The Eleventh Study

The Role of Business Intelligence Systems in Building Organizational Ambidexterity at Lebanese Private-Sector Companies

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Abstract

This study aimed to investigate the reality of applying the dimensions of business intelligence systems in Lebanese private sector companies, investigate the levels of achieving organizational ambidexterity in Lebanese private sector companies, and investigate whether a statistically significant correlation exists between the application of the dimensions of business intelligence systems and the levels of organizational ambidexterity in Lebanese private sector companies. The population of the study consisted of all employees in Lebanese private sector companies, and the researchers selected a random sample of (80) employee from Nomil for Building and Construction to represent the population. The study adopted the analytical descriptive research methodology, and data was collected using questionnaires. Findings of the study include the following: "the reality of applying the dimensions of business intelligence systems in the company" was (high) from the respondents' point of view; "Levels of organizational ambidexterity in the company" had a (high) degree from the respondents' point of view; and there is a statistically significant correlation at the significance level (0.05) between the total degree of "the reality of applying the dimensions of business intelligence systems" and the degree of organizational prowess among the employees of the company Nomil for Building and Construction. Findings of the study include the following: leaders should provide constructive criticism, and to be characterized by cooperation and appreciation of the efforts of employees, and the ability to build a team and work through the group; it is important to increase the knowledge capabilities and skills of senior leaders, supervisors and employees within Lebanese business organizations with the characteristics and importance of applying business intelligence systems; and it is imperative to develop and consolidate the capabilities of employees within Lebanese companies and private organizations with regard to achieving organizational ambidexterity.

Keywords: Business Intelligence Systems - Organizational Ambidexterity - Private-Sector Companies – Lebanon.

الملخص:

هدفت هذه الدراسة إلى التحقيق في واقع تطبيق أبعاد أنظمة ذكاء الأعمال في شركات القطاع الخاص اللبنانية ، والتحقيق في مستويات تحقيق البراعة التنظيمية في شركات القطاع الخاص اللبنانية ، والتحقيق في وجود علاقة ذات دلالة إحصائية بين تطبيق أبعاد الأعمال. أنظمة الاستخبارات ومستويات البراعة التنظيمية في شركات القطاع الخاص اللبناني. تألف مجتمع الدراسة من جميع العاملين في شركات القطاع الخاص اللبناني ، واختار الباحثون عينة عشوائية قوامها (٨٠) موظفًا من شركة نوميل للبناء والتشييد لتمثيل السكان. اعتمدت الدراسة منهج البحث الوصفي التحليلي ، وتم جمع البيانات باستخدام الاستبيانات. وقد تضمنت نتائج الدراسة ما يلي: "كان واقع تطبيق أبعاد أنظمة ذكاء الأعمال في الشركة (مرتفعًا) من وجهة نظر المبحوثين. كانت "مستويات البراعة التنظيمية في الشركة" درجة (عالية) من وجهة نظر المستجيبين ؛ وهناك علاقة ارتباطية ذات دلالة إحصائية عند مستوى الدلالة (٠.٠٥) بين الدرجة الكلية لـ "واقع تطبيق أبعاد أنظمة ذكاء الأعمال" ودرجة البراعة التنظيمية لدى موظفي شركة نوميل للبناء والتشييد. تشمل نتائج الدراسة ما يلي: يجب على القادة تقديم النقد البناء ، وأن يتسموا بالتعاون وتقدير جهود الموظفين ، والقدرة على بناء الفريق والعمل من خلال المجموعة. من المهم زيادة القدرات المعرفية والمهارات لكبار القادة والمشرفين والموظفين داخل منظمات الأعمال اللبنانية بخصائص وأهمية تطبيق أنظمة ذكاء الأعمال ؛ ولا بد من تطوير وتعزيز قدرات الموظفين داخل الشركات والمؤسسات اللبنانية فيما يتعلق بتحقيق البراعة التنظيمية.

الكلمات المفتاحية: أنظمة ذكاء الأعمال ـ البراعة التنظيمية ـ شركات القطاع الخاص – لبنان.

Introduction

Background:

Organizational ambidexterity is an organizational capability in terms of alignment and efficiency in responding to market demands, while adapting to environmental changes; ambidexterity is enabled through creating structural mechanisms to meet the quasi-paradoxical demands that the organization faces against equilibrium and its compatibility (Sirati et al., 2019, 76).

Accurate business information is considered essential for companies to not only succeed, but to survive in today's rapidly changing environment; new informational needs have changed the decision-making processes, and huge amounts of data must be turned into useful information, to provide a high-quality foundation for making business decisions; one of the technologies that allow managers to do this is business intelligence (Hočevar & Jaklič, 2010, 88-89).

The main purpose of business intelligence systems is to provide the capability to interpret and analyze large data to access information that helps to create opportunities and apply effective strategies based on business analysis, which provides competitive marketing features with long-term stability and strength for a company's work; business intelligence systems provide a vision of the movement and processes of business past, present, and future (Al-Zagheer, 2018, 1).

Using business intelligence systems brings about numerous advantages including better business outcomes and increased performance; while business intelligence systems allow for a wide knowledge search, they also expand the company's external knowledge, and potentially open up new problem-solving opportunities, which encourages the growth of organizational ambidexterity.

Business intelligence systems can be used to gain a competitive edge by fostering exploratory and exploitative ambidexterity capabilities, therefore, companies must apply the knowledge generated from business intelligence systems to expand current goods and services as well as develop novel goods and services that are fundamentally different from those now available (Ahmad & Akbar, 2021, 76).

Statement of the Problem:

Business intelligence systems are of significant importance in modern organizations. These systems allow for improving organizational capabilities due to their value in processing large amounts of data. Thus, it can be stated that business intelligence systems enable an organization to adapt to environmental pressures through promoting its organizational ambidexterity capabilities. The findings of the study of Husien et al. (2020) support that assumption. According to the study, business intelligence is positively and significantly associated with improved organizational ambidexterity.

However, it is important to note that the use of business intelligence systems is associated with a variety challenges. According to Hamad et al. (2020), the use of business intelligence system is fraught with several challenges that concern technological difficulties, support from senior management, resistance to change and poor commitment by employees, and the need for the availability of infrastructure, financial resources, and training.

The study of Mesaros et al., 2015, 225) discussed other challenges of using business intelligence systems. According to the study, such challenges include incorrect data, complexity of tools, system response time issues, inadequate support from top management, working with large numbers of files, limited capabilities of many systems, and inadequacy of control mechanisms.

Based on what was previously presented, the problem of the study can be highlighted through the following main question: (What is the role of business intelligence systems in building organizational ambidexterity in Lebanese private sector companies)?

Research Questions:

- What is the reality of applying the dimensions of business intelligence systems in Lebanese private sector companies?
- What are the levels of achieving organizational ambidexterity in Lebanese private sector companies?
- Is there a statistically significant correlation between the application of the dimensions of business intelligence systems and the levels of organizational ambidexterity in Lebanese private sector companies?

Research Objectives:

- Investigating the reality of applying the dimensions of business intelligence systems in Lebanese private sector companies.
- Examining the levels of achieving organizational ambidexterity in Lebanese private sector companies.
- Investigating whether a statistically significant correlation exists between the application of the dimensions of business intelligence systems and the levels of organizational ambidexterity in Lebanese private sector companies.

Significance of the Study:

The significance of the present study stems from the importance of the topic it addresses, which is the role of business intelligence systems in building organizational ambidexterity in Lebanese private sector companies, Because of its importance in improving job performance in the Lebanese private sector; the significance of the study can be highlighted in the following:

First: theoretical significance:

- The present study might contribute to investigating the reality of applying the dimensions of business intelligence systems in Lebanese private sector companies working to strengthen them.
- The present study might contribute to drawing the attention of officials in monitoring and evaluating the levels of application of business intelligence systems and the levels of organizational ambidexterity in Lebanese private sector companies.
- The researcher hopes to enrich libraries with more studies and research on the role of business intelligence systems in building organizational ambidexterity in Lebanese private sector companies in light of the scarcity of studies in this field – as far as the researcher knows.

Second: applied significance:

- The findings of the present study might contribute to making appropriate recommendations for the application of the dimensions of business intelligence systems and enhancing the levels of organizational ambidexterity in Lebanese private sector companies.
- The findings of the present study might contribute to reaching realistic results on the ground that help provide the proper professional and administrative needs to enhance organizational ambidexterity levels and depend on business intelligence systems in Lebanese private sector companies.

Study Limits:

- **First: subject limits:** this study is limited to investigating the role of business intelligence systems in building organizational ambidexterity in Lebanese private sector companies.
- **Second: time limits:** this study will be applied in the second semester of 2022.

- **Third: spatial limits:** this study is limited to the specific geographic range of the field study in Beirut, Lebanon.
- **Fourth: human limits:** the study population will consist of all employees at the company of (…) in 2022, and the researcher will select a number of them as a random sample for the field study.

Research Hypotheses:

The study seeks to test the following hypotheses:

- There are no statistically significant differences, at the significance level (0.05), for the reality of applying the dimensions of business intelligence systems in Lebanese private sector companies according to the variables of (gender – years of experience).
- There are no statistically significant differences, at the significance level (0.05), for the levels of achieving organizational ambidexterity in Lebanese private sector companies according to the variables of (gender – years of experience).
- There is a statistically significant correlation between the role of business intelligence systems and the levels of organizational ambidexterity in Lebanese private sector companies.

Definition of Terms:

- **Business Intelligence Systems:**

Business intelligence systems are defined as systems that provide business information and business analysis within the context of key business processes that lead to decisions and actions that result in improved business performance (Dooley, 2015, 99).

Lanke & Bhuvaneswari (2015) define business intelligence systems as systems for business that turns selected data, information, and knowledge into desired intelligence for business gain by decision makers.

A business intelligence system is also defined as the system that disseminates organizational information and knowledge to be used for decision-making (Sapp, 2014, xiv).

For the purpose of the present study, business intelligence systems are defined as systems used for turning large and disparate data into meaningful information that can be used in decision making.

- **Organizational Ambidexterity:**

Organizational ambidexterity is defined as the ability to implement both types of exploitative and exploratory strategies, although exploration and exploitation are often considered contradictory activities, because achieving ambidexterity needs to strike a balance between these two activities, where the organization is able to exploit its competencies as well as exploring new opportunities in a balanced manner (Alshaer, 2020, 84).

Hijjawi & Mohammad (2019) define organizational ambidexterity as the interactive balanced relationship between exploitation and exploration.

Organizational ambidexterity refers to also the ability of an organization to both explore and exploit—to compete in mature technologies and markets where efficiency, control, and incremental improvement are prized and to also compete in new technologies and markets where flexibility, autonomy, and experimentation are needed (O'Reilly III & Tushman, 2013, 2).

For the purpose of the present study, organizational ambidexterity is defined as an organization's ability to maintain a proper balance between exploitation (focus on efficiency and performance) and exploration (focus on creativity and innovation).

Literature Review

Introduction:

In today's business environments, which are characterized by high levels of uncertainty, the achievement of organizational success necessitates the adoption of balanced strategies that integrate proved business practices and keep abreast of emerging market trends and environmental changes. The integration of these two aspects may be a challenge for an organization. However, in order to cope with that challenge, an organization has to develop its own organizational ambidexterity.

Organizational ambidexterity is a relatively recent concept in the world of management. The value of organizational ambidexterity from it being the ability to maintain a balance between two aspects of organizational management, namely exploitation and exploration, in the long run in order to maintain success. It is an organizational capability that enables an organization to work toward success while maintaining the adaptation to the external environment, which is characterized by rapid changes and complexity (Peng et al., 2019, 2).

Due to the complexity and uncertainty characterizing modern business environments, the achievement of organizational ambidexterity may pose a significant challenge for organization. Coping with this challenge requires constant and rapid gathering of big amounts of data and information and translating them into reasonable management decisions. Therefore, the importance of availability of effective information management systems cannot be overstated. In the contemporary world, a prominent and widely used type of organizational information systems is business intelligence systems.

The use of business intelligence systems has drawn increased traction recently. The growing interest in using these systems is largely attributable to the vast capabilities provided by these systems in processing data, with examples of performed processes including storing, gathering, analysis, and accessing data in order to provide reliable evidence for supporting decision-making processes (Yeoh & Popovič, 2016, 134).

Business intelligence is necessary for companies to succeed because of its ability to process a huge amount of data from various sources anywhere and anytime. Business intelligence systems help find inefficient business processes, which leads to fast responses and improvements for future growth, and companies that utilize these systems for operating at decision level are more competitive and can evaluate the business in a more realistic way (Ivan, 2014, 17).

Business intelligence systems became highly significant with the availability of big data and developments in machine intelligence. They received great interest in industry and academic fields, and they are now used in several fields of business concerned with making decisions in the purpose of creating value (Trieu, 2016, 1).

One important organizational outcome that can be positively impacted by the use of business intelligence systems is organizational ambidexterity. Business intelligence serves in achieving that outcome through providing the capability to adapt to organizational threats and environmental changes, promote organizational flexibility, and speeding up operational processes (Husien et al., 2020, 213).

From the preceding discussion, it can be stated that business intelligence systems may provide an organization with the necessary resources to promote its own organizational ambidexterity capabilities. The balance between exploration and exploitation relies on making the decisions that suit and meet the organization's needs acquiring and processing the needed data to arrive at evidence-based conclusions. Due to their advanced information processing capabilities, business intelligence systems may potentially provide solutions to the challenges of achieving organizational ambidexterity, in the light of modern organizational realities.

Overview of Business Intelligence:

In essence, business intelligence refers to an approach that incorporates practices, tools, applications, and techniques that provide the capability of analyzing knowledge and information in order to arrive at making and improving the quality of management decisions (ALSiyabi & Goel, 2019, 1).

Another definition of business intelligent is that it is a system used for collecting, transforming, and delivery of data gathered from a variety of sources, thereby leading to saving the time needed to acquire information and providing the capability to use this information in making decisions, with the implementation of several processes including searching for, analyzing, retrieving data and explaining decision-making needs (Ramadhani & Tania, 2020, 321).

The term Business Intelligence was originally coined by Richard Millar Devens in 1865, he used the term to describe how a banker profited by receiving and acting upon information about his environment before his competitors could. collecting and acting upon information retrieved is still the basis of the definition of BI used today (Davis & Woratschek, 2015, 24).

Business intelligence systems are integrated systems that are linked to a data warehouse and other applications and are designed to enable the analysis of stored data to support specific management decision-making. their provision of information is enabled by the integration of databases from different business domains, the data available from different sources are combined to provide new insights that lead to better decisions making (Shollo & Galliers, 2016, 342).

Business intelligence is used to provide organizations with the ability to understand internal and external environment through acquisition, collection, analysis, interpretation and utilization of information (Sangar & Iahad, 2013, 176).

The business intelligence system could play a significant role in improving organizational performance by identifying new opportunities, highlighting potential threats, revealing new business insights and enhancing decision making processes among many other benefits. It includes a variety of domains such as competitor intelligence, customer intelligence, market intelligence, product intelligence, strategic intelligence, technological intelligence and business counterintelligence (Ram et al., 2016, 221-222).

The preceding discussion shows that business intelligence is a useful solution for dealing with an organization's needs for information related to decision making. Business intelligence harnesses the massive capabilities offered by modern technologies, in terms of amount of collectible data, powerful processing capabilities, large storage capacities, and fast production of results, in making improved management decisions in a shorter time.

Differences between Business Intelligence and Other Related Concepts:

Business intelligence is an emerging notion in management research and practice. Therefore, the term "business intelligence" might be confused with other terms. Examples of such terms include "competitive intelligence", "business analytics", and "big data". Below is a discussion of the differences between business intelligence and these three terms.

- **Differences between Business Intelligence and Competitive Intelligence:**

Business intelligence and competitive intelligence are two terms that address information analysis and understanding. Both terms have developed significantly, having different meanings from their original ones. Currently, business intelligence is an umbrella term that refers to the applications, tools, methods and infrastructure that improve and optimize the decision process in companies, and competitive intelligence defines, analyzes and distributes intelligence reports about products, customers, competitors, business environment, etc. (Botoş, 2018, 56-57).

Moreover, business intelligence responds to an information need while competitive intelligence responds to a need for decision-making, therefore, competitive intelligence is more comprehensive as it is not limited to one and/or specific areas, but it is multidimensional and its goal is the survival and the expansion of the company. In addition, competitive intelligence is based on the results of business intelligence, it transforms collected information for strategic purposes and integrates the process of capitalization and creation of knowledge (Tarek & Adel, 2016, 543).

Competitive intelligence is not a replacement for market research, strategic planning, marketing, financial analysis, and security, but strengthens the requirements of continuous decision making in these functions and the needs of their key managers. Competitive intelligence helps companies adapt to the environment to improve their position vis-à-vis their competitors and achieve success (de las Heras-Rosas & Herrera, 2021, 4).

The main advantage of competitive intelligence is to extract knowledge needed about competitors' opportunities and threats, hence, competitive intelligence scans the external environment, while business intelligence scans the internal environment (Alnoukari & Hanano, 2017, 9).

- **Differences between Business Intelligence and Business Analytics:**

Many practitioners and academics use business analytics in place of business intelligence, and although many authors and consultants have defined it slightly differently, business analytics can be viewed as the process of developing actionable decisions or recommendation for actions based upon insights generated from historical data. From another viewpoint, business analytics represents the combination of computer technology, management science techniques, and statistics to solve real problems (Sharda et al., 2015, 19).

Business analytics is the application of models, methods, and tools to the analysis of data to gain insight to make wise decisions. Models include statistical, machine learning and data mining, artificial intelligence, domain, net present value (NPV), return on investment (ROI), internal rate of return (IRR) etc., and general models. Methods include such alternatives as visualization, numerical outputs, etc. and Tools include business intelligence analytic tools and programming languages (Raghupathi & Raghupathi, 2021, 2).

Modern-day business analytics is ingrained in the continuous progress of systems to support decision making, this progress includes increasingly powerful mechanisms to acquire, generate, assimilate, select, and emit knowledge pertinent to making decisions. Given its decision support heritage, business analytics necessarily partakes of and exploits these mechanisms, the knowledge to be processed ranges from qualitative to quantitative and business analytics is concerned with operating on both knowledge types (Holsapple et al., 2014, 131).

Simply put, business intelligence and business analytics are closely related, as the latter is an advanced branch of the former. In fact, business analytics use more advanced tools and techniques for reporting data compared to those used in business intelligence (Laursen & Thorlund, 2017, xxiv).

- **Difference between Business Intelligence and Big Data:**

In the contemporary world of organizational management, business intelligence and big data are two related concepts. Both are implemented for a variety of purposes, such as promoting accountability and transparency, and are reliant on information from sources such as accounting systems. Although the overall goal of both notions is the same, which is the support of decision-making processes, the two terms are not identical. In fact, there are several differences between them (Gaardboe et al., 2015, 109-110). The main differences between the two notions are illustrated in Table 1.

Table 1. The main differences between business intelligence and big data (Gaardboe et al., 2015, 110).

Area of Difference	Business Intelligence	Big Data
Types of Data	Structured data	Unstructured data
Sources of Data	Generally internal	Generally external
History	Critical	Moderately relevant
Users	Controller/manager	Data scientist
Accuracy	Accurate findings	Approximate findings
Privacy	Crucial	Not crucial
Data Control	Near full control	Limited to no control

The preceding discussion highlights the differences between business intelligence and the notions of competitive intelligence and business analytics. First, the discussion shows that business intelligence and competitive intelligence are different yet very closely related concepts. While business intelligence focuses more on information needs, competitive intelligence focuses more on serving decision-making needs. This makes business intelligence and competitive intelligence, in fact, complementary. Second, the discussion also shows that business intelligence and business analytics are related and similar. In fact, the main noticeable difference between business intelligence and business analytics is that the latter uses more complex and sophisticated data processing and analysis technologies. Third, business intelligence is similar to big data in terms of the overall goal of use. However, the nature of processes of data processing, organization, use differs significantly between the two approaches. In specific, the two approaches differ in terms of types of data, sources of data, relevance of history, main type of users, degree of data accuracy, importance of privacy, and degree of control over data.

Characteristics of Business Intelligence Systems:

Business intelligence systems are characterized by: fast problem finding and data analysis, with the accelerated data analysis speed, the solving problem-solving speed is also accelerated, and then the difficulty of enterprise operation and management is reduced, and the operation efficiency of organizations is improved. Tracing the source and solving the problem efficiently. multi-dimensional analysis with high accuracy of data analysis (Dai & Wang, 2020, 85).

The main features of business intelligence systems are (Androne, 2015, 156):

- Quantitative analysis by predictive analytics, predictive modeling, business process modeling and statistical analysis.
- Business process performance and objectives achievement measurement.

- Ability to use different tools to enable entities inside and outside of the company to work through electronic data interchange or by data sharing.
- Reporting at department level or enterprise level through various techniques.
- Using specific methodologies and procedures for implementing interactive information gathering techniques.
- Using knowledge management software to identify information within the company and make them available to those interested.

Another notable characteristic of business intelligence systems is their capability of capturing data from a variety of sources. They also allow for converting data into final reports and displaying the results of data analyses in web browsers. Data analysis and reports can be presented in a variety of forms, such as graphics and tables, thereby making information easy to understand for the management team (Dziembek & Ziora, 2014, 87).

This discussion shows that business intelligence systems are characterized by a variety of characteristics that make them useful for processing and managing data. Noticeably, these systems offer the capability of undertaking data-related processes quickly and easily. Moreover, they also allow for using data from a variety of sources and also disseminating information to many targeted groups of users with flexibility and low effort requirements.

Components of Business Intelligence Systems:

Business intelligence systems are complex in structure and operation. This is attributable to the fact that they integrate a variety of technologies that undertake different functions used for converting raw data into understandable information that can be used by the management team for making decisions. Building an adequate understanding of how business intelligence systems serve decision-making processes necessitates first understanding the main components of a typical such system.

According to (Husien et al., 2020), components of business intelligence systems include those outlined in Table 2.

Table 2. The main components of business intelligence systems (Husien et al., 2020, 214-215).

Component	Description
Data Sources	These are the sources that feed the business intelligence system. Data sources are not included in the system based on a certain framework, but are included as long as they can serve the purposes of the system. Therefore, data sources are of utmost importance for the system to achieve effectiveness and success.
Technologies of Data Integration	These technologies are used for temporary storage of data, which is acquired from a variety of operational sources. These technologies are also used for processes including cleaning, validation, conversion, and collection of data, in addition to transferring data to designated repositories.
Technologies of Data Storage	An example of this type of technologies is data warehouses, which are used for storing integrated and constantly updated data, which can be used for making a variety of tactical decisions. Data warehouses may be relational or operational database or in any other form that is supportive of storing organizational data.
Technologies of Data Analysis	These technologies are responsible for extraction of stored data and performing analysis processes for the purpose of supporting making decisions. These technologies includes a wide variety of tools, such as those used for preliminary or instant analysis, applications used for analyzing time series, tools of data exploration, and models of optimization.
Technologies of Data Presentation	These components are used for displaying information in their final form to the targeted audience. The quality of these components defined the quality of the entire business intelligence system. Several types of tools are used for data presentation, with examples of these tools including performance cards, dashboards, and reports.

Another perspective on the components of a business intelligence system is presented by Sharma et al. (Sharma et al., 2013, 145-146). From the perspective of that study, a typical business intelligence system includes the logical groups, which are the front, mid, and back office groups:

1. Front office: this component of the business intelligence system is concerned with monitoring performance and the facilitation of recording information.
2. Mid office: this component receives data from the front office. After authorizing data, notifications are submitted to users. It provides data regarding processes undertaking by customers.
3. Back office: this layer receives data from both the front and mid offices. It also prepares reports that the management can use.

Figure 1 presents an example of a typical business intelligence system, illustrating its main components and how data flows among these components.

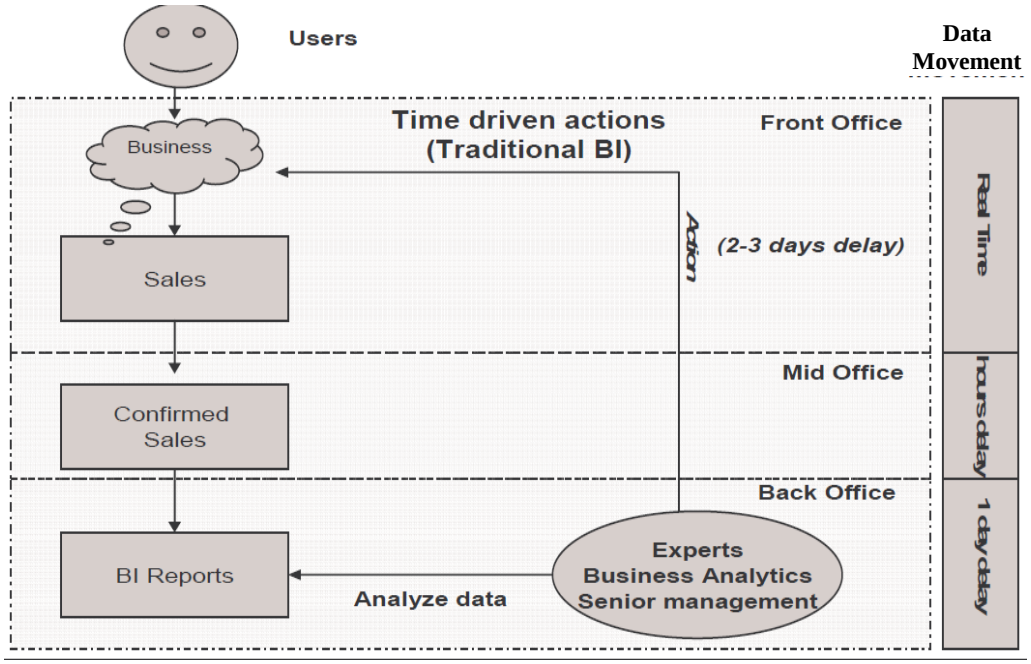

Figure 1. The components of a typical business intelligence system (Sharma et al., 2013, 146).

The preceding discussion shows that business intelligence systems are complex and consists of several interrelated components. The components vary in terms of types of technologies used and general functionalities. Therefore, well-designed business intelligence systems can be used to handle large flows of data and convert it easily and quickly into understandable information that can be used in decision-making processes.

Uses of Business Intelligence Systems:

Business intelligence systems mix concepts and technologies specially designed to help managers take decisions. They help companies establish objectives, offer a base for making decisions in finances, marketing, sales, management or income, enable optimization of future actions on different levels to help companies reach their goals in more efficiently (Nedelcu, 2013, 15).

In order to support decision making in the organization, business intelligence systems are used for mining data for the purpose of generating useful knowledge that can be used in guiding and supporting strategic decision-making processes in the organization (Adam et al., 2015, 67).

Business intelligence systems support decision making in different domains of the company, including the following: marketing analyses, financial analyses, customer analyses, logistic analyses, production management analyses, personal data analyses and analyses of wage (Mudzana, 2016, 31-32).

The benefits of using business intelligence systems have been highly emphasized, organizations can improve their business practices and thus their performance, by making decisions based on business analytics, and the ultimate aim of business intelligence is building shareholder value (Gaardboe & Svarre, 2018, 1).

Business intelligence can be considered the top technology priority by companies as business intelligence systems help them create new capabilities. They assist employees to interact with, and analyze, business data to manage and increase the efficiency of companies, identify any new opportunities and facilitate operation reengineering (Raj et al., 2016, 41).

Moreover, business intelligence systems are used in order to achieve certain advantages, which include the following (Dziembek & Ziora, 2014, 88):

1. Integration of information and data on the organization's operation in a coherent and reliable manner.
2. Facilitation of access to information gathered from a variety of different sources.
3. Achieving time saving in decision making and information analysis, in addition to improvement in management efficiency.
4. Achieving efficiency in forecasting, simulation, and planning, from different perspectives.
5. Ensuring fast response to emerging market trends and identification of potential opportunities and threats.
6. Investigation of the organization's current financial status, identification of budgetary imbalances, and optimization of financial management of operations.
7. Decreasing of number of people needed to participate in decision-making and analysis processes.
8. Improving the efficacy and efficiency of decisions concerning matters such as promoting customer satisfaction, cost saving, and profit growth.

In the light of the preceding discussion, it can be stated that business intelligence systems are primarily used for supporting decision making in the organization. In order to support that ultimate goal, these systems are used for carrying out a variety of functions, such as the gathering of data from many sources and the analysis of gathered data. Thus, business intelligence systems can be used for reducing the demands of processing of knowledge management and decision making in an organization.

Challenges of Using Business Intelligence Systems:

It is undeniable that business intelligence systems can be useful tools for making decisions in an organization. However, as in the case with nearly every technology-based organizational innovation, the use of business intelligence systems is not free of challenges. With the vast capabilities of these systems come a variety of challenges that many organization may find difficult to address. Success in the implementation of business intelligence systems necessitates having a full understanding of these challenges and devising appropriate solutions for addressing them.

Despite the benefits provided by business intelligence systems, there are various obstacles that can face companies and stop them from adopting business intelligence systems successfully. Examples of these obstacles include high cost of implementation and maintenance, inadequate networking, lack of skilled personnel and information security concerns (Zamba et al., 2018, 23).

Business intelligence systems might also face the following problems (Kasem & Hassanein, 2014, 24):

1. Cost: highly expensive hardware, maintenance, software licensing and installation.
2. Setup: to run the business intelligence systems, organizations have to set up software and system platforms that could be complex.
3. Usability: most business intelligence systems are too difficult to operate for most users.
4. Mobile Accessibility: business intelligence systems have limited access via the browsers running on mobile devices.
5. Reporting: traditional business intelligence tools are not designed for cooperative reporting, this could lead to redundant data and conflict in decisions.
6. Feedback: with traditional business intelligence, it is difficult to measure the usability or conduct effective auditing.

A major challenge that often hinders the implementation of business intelligence systems is the lack of expertise and skills to use such systems. Many organizations outsource that objective to other specialized firms. Although this is a solution for availing the benefits of business intelligence systems, it is associated with disadvantages. The outsourcing of operation of business intelligence systems largely deprives the organization's employees of opportunities to acquire new knowledge and skills needed to use and operate business intelligence systems. Ultimately, this would lead to having only a small number of employees who possess the needed set of knowledge and skills in that regard, and thus they would lack the time needed to train their colleagues on the use of business intelligence systems. As a result, implementations of business intelligence systems would be prone to issues such as inefficiency, inconsistency, and delays (Munyoroku, 2016, 16).

The implementation of business intelligence systems may also encounter the problem of lack of support from the top management. With the lack of such support, there would be no clear strategy for coordination among activities involving the use of such systems. Many executives possess poor management skills, and thus they might deem it unworthy to adopt and implement business intelligence systems, largely due to the fear of expected consequences. Another related challenge is poor participation from users' side. In many cases, organizations may encounter difficulties in engaging users (i.e., employees) in planning for the adoption and in use of business intelligence systems; this issue would lead to the creation of a gap between meeting the organization's and serving customers' needs, thereby leading to failure of business intelligence systems to achieve desired outcomes (Munyoroku, 2016, 16-17).

The challenges regarding users may emerge in an opposite fashion. In fact, a common challenge that the implementation of business intelligence systems encounters is the growing number of users, especially with the emergence of the notion of "operation intelligence".

The significant increase in the volumes of information constitutes another significant challenge in the use of business intelligence systems; the data that can be obtained is substantial in quantity and varies in nature. These two challenges have resulted in the emergence of the challenge concerning scalability and performance. This challenge stems from the need to include large numbers of people and incorporation of increasing numbers of processes (Mukuche, 2015, 14).

In the light of the preceding discussion, it is evident that although the implementation of business intelligence systems promises many advantages, it is not free from potential challenges. These challenges stem from personal, organizational, and resource-related factors. The success in coping with these challenges largely relies on the organization's culture and vision. An organization with a culture that is open to change and a future-oriented vision would be more willing to adopt business intelligence systems and try to overcome any potential challenges that might emerge.

Overview of Organizational Ambidexterity:

The term "organizational ambidexterity" refers to an instance in which an organization succeeds in organizing its operations and meeting its demand in a manner that leads to achieving a satisfactory level of performance (Severgnini et al., 2018, 1176).

Organizational ambidexterity is one of the most significant issues of the era and it is a pivotal issue in relation to organizational and knowledge management domains. Organizational ambidexterity is the ability to manage conflicting and complex aspects such as exploitation and exploration, alignment and adaptation, flexibility and efficiency, radical and continuous innovations, these activities need to be simultaneously managed, and this is the main subject of ambidexterity (Yigit, 2013, 6).

Organizational ambidexterity is the capability to address two incompatible objectives equally well. It has been applied to several phenomena, leading to a large number of different operationalization and conceptualization approaches, and it is claimed that this versatility is the biggest strength and also the biggest weakness of organizational ambidexterity (Krause-Söhner, 2021, 24).

In essence, organizational ambidexterity entails working on balancing between two different aspects, which are exploitative and explorative practices. First, with regards to exploitative practices, they concern what is known. Exploitation focuses on notions such as control, predictability, calculability, and efficiency. From a strategic perspective, exploitation can be described as a low-cost approach of operation. Second, with regards to exploration, it concerns the innovative and creative aspects of the organization's operation. Aspects of interest in the exploratory approach include divergent thinking, flexibility, experimentation, and new knowledge. The value of exploration is the achievement of differentiation (Smith, 2017, 1).

From the preceding discussion, it can be stated that the achievement of organizational ambidexterity is a valuable, yet challenging, goal. The achievement of organizational ambidexterity requires paying attention to both exploitative and exploratory practices. As such, an organization can integrate the performance-related outcomes, such as efficiency and profitability, and development-related outcomes, such as innovation and creativity.

Dimensions of Organizational Ambidexterity:

Organizational ambidexterity is the ability of the company to pursue exploitative and exploratory activities. Exploitation is learning based on certainty, while exploration is learning based on probability. exploration involves search, variation, risk-taking, experimentation, play, flexibility, discovery and innovation, and exploitation involves refinement, choice, production, efficiency, selection, implementation, and execution (Bravo et al., 2018, 539).

The two main dimensions of organizational ambidexterity are: exploitation and exploration. Exploitation concerns the ability of companies to improve current service or products, it includes refinement, implementation, efficiency, production, and selection. On the other hand, exploration suggests that companies are categorized by search, discovery, experimentation, risk taking and innovation, it is concerned with organic structures, loosely coupled systems, path-breaking, improvisation, autonomy and chaos, and emerging markets and technologies (Severgnini et al., 2018, 1180).

The dimension of exploitation involves work aimed at improving the valuable capabilities in companies' present markets. It depends on the company- and sector-specific knowledge and the accumulated skills of employees. It also takes the form of continuous refinement of product lines, production processes and business models in response to progressively evolving circumstances in the market (Solheim & Herstad, 2017, 3).

In exploration, the returns are less certain, more variable and more remote, the probability that they will occur, and the direct effect of current actions on future opportunities are less tangible and perceptible, however, without investing in exploration of new knowledge and market opportunities, companies cannot ensure their future prosperity (Taródy, 2016, 40).

The previous discussion shows that success in the achievement of organizational ambidexterity is reliant upon success in the achievement of two dimensions, which are exploitation and exploration. Exploitation concerns the objective performance-related aspects of organizational operation, with examples of these aspects including efficiency and profit growth. Exploitation is important due to its relationship to attaining immediately sought outcomes, such as profit stability/growth. Exploration, on the other hand, concerns aspects of operation that may yield desired outcomes on the long run, with examples of these aspects including creativity, innovation, and transformation.

Exploration is valuable due to its role in attaining competitive advantage and ensuring the organization's sustainability and survivability in the light of constantly changing business environments.

Factors that influence Organizational Ambidexterity:

The effect of organizational ambidexterity on company performance depends on several factors, which include the following: internal factors such as organizational size and market orientation and external environmental factors such as munificence, dynamism, competitiveness, and the organization's competitive intensity (Fu et al., 2016, 1-2).

The main factors that have an impact on organizational ambidexterity can be classified into the following categories (Panagopoulos, 2016, 10-11):

1. Organizational factors: management. Participation in decision making. and Organizational identity: exploitation and exploration are guided by the organizational objectives and dominant logics in each organization.
2. Structural factors: age of organization and size of organization.
3. Learning factors: absorptive capacity, meaning its ability to assess the value of external knowledge, internalize it and apply it. and psychological safety.
4. Market factors: market orientation and environmental sensitivity.

The role played by leadership is also undeniably relevant to organizational survival and necessary to the development of organizational ambidexterity, because the leader plays a significant role in the development of systems, structures and cultures that support the absorption of knowledge. Moreover, contextual factors such as senior team integration helps in balanced resource allocation, forms cross-fertilization and synergies towards ambidexterity (Rao-Nicholson et al., 2016, 11).

Internationalization can also influence organizational ambidexterity, being a way to exploit knowledge found in new markets, while enhancing the existing capabilities of the company through greater international presence, and the company can access new complementary skills and new strategic knowledge as the scope of internationalization increases (Ubeda-Garcia et al., 2021, 1510).

The external factors surrounding the organization may have a significant impact on the pattern of organizational ambidexterity. For example, an external environment characterized by dynamism would encourage an organization to adopt exploratory practices. However, the external environment may be characterized by intensifying competition. In such cases, an organization would be interested in exploiting its resources, in addition to exploring new capabilities (Pertusa-Ortega et al., 2018, 85).

The preceding discussion shows that organizational ambidexterity is influenced by a variety of internal and external factors. Internal factors include those related to managerial, leadership, and structural aspects of the organization's operation. External factors stem from the nature of the business environment surrounding the organization. The internal and external pressures surrounding an organization drive it toward adopting the balance of exploitation and exploration that meets its demands. Thus, the pattern of organizational ambidexterity in an organization is reactive rather than proactive; in other words, it is not predetermined, but it emerges and is shaped based on the nature of factors surrounding the organization.

Effects of Organizational Ambidexterity:

The achievement of organizational ambidexterity leads to a variety of performance outcomes. Examples of such outcomes include improved overall organizational performance, fostered innovation, and stronger financial performance (Venugopal et al., 2019, 2).

Organizational ambidexterity provides the ability to be efficient in existing operations and simultaneously flexible and adaptive to changes in the surrounding environment. organizational ambidexterity increases green progressive and radical innovation performance in companies (Dranev et al., 2020, 678).

Ambidexterity provides the ability to deliver efficiency, control, and progressive refinements, while embracing flexibility, autonomy, and experimentation, and its dimensions-exploitation (incremental innovation) and exploration (discontinuous innovation)-are critical to organizational prosperity and long-term survival (Baškarada et al., 2016, 778).

It has also been emphasized that the ability of an organization to pursue organizational ambidexterity is essential to ensuring sustainable competitive advantage. Besides short-term performance, organizational ambidexterity leads to long-term survival rates in dynamically-competitive advantage, because ambidextrous organizations are better than others at responding to emerging technologies and disruptive new business models (Tarba et al., 2020, 1).

According to the study of Erarslan & Altindag (2021), organizational ambidexterity has a variety of positive impacts on an organization. For example, it can promote positive perceptions among employees, such as the perceptions of organizational support. Moreover, this study shows that exploratory capabilities enable an organization to improve the performance of its innovative operations, while the exploratory capabilities allow the organization to promote its employees' personal development.

Interestingly, the achievement of organizational ambidexterity may lead to adverse outcomes for the organization. This is highlighted by the study of Hijjawi & Mohammad (2019). According to the study, organizational ambidexterity is associated with heightened risks of emergence of organizational conflicts due to the contradiction between its two main dimensions, namely exploration and exploitation. Moreover, the study indicates that the exploratory dimension of organizational ambidexterity is especially impactful in the emergence of organizational conflict.

The preceding discussion shows that organizational ambidexterity can have a variety of effects on an organization. Organizational ambidexterity is an approach through which an organization can strike a proper balance between improving performance and efficiency and seeking innovation for ensuring sustainability and competitive advantage. Thus, organizational ambidexterity can help an organization adopt a comprehensive approach for development and growth. Interestingly, organizational ambidexterity may be associated with certain threats and challenges. The inherent contradiction between the two dimensions of organizational ambidexterity may result in the emergence of disagreements over decisions, thereby leading to conflicts. Success in achieving organizational ambidexterity while avoiding potential challenges necessitates the existence of strong leadership that is aware of the appropriate approaches of implementing organizational ambidexterity.

Challenges of Achieving Organizational Ambidexterity:

Achieving ambidexterity can be difficult for several reasons: First, the high cost of coordinating and integrating exploration and exploitation. ambidexterity also leads to greater potential for conflict amongst organizational members, as ambidextrous organizations simultaneously pursue the goals of near-term efficiency and longer-term adaptability, therefore, ambidextrous organizations tend to display notable conflicts amongst organizational members and coalitions (Jeong, 2018, 16-17).

In several instances, companies are too excited to benefit from their existing opportunities and to reform their processes, technologies and cost savings that they fail to adapt to the fundamental changes in their surrounding environment. The major challenge of these companies is that they are unable to simultaneously operate in a balanced manner while exploiting the current situation and exploring and developing new technologies and products, due to the opposing nature of the two sides (Mottaghi et al., 2022, 157).

Additionally, working toward the achievement of organizational ambidexterity may constitute a source of pressures for many organizations. For example, small and medium-sized enterprises (SMEs) may encounter difficulties in achieving organizational ambidexterity due to the fact that achieving it entails exposure to certain risks and requires relatively high resource requirements, which SMEs may encounter difficulties in securing (Posch & Garaus, 2020, 14).

The inherent contradiction between exploitation and exploration may result in the emergence of challenges in achieving organizational ambidexterity. For example, even in organizations with adequate resources for implementing both exploratory and exploitative organizational practices, the integration of these two types of practices may still be challenging. In fact, working on achieving balance between these two aspects may result in organizational conflicts. Inertia is another problem that may hinder working on achieving these two aspects. Moreover, some organizations are strongly adherent to old and traditional work methods, thereby leading to significant challenges in redesigning work systems. In general, the achievement of consensus on practices related to organizational ambidexterity would be difficult due to the concurrent existence of desires and opinions supporting two contradictory sets of organizational practices in an organization. In fact, disagreements may manifest in the form of destructive behavior in the organization. For instance, employees who are in the favor of exploration may express resistance to efforts

aiming toward promoting discipline and well-defined work practices, while those in the favor of exploration would express resistance to change due to the entailing risk and stress (Hijjawi & Mohammad, 2019, 11).

The preceding discussion shows that working toward achieving organizational ambidexterity is inherently challenging. In reality, many organizations may be unable to achieve organizational ambidexterity due to the high resource requirements needed. Large organizations would have better preparedness for working toward achieving organizational ambidexterity compared to smaller organizations, such as SMEs. Moreover, the fact that organizational ambidexterity entails aiming to achieve two contradicting goals, namely exploitation and exploration, makes organizational conflicts prone to occur. These conflicts would emerge due to the disagreement between employees who prefer to maintain the work practices they are accustomed to and employees who seek making change and exploring new possibilities. Addressing the aforementioned challenges requires the adoption of appropriate management approaches that can effectively integrate both exploitation and exploration in the organization's practices.

The Role of Business Intelligence Systems in Building Organizational Ambidexterity:

Business intelligence systems are a major innovation in managing organizational operations. Using these systems, an organization can achieve a variety of positive organizational outcomes. One of these outcomes is organizational ambidexterity. Understanding the role of business intelligence systems in building organizational ambidexterity necessitates understanding the ways these systems influence an organization's practices and activities.

The adoption and use of business intelligence systems allows an organization to improve its performance in exploratory and exploitative innovations, which represent the two dimensions of organizational ambidexterity. The capabilities of business intelligence systems provide the capability of widening the scope of searching for and gathering new knowledge. Moreover, these systems allow for growing an organization's knowledge as well as developing its problem-solving capabilities (Ahmad & Akbar, 2021, 71-72).

Thus, it can be stated that business intelligence systems help in growing an organization's repository of knowledge. Using these systems, an organization can explore and gather data from a wide range of sources. This makes an organization more capable of building a more comprehensive perspective of both its internal and external environments. In this manner, the organization would have more reliable evidence to guide its operations toward the balanced achievement of exploitive and explorative goals.

Business intelligence systems also play a significant role in strengthening an organization's ambidexterity. These systems enable an organization to transform its work practices toward new approaches. This allows an organization to have more flexible communication structures, become more competitive, and implement knowledge sharing more effectively. As a result, the organization becomes a learning one (Husien et al., 2020, 217).

Thus, business intelligence systems enable an organization to manage its knowledge resources and communication processes more effectively. This makes an organization more able to learn and adapt to constantly occurring changes and shifting market trends. Adequate awareness of the patterns of changes surrounding the organization would enable the management to make decisions that better serve the organization's exploitative and explorative goals, thereby increasing the organization's capability to seek the achievement of organizational ambidexterity.

Another prominent advantage of business intelligence systems in achieving organizational ambidexterity is that these systems provide the capability of dealing with information overload. Information overload occurs as a result of constantly generating new information and knowledge. However, any entity, whether it be an individual or organization, has a certain limited capacity in processing information. The overabundance of information may lead to obstruction in information processing due to the massive number of generated ideas. However, with the use of business intelligence systems, an organization may expand its capacity of handling information flows, as these systems bring about improved and more efficient capabilities for capturing and processing information (Božič & Dimovski, 2019, 5).

This shows the significant role that business intelligence systems play in managing an organization's knowledge and information sources. Achieving organizational ambidexterity is intrinsically reliant upon the organization's ability to have enough information upon which reasonable and rational decisions can be made. Business intelligence systems allow for gathering and analyzing large amounts of data from a wide variety of sources. These systems provide substantial capabilities for handling information that would not be availed using traditional methods. Thus, the important role of business intelligence systems in arriving at decisions that serve an organization's objectives related to organizational ambidexterity cannot be overstated.

Another area of management in which business intelligence systems can help in achieving organizational ambidexterity is the making of decisions based on data. In organizational reality, making such decisions is marred by a variety of challenges, such as the inherent conflict between stability and flexibility of data sources and methods, issues resulting from the degree of understandability and complexity of the used methods of data analysis, and also issues resulting from the clash between specific and broad scopes of data analysis.

With the use of business intelligence systems, such issues may be addressed, and thus organizational ambidexterity can be achieved. This is why business intelligence systems are often used by management accountants, as these systems are used in a variety of processes, such as cost management, measurement of performance, and planning (Rikhardsson & Yigitbasioglu, 2018, 11-12).

Thus, business intelligence systems are not only supportive for the collection of data upon which decisions are to be made, but they also help in undertaking decision-making processes themselves. The advanced capabilities of business intelligence systems allow for undertaking complex analyses of data in a manner that would be costly and laborsome using other methods. Since the achievement of organizational ambidexterity is inherently reliant upon the capability of making sound and rational decisions, business intelligence systems may be of significant value for achieving organizational ambidexterity.

Based on preceding discussion, it can be stated that business intelligence systems can be used a helpful tools for achieving organizational ambidexterity. Business intelligence systems are helpful for achieving organizational ambidexterity due to the advantages summed up below:

1. Improved capability to search for useful data from a variety of different sources.
2. Enhancing the quality of communication among members of an organization.
3. More efficient and effective sharing of knowledge.
4. Increased capabilities for absorbing and coping with the overabundance of obtainable information.
5. Improved efficiency in decision-making processes.

Therefore, in order to pursue and achieve goals related to organizational ambidexterity, an organization's strategy should take into consideration the adoption of business intelligence systems.

The achievement of a proper balance between exploitation and exploration is reliant upon acquiring adequate and detailed information that can be a reliable basis for making reasonable decisions. Business intelligence systems are helpful in that regard due to their advanced capabilities in gather, analyzing, and processing data.

Previous Studies

The study of Husien et al. (2020) aimed to investigate the relationship and impact between business intelligence systems strategies and organizational ambidexterity within the learning organization in hospitals. the study population consisted of all directors, heads of departments, employees and administrators working in the hospitals operating in the center of Anbar province in Iraq; the study sample included (76) individuals representing the population. The study utilized the descriptive analytical approach based on the questionnaire. The study produced several results, the most important were: there is an influence of statistical significance between business intelligence systems and organizational ambidexterity; there is an influence of statistical significance between business intelligence systems and the learning organizations; organizational ambidexterity mediates the relationship between business intelligence systems and the learning organization; and the skills of business intelligence and organizational ambidexterity combined morally affect the learning organization in hospitals. The study made the following recommendations: encouraging the use of business intelligence in hospitals to increase their organizational ambidexterity, and enhancing the implementation of these systems in other fields.

The study of Božič & Dimovski (2019) examined the relationship between business intelligence and analytics use, innovation ambidexterity, and firm performance. The study population consisted of all IT executives and business executives from the most successful in Slovenia; the sample included (97) executives. The study utilized the descriptive analytical approach based on the questionnaire; the study produced several results, the most important were: absorptive capacity for knowledge creation partially mediates the relationship between business intelligence and analytics use and innovation ambidexterity; innovation ambidexterity fully mediates the relationship between business intelligence and analytics use and firm performance; and business intelligence and analytics positively relates to the firm's absorptive capacity for knowledge creation. The study made the following recommendations: future research should design and administer the questionnaire using few *ex ante* approaches in the research design stage to prevent common method bias issues, such as collecting data from different sources of information for some of the variables; future studies might also benefit from collecting firm performance data that span a period longer than 3 years.

The study of Shollo & Galliers (2016) aimed to understand the role of business intelligence systems in organizational knowing. The study population consisted of all branch advisors, their managers and the Business Intelligence analysts in a financial institution in the Scandinavian region; the sample included (10) branch advisors, their managers and the Business Intelligence analysts. The study utilized the case study approach based on semi-structured interviews; the study produced several results, the most important were: business intelligence systems are positively related to organizational knowing through the practices of articulation and data selection; the poor quality of business intelligence data is one of the main obstacle of implementation and use of business intelligence systems; the role of business intelligence as an active agent in the process of organizational knowing becomes less influential by time when the focus shifts to other organizational

goals. The study made the following recommendations: further studies based on power considerations and how they might affect the use of business intelligence data, and in particular how meaning power is exercised on business intelligence data and how business intelligence data impacts or redistributes meaning power; Further, it would be also imperative to conduct future studies that would support, extend or reject the current findings in other cultural settings.

The study of Katou (2021) analyzed the impact of leader's social intelligence, employee's work engagement and environmental changes, as antecedents of organizational ambidexterity, on organizational creativity and productivity; the study population consisted of the employees of private organizations in the manufacturing services and trade sectors in Greece; the sample included (657) employees; the researchers utilized the analytical approach based on the questionnaire; the study produced several results the most important were: leaders' social intelligence has higher positive impact on creativity through exploration activities, compared to productivity through exploitation activities; the dynamically changing environment has a lower positive impact on creativity compared to the positive impact on productivity; leaders' social intelligence positively influences employee's work engagement behavior; and employee's work engagement has a positive and higher direct association with exploration than with exploitation. The study made the following recommendations: organizations could focus on factors of cost, efficiency, and incremental innovation for exploitation, and on speed, flexibility, and radical innovation for exploration; organizations should also utilize the social awareness and the relationship management skills of their leaders for creating a common culture that is dealing simultaneously with the aspects of innovation and efficiency.

The study of Gedajlovic et al. (2012) investigated the relationship between corporate shareholdings and organizational ambidexterity in high-tech SMEs. The study sample included all Chief Executive Officers (CEOs) and Chief Technology Officers (CTOs) from a (122) high-tech SMEs in China. The study utilized the cross-sectional research design based on the questionnaire. The study produced several results, the most important were: top-management shareholdings are positively related to a firm's organizational ambidexterity orientation; governmental shareholdings are negatively related to a firm's organizational ambidexterity orientation; top-management shareholdings are positively related to comprehensive decision-making; and the degree to which firms utilize comprehensive decision-making processes partially mediates the effects of shareholdings on organizational ambidexterity. The study made the following recommendations: future research may be usefully directed towards a consideration of other variables such as family ownership, executive compensation practices, and board of director composition; future studies can use longitudinal data to further the understanding of the antecedents of opportunity-related processes as well as the performance outcomes resulting from realized portfolios of the various types of opportunities accumulated.

Study Methodology:

- **Study Approach**:

To achieve its objectives, the current study will use the analytical descriptive research design, which is "one of the forms of scientific analysis and interpretation organized to describe a specific phenomenon or a problem, and depict it quantitatively through the collection of data and information about a phenomenon or a problem, classifying, analyzing and subjecting it to careful study".

- **Study Population and Sample**:

The current study population includes all employees in Lebanese private sector companies, the researchers selected a random sample of (80) employee from Nomil for Building and Construction, to represent the population.

Characteristics of the sample

The frequencies and percentages of the respondents according to (gender – years of experience – training courses).

1- Distribution of respondents according to gender:

Table (1) distribution of respondents according to gender

s	Gender	Frequency	Percentage
1	Male	38	47.5%
2	Female	42	52.5%
Total		**80**	**100.0%**

Table (1) demonstrates that (47.5%) of the respondents are males, and (52.2%) are females.

2- Distribution of respondents according to years of experience

Table (2) distribution of respondents according to years of experience

s	Years of experience	Frequency	Percentage
1	Less than 5 years	6	7.5%
2	From 5 to less than 10 years	56	70.0%
3	10 years and above	18	22.5%
Total		**80**	**100.0%**

Table (2) demonstrates that (7.5%) of the respondents have less than 5 years of experience, (70.0%) have 5 to less than 10 years of experience, and (22.5%) have 10 years and above.

3- Distribution of respondents according to training courses

Table (3) distribution of respondents according to training courses

s	Training courses	Frequency	Percentage
1	None	8	10.0%
2	Less than 3 courses	46	57.5%
3	3 courses and above	26	32.5%
Total		**80**	**100.0%**

Table (3) demonstrates that (10.0%) of the respondents did not have any training courses, (57.5%) had less than 3 courses, and (32.5%) had 3 courses and above.

- **Study Instrument**:

After reviewing the literature and the previous studies related to the research topic, the researcher built a questionnaire using 5-point Likert scale (very high – high – moderate – low – very low) to investigate the role of business intelligence systems in building organizational ambidexterity in Lebanese private sector companies.

Description of the (questionnaire) study instrument:

The questionnaire included two main parts in its final form:

Part one: includes the primary data of the respondents (gender – years of experience – training courses).

Part two: includes the questionnaire axes and the questionnaire included (25) statements in its final form, divided into two main axes:

- **First axis: "applying the dimensions of business intelligence systems in the company"** consisting of (15) statements divided into three dimensions (data managing – data analytical processing – collection, analysis, and storage business performance).
- **Second axis: "levels of organizational ambidexterity in the company"** consisting (10) statements divided into two dimensions (exploitation ambidexterity – exploration ambidexterity).

Validity of the study instrument:

1) Validity of internal consistency of the instrument

a) Validity of internal consistency of the questionnaire axes

Internal consistency was measured according to the responses of the pilot sample (n=30), by calculating Pearson's correlation coefficient between the scores of each statement and the total score of the axis to which the statement belongs as shown in table (4) below:

Table (4) Pearson's correlation coefficients between the scores of each statement and the total score of the axis to which the statement belongs

"applying the dimensions of business intelligence systems in the company"					
No.	**Correlation coefficient**	**No.**	**Correlation coefficient**	**No.**	**Correlation coefficient**
1	.621**	6	.738**	11	.699**
2	.538**	7	.765**	12	.556**
3	.470**	8	.670**	13	.505**
4	.830**	9	.724**	14	.489**
5	.626**	10	.797**	15	.491**
"levels of organizational ambidexterity in the company"					
1	.641**	5	.719**	9	.503**
2	.441*	6	.621**	10	.460*
3	.596**	7	.581**		
4	.495**	8	.400*		

**** statistically significant at (0.01) level**

***statistically significant at (0.05) level**

Table (4) shows that the correlation coefficients of the statements to the total score of the axis to which the statement belongs, were all statistically significant at (0.01) level, and the values of all coefficients were high as they ranged between (.830**-.470**) in the first axis "applying the dimensions of business intelligence systems in the company", and (719**-.400*) in the

second axis "levels of organizational ambidexterity in the company", which indicates the high internal consistency of the statements of the questionnaire axes.

b) Structural validity of the questionnaire axes:

The structural validity of the questionnaire axes through measuring the correlation coefficients between the total score of each axis and the total score of the questionnaire; this is demonstrated in the next table:

Table (5) correlation coefficients between the total score of each axis and the total score of the questionnaire axes

s	Axis	Correlation coefficient
1	applying the dimensions of business intelligence systems in the company	.981**
2	levels of organizational ambidexterity in the company	.966**

**** statistically significant at (0.01) level**

Table (5) shows that the values of the correlation coefficients of the questionnaire axes to the total score of the questionnaire, were high as they ranged between (.981**-.966**), and they were all statistically significant at (0.01) level; this indicates the high structural validity of the questionnaire axes.

Table (6) Cronbach's Alpha reliability coefficients for the questionnaire axes

s	Axis	No.	Cronbach's Alpha coefficient
1	**applying the dimensions of business intelligence systems in the company**	15	.981
2	**levels of organizational ambidexterity in the company**	10	.991
Total		25	.981

Table (6) shows that the values of the reliability coefficients for the questionnaire axes were high as they ranged between (.991-.981), and the total reliability coefficient was (.981); this indicates the applicability of the questionnaire and credibility of the results.

Discussion of the Study Questions:

Discussion of the first question: what is the reality of applying the dimensions of business intelligence systems in the company?

To answer the first question, the arithmetic mean and standard deviation for each dimension of the first axis were calculated, and then arranged in a descending order based on the arithmetic mean as shown in table (7):

Table (7) frequencies and arithmetic means to explain "applying the dimensions of business intelligence systems in the company"

s	Dimension	Arithmetic mean	Standard deviation	Dimension order	Response degree
1	**First dimension: "data collection, analysis, and storage"**	4.09	.745	1	High
2	**Second dimension: "data analytical processing"**	4.04	.839	2	High
3	**Third dimension: "managing business performance"**	3.87	.890	3	High
The total score of the first axis		4.00	.737	---	High

Table (7) shows that "applying the dimensions of business intelligence systems in the company" was (high) from the respondents' point of view, where the total arithmetic mean of the first axis was (4.00) with a (.737) standard deviation; and the standard deviations of the first axis ranged between (.745-.890).

The first dimension (**data collection, analysis, and storage**) came in first place with a (4.09) arithmetic mean and a (.745) standard deviation, followed by the second dimension (**data analytical processing**) took the second place with a (4.04) arithmetic mean and a (.938) standard deviation, and the third dimension (**managing business performance**) came in last place with a (3.87) arithmetic mean and a (.890) standard deviation.

The researchers believe that the high degree of response to "applying the dimensions of business intelligence in the company" from the respondents' point of view may be attributed to the desire of the management of the sample company to follow scientific and methodological management methods to achieve its goals, and its conviction that business intelligence systems help speed up the process of information analysis and performance evaluation, as they are valuable in helping companies reduce deficiencies, report potential problems, find new sources of income, and identify areas of future growth.

This result may be due to the ability of business intelligence systems to accurately track sales, marketing and financial performance and perform analytics that can be shared in real time across different departments of the company, increasing the chances of achieving the desired management goals. This finding is congruent with the findings obtained by Husien et al. (2020) and Shollo & Galliers (2016), which indicate that the use of business intelligence systems yields positive outcomes for an organization, in the form of capturing useful organizational knowledge.

Discussion of the second question: what are the levels of organizational ambidexterity in the company?

To answer this question, , the arithmetic mean and standard deviation for each dimension of the second axis were calculated, and then arranged in a descending order based on the arithmetic mean as shown in table (8):

Table (8) frequencies and arithmetic means to explain the "levels of organizational ambidexterity in the company"

s	Dimension	Arithmetic mean	Standard deviation	Dimension order	Response degree
2	**Second dimension: "exploration ambidexterity"**	4.26	.484	2	Very high
1	**First dimension: "exploitation ambidexterity"**	3.97	.613	1	High
The total score of the second axis		4.11	.481	---	High

Table (8) shows that "levels of organizational ambidexterity in the company" were (high) from the respondents' point of view, where the total arithmetic mean of the second axis was (4.11) with a (.481) standard deviation; and the standard deviations for the dimensions of the second axis ranged between (.484-.613).

The second dimension (exploration ambidexterity) came in first place with a (4.26) arithmetic mean and a (.484) standard deviation, and the first dimension (exploitation ambidexterity) came in second place with a (3.97) arithmetic mean and (.613) standard deviation.

The researchers believe that the high degree of response to "levels of organizational ambidexterity in the company" from the respondents' point of view may be attributed to the fact that organizational ambidexterity in the 21st century is no longer a matter of choice for business organizations, as organizational ambidexterity and capability to respond quickly to the external environment has become a necessity to distinguish successful organizations from those that falter, and this is compounded by the forces of market pressure where successful business practices are simulated globally, and these constant changes require a rapid response and adaptability.

The reason for this result may be that organizational ambidexterity is the successful exploration of competitive principles that include speed, flexibility, innovation, quality and profitability by integrating resources and reinvesting them through best practices in the rich environment while providing products that suit the ever-changing needs of the market. This finding is in line with the findings of the studies of Husien et al. (2020) and Božič & Dimovski (2019), which indicate that organizational ambidexterity is a decisive factor in organizational learning and performance, thereby leading to better response to changes in the business environment.

Discussion of the third question: is there a statistically significant correlation between the application of the dimensions of business intelligence systems and the levels of organizational ambidexterity in Lebanese private sector companies?

To answer this question, Pearson's correlation coefficient between "**applying the dimension of business intelligence systems in the company**" and the total score of "**levels of organizational ambidexterity in the company**"; the results were as follows:

Table (9) results of Pearson's correlation coefficient between "applying the dimension of business intelligence systems in the company" and the total score of "levels of organizational ambidexterity in the company"

applying the dimensions of business intelligence	The total score of levels of organizational ambidexterity	
	Correlation coefficient	Statistical significance
First dimension: "data collection, analysis, and storage"	.861**	.000
Second dimension: "Data Analytical Processing "	.933**	.000
Third dimension: "managing business performance"	.531**	.000
Total score of organizational ambidexterity	.899**	.000

The results of table (9) show that:

- There is a statistically significant correlation, at (0.05) level, between the total score for "the reality of applying the dimensions of business intelligence systems" and "the degree of organizational ambidexterity" among the employees of Nomil for Building and Construction, with a (.899**) coefficient; this shows that the greater the application of the dimensions of business intelligence systems, the greater the levels of organizational ambidexterity in Lebanese businesses and organizations.

The researchers believe that this result may be due to the important role played by the processes of applying the dimensions of business intelligence systems and practices in improving and developing the performance of employees and increasing their ability to achieve the desired administrative goals; These systems are also used to collect, store, access and analyze data to help the business user make administrative decisions and organize the huge amounts of data collected by the company, which increases the ability of employees to explore and exploit information and data in order to improve job performance and achieve the desired goals. This finding concurs with findings obtained by Husien et al. (2020), which show that there is a direct and significant correlation between business intelligence and organizational ambidexterity.

Summary of Findings:

- The reality of "applying the dimensions of business intelligence systems in the company" was (high) from the respondents' point of view, where the general arithmetic mean for the first axis was (4.00) with a standard deviation of (.737); The standard deviations of the dimensions of the first axis were between (.745-.890).
- The first dimension "data collection, analysis, and storage" came in the first place, with an arithmetic mean of (4.09) and a standard deviation of (.745), followed by the second dimension: "Data Analytical Processing" with a mean of (4.04) in the second place and a standard deviation of (.839), while the third dimension "managing business performance" came in the last place with an arithmetic mean of (3.87) and a standard deviation of (.890).
- The "levels of organizational ambidexterity in the company" had a (high) degree from the respondents' point of view, where the general arithmetic mean of the second axis was (4.11) with a standard deviation of (.481); The standard deviations of the dimensions of the second axis were between (.745-.890).

- The Second dimension "exploration ambidexterity" came in the first place with an arithmetic mean of (4.26) and a standard deviation of (.484), followed by the first dimension: "exploitation ambidexterity" in the second place with an arithmetic mean of (3.97), and a standard deviation of (.613).
- There is a statistically significant correlation at the significance level (0.05) between the total degree of "the reality of applying the dimensions of business intelligence systems" and the degree of organizational prowess among the employees of the company Nomil for Building and Construction and it reached (.899**).

Study Recommendations:

- The need for the leader to provide constructive criticism, and to be characterized by cooperation and appreciation of the efforts of employees, and the ability to build a team and work through the group.
- The need to increase the knowledge capabilities and skills of senior leaders, supervisors and employees within Lebanese business organizations with the characteristics and importance of applying business intelligence systems.
- The need to develop and consolidate the capabilities of employees within Lebanese companies and private organizations with regard to achieving organizational ambidexterity.
- Work to increase the adoption of business intelligence systems in the various activities of the company.
- Develop advanced systems for the processes of attracting and selecting employees who are able to achieve the organizational ambidexterity of the organization.

- The need to conduct similar future studies in the same context on the reasons that drive some Lebanese business organizations to switch to a commitment to applying business intelligence systems.
- The need to conduct more future studies aimed at identifying the obstacles to achieving organizational ambidexterity in business organizations and how to overcome them.

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