information systems.

BI technology includes data quality from its sources, information query, report generation, data visualization functions, and knowledge discovery by extracting variable information from data in databases (Yeoh & Koronios, 2010). A set of basic elements of technology must be taken into account in the sense that it is one of the basic dimensions of BI and these elements are data quality, reporting and visualization technology, discovery baseness analytic technology, user access, integration with other systems, Systems Integration (Torres et al., 2018).

2.1.3.2. People

The management role is concerned with the necessary support, the skills of the BI team, and the skills of the system user. Individuals include everything related to those related to BI systems, such as senior management, its team, and its users in terms of their predominant technical, managerial and cultural capacity that governs their actions and decisions (Mungree et al., 2013).

There is a set of basic elements for individuals in the sense that it is one of the basic dimensions of BI. These elements are to support the upper management, the team and its skills, the system user and the skills of (Yeoh, & Koronios, 2010).

2.1.3.3. Strategic Alignment

Strategic alignment means undertaking the necessary restructuring to align applications and uses of BI with the objectives of strategic operations in order to support and enhance the operational processes (Watson & Wixom, 2007).

Strategic alignment is the foundation in the governance of information systems, which requires alignment of BI, and business strategy must be aligned with strategies and plans of information technology with strategic business objectives so that information technology provides the ability to provide business value and create a clear vision of BI (Wilkin & Chenhall, 2010).

Strategic alignment means that BI strategies and plans are aligned with the objectives of operations management (Luftman, 2000).

2.2. Organizational Excellence

2.2.1. Organizational Excellence Concept

Excellence can be attained by encouraging workers to participate with their opinions and suggestions in solving the problems they face within the organization, the delegation of authority, freedom and avoidance of excessive instructions, policies and commands control related to their work, freedom to take responsibility to express their views and make their own decisions besides doing their jobs (Simard & Rice, 2006).

Excellence is any act or activity for anyone who wants to enhance and achieve the goals of the organization. OE depends mainly on the competitive strategy of the organization, technology and relationship with customers (Mcgregor, 1994).

The excellent organization is crystallized through the ability to study the current situation of the organization, external variables through strategic analysis processes, specify its foundations and strategic direction, formulate the organization's mission, vision, strategic objectives and lay the foundations and criteria for measuring results. It prepares strategic plans in light of its objectives in order to exploit opportunities and avoid threats. It develops follow-up and identifies the environmental variables and their possible impact on the organization's mechanisms (Bukovec & Markic, 2008).

The excellent organization is able to collect, manage and use information from the organization in order to ensure the achievement of the desired goals (Martensen, et al., 2007).

The excellent organization is constantly superior to the best international practices in the performance of its functions. It is also linked with its customers and clients with relations of support and interaction. It recognizes the capabilities of its competitors; their strengths and weaknesses, as well as the opportunities and threats that surround it (Gilgeous, 1997).

OE means the ability of organizations to create and exploit opportunities, create a stimulating climate and effectively confront various work problems. OE is the organization's ability to create and exploit the opportunities of encouraging climate, in addition to effective confrontation of different problems at work (Grote, 2002).

OE is the ability of organizations to provide development opportunities, and create the conditions that stimulate and correct performance problems, besides facing them effectively. There are several determinants to achieve OE, (1) the existence of a vision in the organization's leadership, (2) focusing on the future, (3) activating the role of knowledge, organizational learning and individual learning (Grote, 2002).

OE in a more comprehensive manner is focusing on all parties and stakeholders, both internal and external. OE is the holistic way of working that achieves the goals of all parties involved in the organization, and thus the potential for long-term success (Eskild, 1999).

OE is a total way of action that leads to the satisfaction of both balance (1) of employees in the organization, (2) customers, (3) the surrounding community, and thus increasing the possibility of success of the organization in the long run (Eskild, 1999).

OE is the pursuit of the organization towards the exploitation of appropriate opportunities through effective strategic planning and shared vision based on clarity of purpose and adequacy of resources to achieve high levels of performance (Burkhart, 1993).

The organization is distinguished by consistently excelling in the performance of its functions, and having good relations with its customers and clients. It should identify the performance of its competitors, strengths and weaknesses, and the circumstances surrounding its environment (Gilgeous & Gilgeous, 1999).

There are several determinants to achieve OE; such as the presence of visionary leadership, focusing on the future through strategic planning, activating the role of knowledge and adoption of organizational learning (Grant, 2000).

The aim of the organizational process excellence is to develop a strong work force having the ability to produce goods and services in a manner that achieves the internal and external consumer expectations. The intrinsic value is to achieve internal and external consumer desires, and to develop awareness towards achieving the objectives of the organization, through (1) energies of creativity and innovation (2) policies and flexible measures (3) skilled leadership to guide and stimulate communication with employees (4) manpower and professionals having a capacity for creativity and innovation (5) a cultural climate that

provides confidence, safety, job satisfaction and real belonging and loyalty to the organization to achieve customer satisfaction (Rahman, 2001).

Performance is high in organizations that contain centers of excellence rather than those organizations that do not include centers of excellence (Frost et al., 2002).

There are a number of steps that must be followed in order to build a distinct organization. They are (1) communicating the vision of leadership with regard to the excellence to all workers in the various levels of management in a clear and specific manner, (2) linking OE and all operations and activities of the organization, (3) understanding the basic capabilities of the organization and evaluation in terms of how optimally such capabilities are exploited in order to achieve excellence, (4) empowering workers and encouraging initiatives, (5) employing a technical image that achieves the highest possible use, (6) dissemination of knowledge among all employees within the organization, and (7) encouraging learning at individual level, group level, and organizational level (Sasmita & Nayantara, 2003).

The shift from traditional management to integration results from the perception of employees that they participate strongly in solving problems, and that the merger turns into excellence. The goal is to get the most productivity, better quality, consumer satisfaction, and excellence to maximize and enhance the overall performance of the organization. This can bring success and gives the authority to make decisions in various business achievements of the organization (Kathryn et al., 2005).

The outstanding management must have a vision that can create a climate of participation and provide assistance to excellence conditions. This also requires a clear strategy, an organizational structure that promotes a sense of responsibility, skills development, keeping channels of communication open, guidance and training of staff as the employees are the key element in the process of excellence. Employees' awareness of excellence enhances the meaning of fidelity, devotion to the attention of customers and their satisfaction (Al-Marri et al., 2007).

2.2.2. Organizational Excellence Dimensions

The dimensions of OE are leaders excellence, subordinates excellence, structure excellence, strategic excellence, and cultural excellence. This can be illustrated as follows (Kandula, 2002; Hesslbein & Gohanston, 2002):

2.2.2.1. Leaders Excellence

Leaders excellence is a set of strategies, skills and behaviors adopted by leaders working in the organization in order to achieve goals efficiently and effectively. Leaders excellence represents the leader's degree of outstanding ability to exploit organizational opportunities, provide development opportunities and accept challenging business in a way that helps the organization to cope with turbulent processes and multiple crises (Hesslbein & Gohanston, 2002).

2.2.2.2. Subordinates Excellence

Subordinates excellence refers to the subordinates having sufficient freedom and independence in performing their work. Creating the methods that they deem appropriate for their work, and that they have sufficient control over what is going on in the workplace, and that they have a feeling that their actions affect what happens in the organization. Subordinates excellence represents the degree to which the members of the organization have distinguished enthusiasm in performing the tasks of the organization by possessing mental capabilities and distinct creative capabilities that help them overcome the obstacles they face without complaining and encouraging others to actively participate that enhances the achievement of the overall goals of the organization (Burkhart, 1993).

2.2.2.3. Structural Excellence

Structure excellence means relying on an organizational structure that is characterized by a degree of flexibility in order to be able to update and seize opportunities, quick decision-making, and lack of commitment to professional work specifications in order to enable team members to monitor their behavior and the behavior of the rest of the workers in the organization. Structure excellence represents the degree of

capacity of the structural framework that links the parts of the organization, defines the relationships between the business, centers and departments, and the expected cooperation between the parts of the organization, and clarifies the lines of authority and responsibility in a way that helps to perform the various activities to achieve the required goals (Batman & Organ, 1991).

2.2.2.4. Strategic Excellence

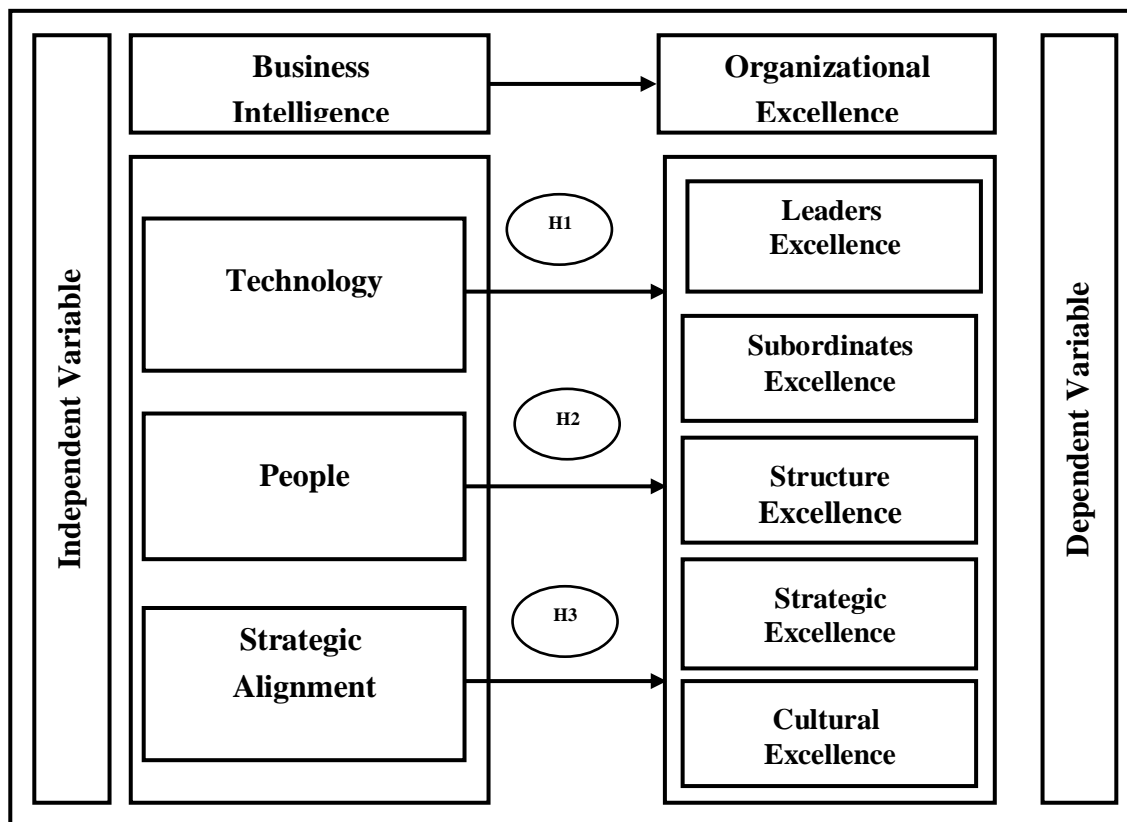
Strategic excellence means that workers in the organization look at its future with a single perspective and a similar vision, in a way that leads to interdependence of relationships, anticipating changes that occur in the environment, until appropriate plans are developed to adapt to it, and a specific plan for the organization that supports training, learning, and innovation is available. Strategic excellence is the degree of distinction of the steps taken by the organization to achieve its vision and mission, and their interaction as a unified, comprehensive and integrated plan linking the advantages of the organization with its strategic ability to face environmental challenges (Kandula, 2002).

2.2.2.5. Cultural Excellence

Cultural excellence means that the organization seeks to achieve its future goals, plan well for the future, follow fair rules and procedures, consider good ideas with an appreciation point, strive to face challenges and deal with them objectively, and face obstacles facing the achievement of the organization’s goals. Cultural excellence represents the degree of conformity of behavior and reflects the distinction of the values and beliefs of individuals with influence in the organization, and includes elements (openness, cooperation, trust, originality, tribal activity, independence and facing problems). These elements contribute to enhancing the effectiveness of human performance (Gupta & Arya, 2003).

3. Research Model

Figure (1) Proposed Comprehensive Conceptual Model



The diagram shows that there are one independent variable of BI. There is one dependent variable of OE. It shows the rational link among the two types of observed variables. The research framework suggests that BI have an impact on OE.

BI is measured in terms of technology, people, and strategic alignment (Torres et al., 2018; Knabke & Olbrich, 2017; Yeoh & Popovič, 2015; Sangari & Razmi 2015; Cosic et al., 2012).

OE is measured in terms of leaders excellence, subordinates excellence, structure excellence, strategic excellence and culture excellence (Kandula, 2002; Hesslbein & Gohanston, 2002).

4. Research Questions

The research problem has two sources. The first source is to be found in previous studies. There is a lack in the number of literature review that dealt with the analysis of the relationship between BI and SI. This called for the researcher to test this relationship in the Egyptian environment.

In light of the review of previous studies, there is a study that aimed to implement the service oriented BI (SOBI) to integrate academic and financial data in the data warehouse. The study found that when implementing SOBI, therefore, Dashboard applications that work to manage the data integration process must be performed, and data integration is usually done on the BI. The service provider can be called by the dashboard application to perform the data retrieval process and transfer it to the data warehouse (Somya, 2018).

There is a study aimed at identifying the effect of BI on BI capabilities. The study found that there is a relationship between the experience of BI employees and the capabilities of BI. The study also indicated that BI can be considered a strategic investment in improving the performance of the organization (Torres et al, 2018).

There is also another study aimed at identifying the effect of BI on artistic creativity. The study found a relationship between the BI dimensions represented in data storage, data mining, and immediate analytical processing on technical creativity in the organization (Irtaimah et al, 2016).

There is a study aimed at identifying the impact of BI on managing organizational performance. The study concluded that BI is considered a basic necessity to assist decision makers in a way that leads to improving organizational performance.

The study also indicated that designing a good BI system is useful to ensure that the organization's performance management is done effectively and more dynamically (Yahaya et al, 2016).

There is a study aimed at identifying the way in which BI can help in knowledge management for employees. The study indicated that BI systems play an important role in achieving a competitive advantage for employees if they are able to employ and exploit BI tools such as data warehouse, data search, data analytical processing, and the process of reading, converting and writing data (Muhammad et al., 2014).

There is another study aimed at developing a framework of critical success factors in BI. The study found some factors that are strongly and successfully linked to the application of BI. These factors are senior management support, the executive sponsor, the clear vision, Managing change, user engagement, aligning BI strategy with business goals, team skills, adequate resources (Mungree et al., 2013).

There is a study aimed at identifying the processes that underlie business administration and the relationship between it and BI. The study found that managing and improving work performance is a prerequisite not only for increasing commercial profitability but also for staying in a competitive and fast-moving business environment (Yan & Xiangjun, 2010).

The second source is the pilot study, which was conducted an interview with (30) employees at Real Estate Tax Authority in Grater Cairo. The researcher found several indicators notably the important role that could be played by BI in affecting OE at Real Estate Tax Authority in Grater Cairo. The research questions are as follows:

Q1: What is the relationship between BI (Technology) and OE at Real Estate Tax Authority in Grater Cairo?

Q2: What is the nature of the relationship between BI (People) and OE at Real Estate Tax Authority in Grater Cairo?

Q3: What is the extent of the relationship between BI (Strategic Alignment) and OE at Real Estate Tax Authority in Grater Cairo?

5. Research Hypotheses

In the light of a review of previous studies, there is another study aimed at identifying the effect of BI on the agile performance of the supply chain. The study concluded that there is a significant relationship between the different dimensions of BI in administrative efficiency, technical competence, cultural

competence and the lean performance of the supply chain which is represented in customer satisfaction, productivity, Sales, delivery, cost, quality, and product development capability (Sangari & Razmi, 2015).

There is a study aimed at identifying the effect of BI on the quality of decision-making. The study found that the existence of BI management has direct and indirect positive effects on data quality and information quality, and that all these factors affect the quality of managerial decision-making (Wieder & Ossimitz, 2015).

There is a study aimed at identifying the nature of the relationship between BI and knowledge management. The study concluded that BI systems play an important role as a tool for knowledge management for workers in the financial sector, and this is in addition to providing benefit to this sector, which is always characterized by the speed of change, as well as the huge size of Data used (Muhammed & et al., 2014).

There is also a study concerned with identifying the potential for BI to reduce the time allocated to decision-making in the organization. The study has found that the decision-making process necessarily leads to changes in the organizational behavior of all individuals working in the organization in a manner that leads to enhancing the quality of business decisions and their approach (Bara & Knezevic, 2013).

There is a study interested in learning about the role of BI in knowledge exchange. The study found that there is a significant impact of real-time analytical processing, data mining, and data warehouse on knowledge sharing. The results also indicated that BI tools had the greatest impact on sharing knowledge, and these tools are represented in the analytical processing of data, searching for it, and extracting it from all sources available to it (Barakat et al., 2013).

There is a study concerned with choosing the relationship between BI and information quality. The study found that the implementation of BI systems positively affects the quality of information. Also, the maturity of BI system affects the quality of the information content and the quality of the methods used (Popovic et al., 2009).

The following hypotheses were developed to decide if there is a significant correlation between BI and OE.

H1: There is no statistically significant relationship between BI (Technology) and OE at Real Estate Tax Authority in Grater Cairo.

H2: BI (People) has no statistically significant effect on OE at Real Estate Tax Authority in Grater Cairo.

H3: There is no relationship between BI (Strategic Alignment) and OE at Real Estate Tax Authority in Grater Cairo.

6. Research Population and Sample

The population of the study included all employees at c at Real Estate Tax Authority in Grater Cairo. The total population is 6665 employees. Determination of respondent sample size was calculated using the formula (Daniel, 1999) as follows:

$$n = \frac{N \times (Z)^2 \times P(1-P)}{d^2 (N-1) + (Z)^2 \times P(1-P)}$$

A number of samples, obtained by 363 employees at Real Estate Tax Authority in Grater Cairo, are shown in Table (1).

Table (1) Distribution of the Sample Size

Real Estate Tax Authority in Grater Cairo	Number of Population	Percentage	Sample Size
1. Cairo	3398	51%	363X 51% = 185
2. Giza	2326	35%	363X 35% = 127
3. Qalyubia	941	14%	363 X 14% = 127
Total	6665	100%	363 X 100% = 363

Source: Personnel Department at Real Estate Tax Authority in Egypt, 2020

Table (2) Frequency Distribution Table of Demographics

Demographic Variables		Number	Percentage
1. Gender	Male	200	%.67
	Female	100	%.33
	Total	300	100%

2. Marital Status	Married	230	%77
	Single	70	%23
	Total	300	100%
3. Age	From 30 to 45	190	%63
	More than 45	110	%37
	Total	300	100%
4. Educational Level	University Education	170	%57
	Post Graduate Studies	130	%43
	Total	300	100%
5. Period of Experience	From 5 to 10	220	%73
	More than 10	80	%27
	Total	300	100%

7. Procedure

The goal of this study was to identify the role of BI in enhancing OE. A survey research method was used to collect data. The questionnaire included three questions, relating to BI, OE, and biographical information of employees at Real Estate Tax Authority in Grater Cairo. About 363 survey questionnaires were distributed. Multiple follow-ups yielded 300 statistically usable questionnaires. Survey responses were 82%.

8. Research Variables and Methods of Measuring

The 15-item scale BI section is based on Torres et al., 2018; Knabke & Olbrich, 2017; Yeoh & Popovič, 2015; Sangari & Razmi 2015; Cosic et al., 2012. There were five items measuring technology, five items measuring people, and five items measuring strategic alignment.

The 25-item scale OE section is based on Kandula, 2002; Hesselbein & Gohanston, 2002. There were five item measuring leaders excellence, five item measuring subordinates excellence, five item measuring structure excellence, five item measuring strategic excellence, and five item measuring cultural excellence (Kandula, 2002; Hesselbein & Gohanston, 2002).

Responses to all items scales were anchored on a five (5) point Likert scale for each statement which ranges from (5) “full agreement,” to (1) for “full disagreement”.

9. Data Analysis and Hypotheses Testing

9.1. Coding of Variables

Table (3) Description and Measuring of the Research Variables

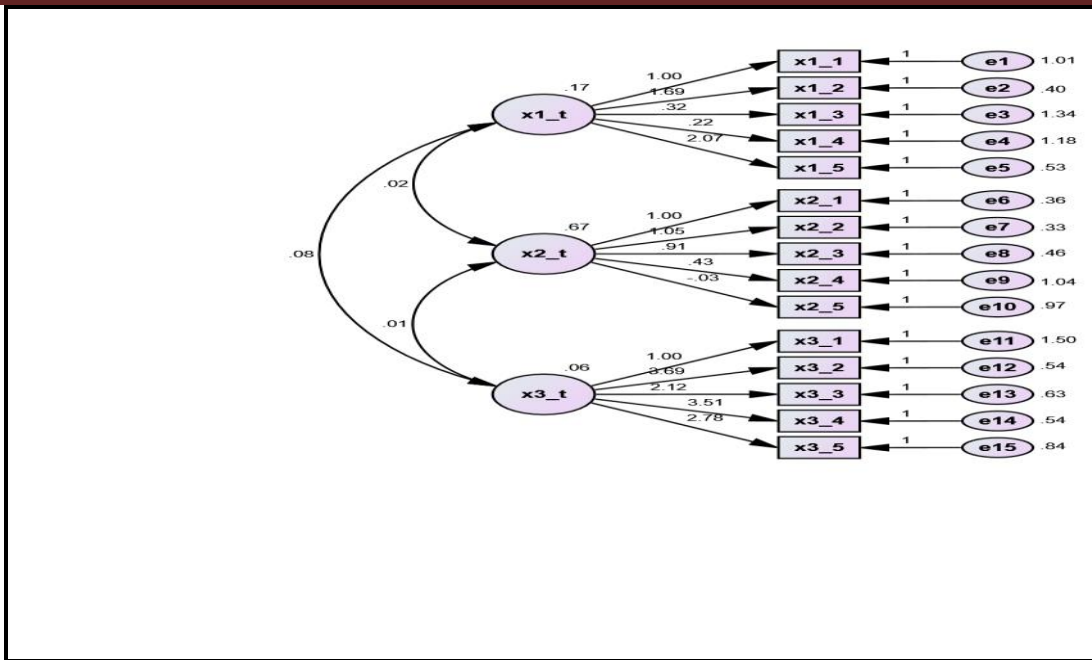
Main Variables		Sub-Variables	Number of Statement	Methods of Measuring Variables
Independent Variable	Business Intelligence	Technology	5	Torres et al., 2018; Knabke & Olbrich, 2017; Yeoh & Popovič, 2015; Sangari & Razmi 2015; Cosic et al., 2012
		People	5	
		Strategic Alignment	5	
		Total BI	15	
Dependent Variable	Organizational Excellence	Leaders Excellence	5	Kandula, 2002; Hesselbein & Gohanston, 2002
		Subordinates Excellence	5	
		Structure Excellence	5	
		Strategic Excellence	5	
		Culture Excellence	5	
Total BD	25			

9.2. Construct Validity

9.2.1. Business Intelligence

The researcher used Confirmatory Factor Analysis (CFA) for BI. This can be illustrated by the following figure:

Figure (2) CFA For BI



From the previous figure, it is clear that all the statement of BI are greater than 0.50, which corresponds to GFI. This is a good indicator of all other statistical analysis. The quality indicators for BI can be illustrated in the following table:

Table (4) Quality Indicators for BI Using AMOS Analysis

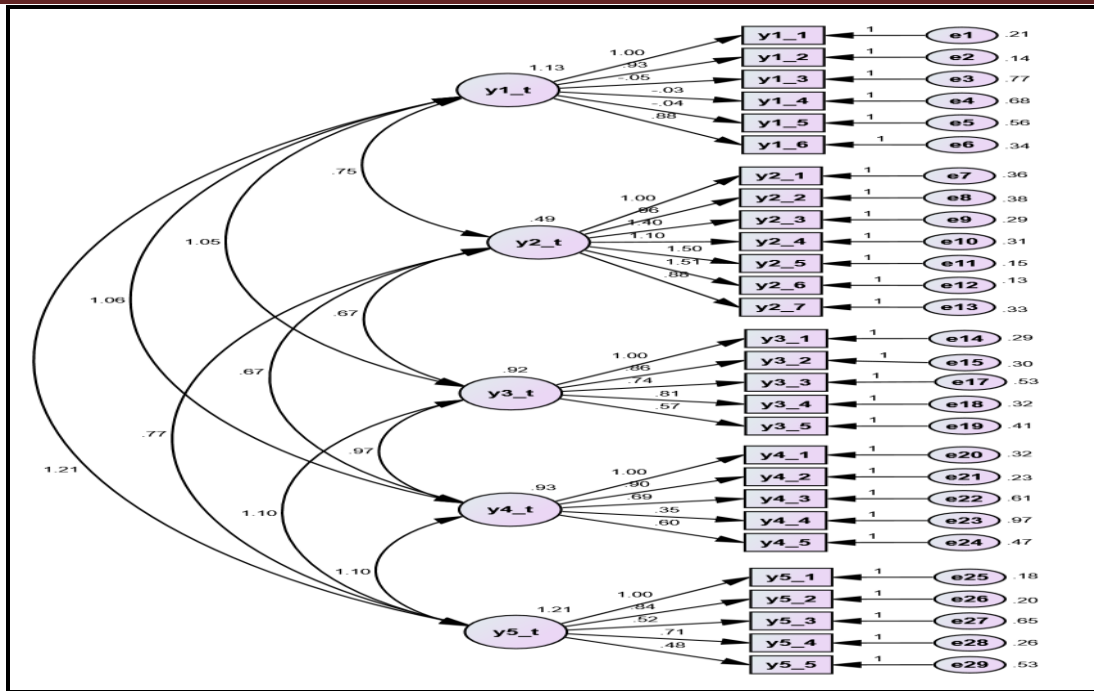
Test the Quality of the Model Acceptance Condition (Daire et al., 2008)	Test Value
X ² / Degree of freedom >5	1090.577
P. value > 0.5	0.000
Goodness of fit Index (GFI) > 0.90	0.717
Tuker-Lewis Index (TLI) > 0.95	0.386
Comparative Fit Index (CFI) > 0.90	0.491
Normed Fit Index (NFI) > 0.90	0.475
Incremental Fit Index (IFI) > 0.95	0.496
Relative Fit Index (RFI) > 0.90	0.366
Root Mean Square Residual (RMR) < 0.5	0.220
Root Mean Square Error of Approximation (RMSEA) < 0.5	0.196

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

9.2.2. Organizational Excellence

The researcher used CFA for OE. This can be illustrated by the following figure:

Figure (3) CFA For OE



According to Figure (2), it is clear that all the statement of OE are greater than 0.50. This is a good indicator of all other statistical analysis. The quality indicators for OE can be illustrated in the following table:

Table (5) Quality Indicators for OE Using AMOS Analysis

Test the Quality of the Model Acceptance Condition (Daire et al., 2008)	Test Value
X ² / Degree of freedom < 5	3655.898
P. value > 0.5	0.000
Goodness of fit Index (GFI) > 0.90	0.435
Tuker-Lewis Index (TLI) > 0.95	0.670
Comparative Fit Index (CFI) > 0.95	0.703
Normed Fit Index (NFI) > 0.90	0.683
Incremental Fit Index (IFI) > 0.95	0.704
Relative Fit Index (RFI) > 0.90	0.648
Root Mean Square Residual (RMR) < 0.5	0.088
Root Mean Square Error of Approximation (RMSEA) < 0.5	0.181

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

9.3. Descriptive Analysis

Table (6) shows the mean and standard deviations of BI and OE

Variables	The Dimension	Mean	Standard Deviation
Biasness Intelligence	Technology	3.74	0.657
	People	3.81	0.659
	Strategic Alignment	3.59	0.743
	Total Measurement	3.71	0.536
Organizational Excellence	Leaders Excellence	3.90	0.578
	Subordinates Excellence	3.44	0.865
	Structure Excellence	3.51	0.818
	Strategic Excellence	3.69	0.792
	Culture Excellence	3.47	0.838
	Total Measurement	3.60	0.737

According to Table (6), most of the respondents identified technology (M=3.74, SD=0.657), people (M=3.81, SD=0.659), strategic alignment (M=3.59, SD=0.743), and total BI (M=3.71, SD=0.536).

Regarding to OE, most of the respondents identified the leaders excellence (M=3.90, SD=0.578), subordinates excellence (M=3.44, SD=0.865), structure excellence (M=3.51, SD=0.818), strategic excellence (M=3.69, SD=0.792), culture excellence (M=3.47, SD=0.838), and total OE (M=3.60, SD=0.737).

9.4. Evaluating Reliability

Table (7) presents the reliability of BI. The 15 items of BI are reliable because the ACC is 0.783. Technology, which consists of 5 items, is reliable because the ACC is 0.570. The 5 items related to people are reliable because the ACC is 0.645. The 5 items related to strategic alignment are reliable because the ACC is 0.677. Thus, the internal consistency of BI can be acceptable.

Table (7) Reliability of BI and OE

Variables	Dimension	Number of Statement	ACC
Business Intelligence	Technology	5	0.570
	People	5	0.645
	Strategic Alignment	5	0.677
	Total Measurement	15	0.783
Organizational Excellence	Leaders Excellence	5	0.634
	Subordinates Excellence	5	0.942
	Structure Excellence	5	0.885
	Strategic Excellence	5	0.837
	Culture Excellence	5	0.886
	Total Measurement	25	0.969

The 25 items of SI are reliable because the ACC is 0.969. Leader excellence, which consists of 5 items, is reliable because the ACC is 0.634. The 5 items related to subordinates excellence are reliable because the ACC is 0.942 while the 5 items of structure excellence are reliable because the ACC is 0.885. The 5 items related to strategic excellence are reliable because the ACC is 0.837 while the 5 items of culture excellence are reliable because the ACC is 0.886. Thus, the internal consistency of OE can be acceptable.

9.5. The Means, St. Deviations and Correlation among Variables

Table (8) Means, Standard Deviations and Intercorrelations among Variables

Variables	Mean	Std. Deviation	BI	OE
Business Intelligence	3.71	0.536	1	
Organizational Excellence	3.60	0.737	0.317**	1

Table (8) shows correlation coefficients between BI and OE. BI is (Mean=3.71; SD=0.536), while OE is (Mean=3.60; SD= 0.737). Also, the correlation between BI and OE is (R=0.317; P <0.01).

9.6. The Correlation between BI and OE

Table (9) Correlation Matrix between BI and OE

Research Variables	1	2	3	4
Technology	1			
People	0.578**	1		
Strategic Alignment	0.527**	0.162**	1	
Organizational Excellence	0.250**	0.168**	0.315**	1

Based on Table (9), correlation between BI (Technology) and OE is 0.250 whereas BI (people) and OE shows correlation value of 0.168. Also, BI (strategic alignment) and OE is 0.315. The overall correlation between BI and OE is 0.317.

9.6.1. Business Intelligence (Technology) and OE

Table (10) MRA Results for Business Intelligence (Technology) and OE

Business Intelligence	Beta	R	R ²
-----------------------	------	---	----------------

(Technology)			
1. BI system uses accurate, error-free data.	0.080	0.187	0.034
2. BI system provides reports for taking quick action to tackle everyday problems.	0.296**	0.343	0.117
3. BI system analyzes historical data to identify trends and detect problems.	0.017	0.018	0.003
4. BI system has the ability to display information as requested by the system user.	0.015	0.019	0.003
5. BI system has the ability to integrate with other information systems.	0.039	0.227	0.051
<ul style="list-style-type: none"> ▪ MCC ▪ DC ▪ Calculated F ▪ Degree of Freedom ▪ Indexed F ▪ Level of Significance 		0.354	
		0.126	
		8.440	
		5, 294	
		3.01	
		0.000	

As Table (10) proves, the MRA resulted in the R of 0.354 demonstrating that the 5 independent variables of BI (Technology) construe OE significantly. Furthermore, the value of R², 5 independent variables of BI (Technology) can explain 0.13% of the total factors in OE level. Hence, 87% are explained by the other factors. Therefore, there is enough empirical evidence to reject the null hypothesis that it said there is no relationship between BI (Technology) and OE.

9.6.2. Business Intelligence (People) and OE

Table (11) MRA Results for Business Intelligence (People) and OE

Business Intelligence (People)	Beta	R	R ²
1. The management of the organization encourages the use of the BI system by the various administrative levels.	0.013	0.054	0.002
2. The management of the organization is interested in making operational improvements through the use of the BI system.	0.029	0.036	0.001
3. The employees in the BI system have the appropriate technical skills.	0.081	0.087	0.007
4. The BI system workers have the ability to provide appropriate solutions.	0.069	0.102	0.010
5. The organization provides appropriate training programs for users of the BI system in a timely manner.	0.266**	0.269	0.072
<ul style="list-style-type: none"> ▪ MCC ▪ DC ▪ Calculated F ▪ Degree of Freedom ▪ Indexed F ▪ Level of Significance 		0.292	
		0.085	
		5.480	
		5, 294	
		3.01	
		0.000	

As Table (11) proves, the MRA resulted in the R of 0.292. This means that OE has been significantly explained by the 5 independent variables of BI (people). As a result of the value of R², the five independent variables of BI (people) justified 8% of the total factors in OE level. So, there is enough empirical evidence to reject the null hypothesis that it said there is no relationship between BI (people) and OE.

9.6.3. Business Intelligence (Strategic Alignment) and OE

Table (12) MRA Results for Business Intelligence (Strategic Alignment) and OE

Business Intelligence (Strategic Alignment)	Beta	R	R ²
1. The organization takes into account the restructuring of BI processes to adapt to the available opportunities.	0.182	0.157	0.024
2. The organization takes into account restructuring the operations of the operational divisions in order to cope with the available opportunities.	0.016	0.173	0.029
3. The organization takes into account that BI applications are compatible with the needs of operational management.	0.054	0.166	0.027
4. The organization takes into account that BI applications are compatible with the objectives of the operational management.	0.065	0.172	0.029
5. The organization is keen that BI is concerned with generating information from it.	0.407**	0.375	0.140

▪ MCC	0.420
▪ DC	0.176
▪ Calculated F	12.588
▪ Degree of Freedom	5, 294
▪ Indexed F	3.01
▪ Level of Significance	0.000

As Table (12) proves, the MRA resulted in the R of 0.420 demonstrating that the 5 independent variables of BI (strategic alignment) construe OE significantly. Furthermore, the value of R^2 , 5 independent variables of BI (strategic alignment) can explain 0.18% of the total factors in OE level. Hence, 82% are explained by the other factors. Therefore, there is enough empirical evidence to reject the null hypothesis that it said there is no relationship between BI (strategic alignment) and OE.

10. Research Results

By reviewing the results of testing the research hypothesis, the study reached a set of results which will be reviewed and discussed as follows:

1. Real Estate Tax Authority in Grater Cairo do not rely on BI applications and technologies as a repository of data and immediate analytical processing. Perhaps this is due to the low knowledge of workers about these applications as one of the directions that beneficiaries must deal with.
2. Real Estate Tax Authority in Grater Cairo operate in a competitive framework, represented by other organizations operating in the Egyptian environment, which makes the organization's environment suitable for using BI and competitive intelligence applications.
3. The low level of the Real Estate Tax Authority in Grater Cairo infrastructure to deal with the field of software that supports BI. Perhaps this is due to the organizations' tendency to deal with technologies that work to accomplish the traditional activities of the organization.
4. The interest in BI was limited to certain aspects, the most important of which is the use of BI in reviewing and completing operations within the organization, while the lesser concerns were related to various aspects, the most important of which is cooperation with individuals inside and outside the organization, and the search for new knowledge, and allowing individuals to learn in multiple locations. Perhaps this is due to the leaders' lack of interest in adopting BI in the completion of activities and processes within the organization, in addition to the lack of technical personnel necessary to manage and operate BI systems in the organization.
5. Attention has been focused on the practice of BI in specific aspects, the most important of which is the focus on ensuring that workers in the organization understand the importance of BI for the success of the organization and considering this concept as part of the organization's culture. Therefore, the organization focused on the need to support the top management in achieving the role of BI in the success of the organization. As for the aspects that received a lesser level of attention, they were represented in the organization's management expecting a high level of participation in the development and exchange of experiences in the field of BI.
6. The interest of Real Estate Tax Authority in Grater Cairo in the vital role played by BD technology and BI in transforming data into information, which is the first step in knowledge management, as well as the extent of organizations' interest in all methods and procedures related to improving performance in the organization.
7. Real Estate Tax Authority in Grater Cairo use data from a variety of sources, and that is why organizations are keen to use BD technology to link their various data sources, store them, and facilitate the speed of their analysis, with the aim of studying them and making use of them in all the different work in the organization.
8. Real Estate Tax Authority in Grater Cairo adopt many data analyzes that help them in analyzing what happened in the past regarding customers in terms of their desires and needs, and predicting what will happen in the future.
9. The operational management in Real Estate Tax Authority in Grater Cairo seeks to improve the quality of the services they provide as a major factor in achieving customer satisfaction, as well as the desire to increase the size of their customers, which leads to a reduction in the cost of producing their services on the one hand, and the speed in delivering the service with the required specifications on the other hand.

10. There is a conviction from the operational management that BI plays an important role in improving and developing the operational performance in the organization, in addition to the interest of the operational management in the necessity and importance of effective use of BI in order to make the appropriate decision at the appropriate time.

11. Research Recommendations

In the light of the previous results, the researcher concluded with a set of recommendations summarized as follows:

1. The necessity of attracting workers with experience and skill in dealing with BI techniques, as well as the possibility of developing workers in the technical field by directing them to participate in training courses in this field.
2. The use of the data warehouse as the most prominent techniques that provide analytical information through which administrative decisions are made, in addition to the analytical and immediate processing of the data and presenting it in an appropriate manner.
3. Identify the applications of BI in Real Estate Tax Authority in Grater Cairo operating in the same field in order to benefit from them and achieve the highest levels of benefit in this field.
4. The necessity of integrating BI techniques in a manner that achieves the highest level of efficiency in exploiting and analyzing data, in order to achieve the highest level of decisions in light of the use of cost-benefit analysis.
5. The need to pay attention to amending the services provided by banks to their customers, with the aim of making use of BI systems in developing the performance of employees, which leads to the survival, growth, and distinction of the banking sector while it is in the process of providing services to its customers.
6. The necessity to invest in all available resources in a manner that meets the needs and desires of customers on a daily basis, and to work on increasing and diversifying the services provided.
7. Interest in designing flexible organizational structures with which the organization's management can respond to the increasing changes in the market on the one hand, and strengthening its position in the application of BI systems on the other hand.
8. Work to form communication networks with academic institutions, whether universities, research centers or others, with the aim of getting acquainted with what is new in the field of BI systems and benefiting from them.
9. Conducting more studies and research in the field of BI and making use of it in developing, improving and diversifying the services provided by the organization.
10. The need for Real Estate Tax Authority in Grater Cairo to pay attention to employing BI tools in building strategic information systems and activating their role in all different areas in the organization.
11. Benefiting from the experiences of developed Real Estate Tax Authority in Grater Cairo and countries in building and employing BI tools and making use of available technologies, developing them and supporting them in a manner that leads to efficient and effective use of them.
12. The need for higher management in the Real Estate Tax Authority in Grater Cairo to pay attention to the mechanism of obtaining information from the various parties, so that this information is stored in the organization's storage warehouses after verification, collection and transfer so that the organization can use it well in all its decisions.
13. Increasing the interest of senior management in generating knowledge from employees and converting it into tacit knowledge, through which it is possible to achieve competitive excellence and excellence for the organization.
14. The need to pay attention to the causes of the decline in interest in the BI system by strengthening the relationships between all existing information systems in the organization, and choosing modern technology in collecting information, in addition to working to exploit the implicit knowledge possessed by workers in the organization, which leads to building learning organization.
15. The necessity of investing the progress made between the BI system in enhancing knowledge transfer processes on the basis that it is the main gateway to achieving the learning organization, by identifying the necessary resources for the development of the organization, and the optimal investment for the BI

system in knowledge acquisition and sharing among users in a manner that allows the organization to diversify Its informational resources.

16. Increasing attention to the need to build the technical capabilities of individuals working in the field of information technology, through specialized training courses that increase their capabilities and skills in the field of BI technology.
17. The necessity and importance of spreading a culture of reliance on data among the organization's personnel in a manner that leads to the exploitation of the capabilities provided by both BD and BI in improving the performance of all different operations of the organization.
18. The necessity of holding training courses and workshops at the level of the operational departments in the organization in order to identify the importance of data and BI and their role in improving the operational performance of the organization.
19. Seeking for ways and means to achieve the objectives of the organization so as to ensure survival and continuance, and perhaps Management Excellence is the perfect choice to make it happen.
20. Creating a culture of excellence among workers, and drawing their attention to customer service. Given that excellence is based primarily on this aspect, it can not be achieved only by creating a positive difference from competitors.
21. Translating the organization's vision into a set of objectives, policies and activities in order to achieve OE, through activating the channels of communication within the organization so that there is clarity and a common understanding of the organization's vision among all employees.
22. Strengthening the core capabilities of the organization, which include knowledge and skills, to achieve OE and create value at the client. This is through the employment of the strengths of the organization to gain a competitive advantage, in addition to prioritizing activities that add value to the services provided by the organization to clients.
23. There is an urgent need that the organization reconsider its perceptions and understanding of the role of the client. This is because excellence does significantly depend on the customer. Therefore, he must be treated well, besides, meeting his needs and expectations.

12. Future Studies

The present study attempts to reveal the dimensions of BD and its impact on the dimensions of the BI, but the scope of this study, the methods used and its findings indicate that there are areas for other future studies.

Among these research areas are (1) the impact of BD on BI in different sectors, (2) the effect of BI on SI, (3) the impact of BI on organizational excellence, (4) the impact of BI on strategic success, (5) the impact of BI on organizational prowess, (6) the role of BD and BI in improving operational performance, (7) the role of SI in facing crises, (8) The role of SI in human capital management, (9) the relationship between SI and some other concepts such as strategic thinking, strategic management, (4) the reality of SI in the banking sector (10) the impact of SI in achieving institutional excellence, (11) The role of strategic knowledge in enhancing SI.

References

- i. Abai, N. Hani, N. Yahaya, J. and Deraman, A. (2016). *Business Intelligence and Analytics in Managing Organizational Performance: The Requirement Analysis Model. Journal of Advances in Information Technology*, 7(3), PP. 208-213.
- ii. Alawin, A. and Mayteh, M. (2014). *Proposed Ranking for Point of Sales using data mining for telecom operators, International Journal of Database Management Systems (IJDMS)*, 6(3). PP.17-31.
- iii. Al-Marri K., Abdel Moneim M. Baheeg A., Mohamed Z., (2007). *Excellence in service: an empirical study of the UAE banking sector. International Journal of Quality and Reliability Management*, 24(2): 164-176.
- iv. Azvine, B. Cui, Z. Nauck, D. Majeed, B. (2006). *Real Time Business Intelligence for the Adaptive Enterprise, IEEE Joint Conference: The 8th IEEE International Conference on E- Commerce*

- Technology and the 3rd IEEE International conference on Enterprise computing, E- Commerce, and E-Services (CEC/EEE,06) IEEE, San Francisco, California.*
- v. *Balachandran, B and Prasad, S. (2017). Challenges and benefits of deploying big data analytics in the cloud for business intelligence. Procedia Computer. Science, 112(1), PP.112-1122.*
- vi. *Bara D. and Knezevic, N. (2013). The Impact Of Right-Time Business Intelligence On Organizational Behavior," Interdisciplinary Management Research, Josip Juraj Strossmayer University of Osijek, Faculty of Economics, Croatia, vol. 9, pages 27-42.*
- vii. *Barakat S. Al-Zu'bi H. Al-Zegaier H. (2013). The role of business intelligence in knowledge sharing: a Case Study at Al-Hikma Pharmaceutical Manufacturing Company, European Journal of Business and Management, Vol.5, No.2, PP.237-243.*
- viii. *Barbieri, D. (2012). Business Intelligence and its Applications to the Public Administration, Journal of Business Management and Applied Economics, PP1-9.*
- ix. *Batman, T. and Organ, D. (1991). Jop Satisfaction and The Cood Solider: The Relationship between Affect and Employee Citizenship, Academy of Management Journal, 26.*
- x. *Bukovec, B., and M. Markič M. (2008). 'The Level of Integration of Various Models for Organizational Change Management in Slovenian Organizations. International Journal of Business and Systems Research 2(4), PP. 431–46*
- xi. *Burkhart, P., (1993). Successful Strategic Planning: A Guide For Nonprofit Agencies and Organizations, Newbury Park CA: Sage Publications.*
- xii. *Chaudhuri, S., Dayal U., and Narasayya, V. (2011). An overview of business intelligence technology. Communications of the ACM, 54(8), PP.88-89.*
- xiii. *Chen, C. (2016). Use cases and challenges in telecom big data analytics, APSIPA Transactions on Signal and Information Processing, 5(1), PP.1-7.*
- xiv. *Cody, W., Kreulen, J., Krishna, V., and Spangler, W. (2002), The integration of business intelligence and knowledge management, IBM Systems Journal, 41(4), 697-713*
- xv. *Cosic, R., Shanks, G., and Maynard, S. (2012). Towards a business analytics capability maturity model. Proceeding of 23rd, Australasian Conference on Information Systems, Geelon, Australia.*
- xvi. *Dayal, U., Castellanos, M., Simitsis, A. and Wilkinson, K. (2009). Data integration flows for Business Intelligence. Proceedings of the 12th International Conference on Extending Database Technology: Advances in Database Technology (EDBT '09), Martin Kersten, Boris Novikov, Jens Teubner, Vladimir Polutin, and Stefan Manegold (Eds.). New York, USA, PP. 1-11.*
- xvii. *Duan, L., and Xu L.D. (2012). Business intelligence for enterprise systems: a survey, Industrial Informatics, IEEE Transactions on Industrial Informatics, 8(3), PP. 679- 687.*
- xviii. *Elbashir Z., Collier A., and Davern J. (2008). Measuring the Effects of Business Intelligent Systems: The Relationship between Business Process and Organizational Performance". International Journal of Accounting Information Systems, (9), PP. 135-153.*
- xix. *Eskild, D. and Adders, D. (1999). The Impact of Creativity and Learning on Business Excellence, Total Quality Management, Vol.10, No.3: 259-266.*
- xx. *Evans, P. (2010). Business Intelligence is a Growing Field. Data Base Journal. Retrieved January 12, 2019 from, Available at: www.databasejournal.com/features/article.php/3878566/Business-Intelligence-is-a-Growing-Field.htm.*
- xxi. *Fleisher, C. and Bensoussan, B. (2007) Business and Competitive Analysis: effective application of new and classic methods. Upper Saddle River: FT Press.*
- xxii. *Frost, T., Birkinshaw J., and Ensign P., (2002). Centers of Excellence in Multinational Corporation, Strategic Management Journal, 23(11): 997-1018.*
- xxiii. *Gartner (2016). Gartner Says Worldwide Business Intelligence and Analytics Market to Reach \$16.9 Billion in 2016. Retrieved January 7, 2019 from: <https://www.gartner.com/en/newsroom/press-releases/2016-02-03-gartner-says-worldwide-business-intelligence-and-analytics-market-to-reach-17-billion-in-2016>*
- xxiv. *Gartner (2019). Business Intelligence (BI). Retrieved January 6, 2019 from: <https://www.gartner.com/it-glossary/business-intelligence-bi/>*

- xxv. Ghosh, P. (2018). *Business Intelligence and Analytics Trends in 2018*. Retrieved February 12, Available at: <http://www.dataversity.net/business-intelligence-analytics-trends-2018/>.
- xxvi. Gilgeous V., Gilgeous, M., (1999). *A framework for manufacturing excellence, Integrated Manufacturing Systems*, 10 (1) PP. 33-44.
- xxvii. Gilgeous, V. (1997). *Operations and Management Change*", London: Pitman.
- xxviii. Glancy, F. and Yadav, S. (2011). *Business Intelligence Conceptual Model, International Journal of Business Intelligence Research*, 2(2), PP. 48-66
- xxix. Golfarelli, M, Rizzi, S and Cella, I., (2004). *Beyond data warehousing: what's next in business intelligence? Washington, DC, USA, 7th ACM international workshop on Data warehousing and OLAP*.
- xxx. Grant, Robert (2000). *Contemporary Strategy Analysis*, Oxford, UK.
- xxxi. Grote, D. (2002). *The Performance Appraisal Question and Answer Book Survival Guide for managers*, U.S.A.
- xxxii. Gupta, R. and Arya, P. (2003). *Human Resource Management and Accounting, India at Elegant Printers*.
- xxxiii. Haag, S. Cummings, M. and Phillips, A. (2007). *Management Information Systems*, 6th ed, Irwin McGraw-Hill, New York, U.S.A
- xxxiv. Henshen, D. (2008). *Special Report: Business Intelligence Gets Smart. Information Week*.
- xxxv. Hesslbein, F, and Johnston, R, (2002). *On Mission and Leadership: A Leader to Leader Guide*, U.S.A.
- xxxvi. Ionescu, B., and Podaru, S. (2014). *Business Intelligence. A Presentation of the Current Lead Solutions and a Comparative Analysis of the Main Providers. Database Systems Journal*, 5 (2), PP.60-69.
- xxxvii. Isik O., Jones C., and Siorova A. (2013). *Business Intelligence Success: The Roles of BI Capabilities and Decision Environments. Information & Management*, (50), PP. 13-23.
- xxxviii. Kalakota, R., and Robinson, M. (2000). *E-business: Roadmap for success. Addison-Wesley*.
- xxxix. Kandula, S. (2002). *Strategic Human Resource Development*", Meenakshi Printers, Delhi
- xl. Kaplan R. and Norton D. (2010). *Le tableau de bord prospectif*, ed. Eyrolles, Paris, France.
- xli. Karim, A. (2011). *The value of Competitive Business Intelligence System (CBIS) to Stimulate Competitiveness in Global Market, International Journal of Business and Social Science*, Vol. 2, No. 19, PP. 196-203.
- xlii. Kathryn B., Anne W., Stanislav K., May A., (2005). *Evolution towards excellence: use of business excellence programs by Canadian organizations, Measuring Business Excellence*, 9(4): 4-15.
- xliii. Kimball, R. Reeves, L. Ross, M. and Thornthwaite, W. (2005), *The data warehouse: Guide de conduit de project*, ed. Eyrolles, Paris, France.
- xliv. Knabke, T., and Olbrich, S. (2017). *Building novel capabilities to enable business intelligence agility: results from a quantitative study. Information Systems and e-Business Management*. 16(3), PP.493–546.
- xlv. Kumar, P. (2012). *Impact of Business intelligence in India, Telecom Industry, Business Intelligence Journal*, July, Vol.5 No.2. poonamkumar123@gmail.com
- xlvi. Lioyd, J. (2011). *Identifying Key Components of Business Intelligence Systems and Their Role in Managerial Decision making, Master of Applied Information Management Program, University of Oregon*.
- xlvii. Lonnqvist, A., and Pirttimaki, V. (2006). *The measurement of business intelligence. Business Intelligence*, 23 (1), PP.32-40.
- xlviii. Loshin, D. (2013). *Business Intelligence The Savvy Managers Guide, Elsevier Morgan Kaufmann Publisher, USA*.
- xliv. Luftman, J. (2000). *Assessing Business-IT Alignment Maturity. Communications of the Association for Information Systems*, 4, <https://doi.org/10.17705/1CAIS.00414>
- l. Luhn, H. (1958). *A Business Intelligence System. IBM Journal of Research and Development*, 2(1), PP.314-319.

- li. Maheshwari. (2015). *A. Business Intelligence and Data Mining*. - New York: Business Expert Press, LLC.
- lii. Martensen, A. Jens, J. and Dahlgard, S. (2007). *Measuring and diagnosing innovation excellence: Simple Conta advanced Approached: A Danish Study*, *Measuring Business Excellence*, 11(4), PP. 51-65.
- liii. Massa, S., and Testa S. (2005). *Data Warehouse-In-Practice: Exploring the Function of Expectations in Organizational Outcomes*". *Information Management*, (42), PP. 709-718.
- liv. Matei, G., (2010), *a collaborative approach of business intelligence systems*, *Journal of Applied Collaborative Systems*, Vol. 2, No 2, PP.91-101.
- lv. Mcgregor, B., (1994). *Public Service Status Review The Excellence Agend*, *Public Administration*, 54(3): 296-301.
- lvi. Moreno, V. Carvalho, W., and Cavazotte, F. (2018). *Does Business Intelligence and Analytics Leverage Dynamic and Operational Capabilities? An Empirical Study in a Brazilian Telecommunications Company*. *Twenty-fourth Americas Conference on Information Systems*, New Orleans, 6(1), PP.1-10
- lvii. Moss, T., and Atre S. (2007). *Business Intelligence Roadmap*. Boston: Pearson Education Inc.
- lviii. Muhammad, G., Ibrahim, J., Bhatti, Z., and Waqas, A. (2014). *Business Intelligence as a Knowledge Management Tool in Providing Financial Consultancy Services American*, *Journal of Information Systems*, 2(2), PP.26-32.
- lix. Mungree, D. Rudra, A. and Morien, D. (2013). *A Framework for Understanding the Critical Success Factors of Enterprise Business Intelligence Implementation*, *Proceedings of the Nineteenth Americas Conference on Information Systems; Chicago, Illinois, AMCIS*, PP. 1–9.
- lx. Naraina A. (2013). *Business Intelligence, UniSa, Stu Docu*, Available <https://www.studocu.com/row/user/264074> 8
- lxi. Negash, S. (2004). *Business Intelligence. Communications of the Association for Information Systems*, 13, PP. 199-195, <https://doi.org/10.17705/1CAIS.01315>
- lxii. Pirttimäki, V. (2004). *The Roles of Internal and External Information in Business Intelligence*, *Frontiers of E-Business Research*, PP. 385-396.
- lxiii. Pirttimäki, V., Lönnqvist, A., and Karjaluoto, A. (2006). *Measurement of Business Intelligence in a Finnish Telecommunications Company*. *The Electronic Journal of Knowledge Management*, 4(1), PP. 83-90.
- lxiv. Popovic A., Hackney R., Coelho S. and Jaklic J. (2012). *Towards Business Intelligence Systems Success: Effects of Maturity and Culture on Analytical Decision Making*". *Decision Support Systems*, (54), PP. 729-739.
- lxv. Popovič, A. Coelho, P. and Jaklič, J. (2009). *The Impact of Business Intelligence System Maturity on Information Quality (December 21, 2009)*. *Information Research*, Vol. 14, No. 4, Available at SSRN: <https://ssrn.com/abstract=1625573>.
- lxvi. Pratt M and Fruhlinger. J. (2019). *What is business intelligence? Transforming data into business insights*. - *cio.com*, Available at: <https://www.cio.com/middle-east/>
- lxvii. Rahman S. (2001). *Total quality management practices and business outcome: evidence from small and medium enterprises in Western Australia*, *Total Quality Management*, Volume 12, Number 2, 1 March 2001, PP. 201-210.
- lxviii. Ramakrishnan T., Jones C. and Sidorova A. (2012). *Factors Influencing Business Intelligence (BI) Data Collection Strategies: An Empirical Investigation*. *Decision Support Systems*, 52, PP. 486-496.
- lxix. Rubio, J. and Crawford, B. (2008), *An approach towards the integration of Adaptive Business Intelligent and Constraint Programming*, Hyderabad, India, *International Symposiums on Information*.
- lxx. Sangari, M. and Razmi, J. (2015). *Business intelligence competence, agile capabilities, and agile performance in supply chain: An empirical study*, *The International Journal of Logistics Management*, 26 (2), PP. 356-380. <https://doi.org/10.1108/IJLM-01-2013-0012>.
- lxxi. Sasmita P., Nayantara P., (2003). *Measuring effectiveness of TQM training: an Indian study* *International Journal of Training and Development*, 7 (3), 203–216.

- lxxii. Shelton, C.; Darling, J and Walker, W. (2010). *Foundations of Organizational Excellence: Leadership Values, Strategies, and Skills*. LTA, (1)2, 46-63.
- lxxiii. Simard C., and Rice R., (2006). *Managerial information behaviour: Relationships among Total Quality Management orientation, information use environments, and managerial roles*. *Total Quality Management and Business Excellence*. 17 (1): 79-95.
- lxxiv. Somya R. Manongga, D. Pakereng M. (2018). *Service-Oriented Business Intelligence (SoBI) for Academic and Financial Data Integration in University*, *International Seminar on Application for Technology of Information and Communication*, PP.1-5.
- lxxv. Tabbitt, S. (2013). *BI Services Market Predicted to Double by 2016*, *Information Week*, (2013).
- lxxvi. Tabtabaei, S. (2010). *Evaluation of Business intelligence Maturity Level in Iranian Banking industry*, *MASTER THESIS*, Tarbiat Modares University Faculty of Engineering Department Industrial Engineering Lulea University of Technology, Iran.
- lxxvii. Torres, R., Sidorova, A., and Jones, M. (2018). *Enabling firm performance through business intelligence and analytics: A dynamic capabilities perspective*. *Information & Management*. doi:10.1016/j.im.2018.03.010
- lxxviii. Trieu, V. Cockcroft, S. and Perdana, A. (2018). *Decision-Making Performance in Big Data Era: The Role of Actual Business Intelligence Systems Use and Affecting External Constraints*. *Research-in-Progress Papers*. 38. https://aisel.aisnet.org/ecis2018_rip/38.
- lxxix. Turban, E. Liang, J. Sharda, R. (2007). *Decision Support and Business Intelligence Systems*, Eighth Edition, Prentice Hall, New Jersey.
- lxxx. Turban, E., and Volonino, L. (2011). *Information Technology for Management: Improving Strategic and Operational Performance*, 8th Ed., Wiley, Hoboken, New Jersey.
- lxxxi. Turban, E., Sharda, R., Aronson, J, and King, D. (2011). *Business Intelligence: A Managerial Approach*, Prentice Hall.
- lxxxii. Watson H. and Wixom, B. (2007). *The Current State of Business Intelligence*, *IEEE Computer*, Vol. 40, No. 9, PP. 96-99. doi:10.1109/MC.2007.331
- lxxxiii. Watson, H. (2009). *What is new and important in Business Intelligences*, *ITI'09, 31st International Conference on Information Technology Interfaces*.
- lxxxiv. Wilkin, C. and Chenhall, R. (2010). *A Review of IT Governance: A Taxonomy to Inform Accounting Information Systems*. *Journal of Information Systems: Fall* Vol. 24, No. 2, PP. 07-146.
- lxxxv. Wixom, B. and Watson, H. (2010). *The BI-based organization*. *International Journal of Business Intelligence Research*, 1(1), PP.13-28.
- lxxxvi. Wu, L. Barash, G. Bartolini, C. (2007). *Service-oriented Architecture for Business Intelligence*, Berlin: Springer.
- lxxxvii. Xu, M. and Kaye, R. (2007). *The Nature of Strategic Intelligence, Current Practice and Solutions*, In Xu, M. (Ed). *Managing strategic intelligence*. PP. 36-53. Hershey, PA: Information Science Reference.
- lxxxviii. Yan S. and Xiangjun L. (2010). *The Role of Business Intelligence in Business Performance Management*, 3rd International Conference on Information Management, Innovation Management and Industrial Engineering.
- lxxxix. Yeoh, W. and Koronios, A. (2010). *Critical success factors for business intelligence systems*, *Journal of computer information systems*, 50 (3), PP.23-32, URL: <https://pdfs.semanticscholar.org/7a66/7cdb124e404be1f0152260eade99b1f8d217.pdf>.
- xc. Yeoh, W., and Popovič, A. (2015). *Extending the understanding of critical success factors for implementing business intelligence systems*. *Journal of the Association for Information Science and Technology*, 67(1), 134-147.
- xc. Zeng, L. Xu, Lida, S. Shi, Z. Wang, M. and Wu, W. (2006). *Techniques, Process, and Enterprise Solutions of Business Intelligence*, *SMC '06. IEEE International Conference on, Systems, Man and Cybernetics*, PP. 4722-4726.