Ankara Science University Graduate School of Studies

Management Information Systems

BUSINESS INTELLIGENCE AND ITS ROLE IN ADMINISTRATIVE DEVELOPMENT AT THE UNIVERSITY OF MISURATA

MUSTAFI BADI

Master's Thesis

Ankara, 2023

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ÖZET

BADI, MUSTAFIİŞ ZEKASI VE İŞ ZEKASININ MİSURATA ÜNİVERSİTESİ YÖNETİMİNİN GELİŞTİRİLMESİNDEKİ ROLÜ, Master Tezi, Ankara 2023.

Bu çalışma, Misurata Üniversitesi'nde iş zekası ve idari gelişim arasındaki ilişkiyi ve uygulamalarını kapsamlı bir şekilde anlamayı amaçlamaktadır. Çalışma, betimsel bir yaklaşım kullandı ve alandaki mevcut literatürü gözden geçirerek veri toplamıştır. Ayrıca, üniversiteden idari liderler, öğretim üyeleri, asistan öğretmenler ve öğrenciler de dahil olmak üzere 80 katılımcıya elektronik olarak dağıtılan bir anket geliştirilmiştir ve dağıtılmıştır. Bu çalışmanın temel bulgularından biri, iş zekası ve idari gelişim arasındaki ilişkidir. Katılımcıların iş zekası uygulamalarının idari gelişimde kullanımına yönelik algıları olumludur, özellikle üniversite içinde iş zekası sistem uygulamalarının kullanımı açısından. Sonuçlara dayanarak, çalışma, iş zekası uygulamalarında eğitimin önemini ve bunların yönetim gelişimine entegrasyonunu önermektedir. Ayrıca, üst düzey yönetimin iş zekası benimsemesini ve idari süreçlerde uygulamak için daha fazla çaba sarf etmesini teşvik etmektedir Çalışma, iş zekası eğitimine öncelik vermenin önemini vurgularken, üniversite liderlerine tanıtıcı ve farkındalık mesajlarının yayılmasının yanı sıra son iş zekası teknikleriyle güncel kalmanın gerekliliğini de vurgulamaktadır. Ayrıca, üniversitedeki iş zekası uygulamalarını keşfetmek için daha fazla ampirik araştırma yapılması önerilmekte olup, mevcut uygulama düzeyinin değerlendirilmesi ve potansiyel engellerin belirlenmesi de dahil edilmektedir.

Anahtar Kelimeler: İş zekası; İş idaresi; İdari gelişme.

ABSTRACT

Badi, Mustafi, BUSINESS INTELLIGENCE AND ITS ROLE IN ADMINISTRATIVE DEVELOPMENT AT THE UNIVERSITY OF MISURATA, Master's Thesis, Ankara, 2023.

This study aimed to comprehensively understand business intelligence and administrative development, specifically focusing on their relationship and application at the University of Misurata. The study utilized a descriptive approach and collected data by reviewing existing literature in the field. A questionnaire was also developed and distributed electronically to 80 participants, including administrative leaders, faculty members, assistant teachers, and students from the university. One of this study's key findings is the correlation between business intelligence and administrative development. The participants' perceptions regarding the implementation of business intelligence in administrative development were positive, particularly in terms of utilizing business intelligence system applications within the university. Based on the results, the study suggests the importance of training on business intelligence practices and their integration into management development. Furthermore, it recommends supporting and encouraging senior management to embrace business intelligence and exert more effort in implementing it in administrative processes. The study emphasizes the significance of prioritizing training in business intelligence, as well as disseminating introductory and awareness messages to university leaders. Additionally, it highlights the need to stay updated with the latest business intelligence techniques and their modernization. The study also proposes conducting further empirical research to explore the applications of business intelligence within the university, including assessing the current level of implementation and identifying potential obstacles.

Keywords— Business intelligence; Business administration; Administrative development

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INTRODUCTION

The business environment has witnessed a great development in information technology in recent years because of continuous changes, increased competition, knowledge, cultural diversity, and the huge amount of information. Hence, the idea of the current research is to address and sustain the performance of organizations in light of the challenges they face by adopting smart systems capable of sharing and exchanging information that enables institutions and departments to do so, support decision-making, and develop and improve management. Work, monitor, and activate their performance.

The development process is a continuous process and does not stop at a specific stage or event, as it appeared in many forms in different fields, including economic fields, social fields, political fields, technical fields, and administrative development, and because the senior management in organizations and institutions decides on changes related to improving administrative work, Misurata University, like any other institution, is looking for new ways to contribute to raising the efficiency of its management and development. In addition, work to adopt effective strategies that help develop the administrative work of the university, as business intelligence is considered the backbone of the development of any organization because it contributes to decision-making processes with distinct efficiency and effectiveness to establish a new economic or administrative activity. (Gharaibeh, 2017; Saleh, 2016)

SECTION 1:

1.1. RESEARCH PROBLEM

The University of Misurata is confronted with numerous challenges in its administrative development due to the rapid and multiple changes occurring in the higher education sector. These challenges primarily stem from technical advancements, such as the increased reliance on computerized systems, as well as heightened competition among universities. To effectively address these challenges and maintain its competitive position, the university recognizes the need to continuously evolve and adopt modern management styles. This involves a strong focus on business development and the utilization of systems and tools, including business intelligence, to align with the latest changes. A significant issue currently faced by Misurata University is the substantial increase in daily data handling, which necessitates prompt processing and delivery to various departments. Consequently, the administration requires the development of programs and tools for efficient data transfer and display. It is crucial to explore the potential impact of business intelligence applications on the decision-making process within the university and assess the readiness of the university administration to implement business intelligence effectively.

1.2. RESEARCH QUESTION

Hence the research questions come with the main research question (what the role of business intelligence in the administrative development of the University of Misurata is) and several questions branching from it, as follows:

- How prepared is Misurata University to adopt business intelligence?
- How can business intelligence be utilized in administrative development at Misurata University?
- What solutions and proposals contribute to the administrative development at Misurata University through business intelligence?

1.3. OBJECTIVES OF THE STUDY

In order to find answers to these research questions, the following concepts should better be clearly defined and identified:

- What is the meaning of business intelligence for the members of Misurata University and how much they are in favor of utilizing business intelligence in their daily routines?
- What is the meaning of administrative development and how much it is credited to the University of Misurata?
- How strong is the relationship between business intelligence and administrative development at the University of Misurata?
- Identifying the extent to which business intelligence tools and techniques are utilized in administrative development at the University of Misurata
- Easy access to solutions and proposals that contribute to administrative development and the decision-making process through business intelligence.

SECTION 2:
BACKGROUND

2.1. THE IMPORTANCE OF THE STUDY

This study seeks to explain the understanding of business intelligence, and utilization of business intelligence tools and applications, at the University of Misurata, and to clarify its role in the process of developing administrative work at the University of Misurata. Where the importance of research is evident in the following aspects:

- The novelty of the subject of business intelligence is the lack of research conducted on the utilization of business intelligence at Libyan universities.
- Assisting the University of Misurata in evaluating the business intelligence system and determining its importance by understanding the work of the administrative system.
- It allows the university to identify the pros and cons of the business intelligence system, and then to identify ways to improve the administrative work of the university.

2.2. BUSINESS INTELLIGENCE CONCEPT

Business intelligence is defined in different perspectives by many sources in the literature as follows:

Al-Nadawi is defined, Business intelligence is defined as the process of employing technology in using information accurately and systematically so that it is of high-quality value in the field of work itself, and that data and information are of great reliability and available from several sources, and then apply what has been gained from experience to improve and develop the quality of decisions that are made. taken based on the information gained. (Al-Nadawi, 2011) Narain Defines it as a set of techniques that help discover and extract the best data from a huge amount of data to improve the production process. Maheshwari defined it as a comprehensive term that includes a variety of information technology applications that are used to analyze the organization's data and deliver it to the

concerned users, and its main components are data storage, data extraction, querying, and reporting (Maheshwari,2015; Naraina,2013). Definition of Pratt, business intelligence is the use of programs and services to transform current research aims to support strategic and tactical business decisions of the organization. Business intelligence tools access and analyze data and present analytical findings in reports, summaries, dashboards, and graphs. In addition, it provides users with detailed working status information. The term business intelligence refers to a set of tools that provide quick and easy access to insights about the current state of an organization, based on available and future data. (Pratt & Fruhlinger,2019)

2.3. THE IMPORTANCE OF BUSINESS INTELLIGENCE AND BENEFITS

Business Administration (BA) systems provide historical, current, and predictive views of business processes, often using data collected in a data warehouse or data file, sometimes operating from operational data, the library supports reporting, interactive analytics, visualizations, statistical data mining, and applications addressing various organizations' activities, production, finance, and many more Other sources of business data for purposes include managing business performance, and information is collected about other organizations operating in the same field. From the previous definitions, it is clear that business intelligence depends entirely on data, and the most important thing it provides is its analysis to provide useful information that contributes to supporting decision-making and strategic planning.

The main benefit of business intelligence is the ability to provide accurate information when it is needed, which may include a view of the performance of the organization and its parts in real time. This information is essential for all kinds of decisions, strategic planning, and future insights. Therefore, organizations must harness the power of their big data by mining, understanding, and leveraging it to improve and support decisions to increase operational efficiency**.**

Moreover, the effectiveness of the agile organization ensures faster and more informed decision-making; it has become an urgent necessity. Therefore, leaders need the right information at the right time and in the right place, which requires that organizations operate with integrity and benefit greatly from business intelligence processes.

Business operations consist of three basic tasks, the first of which lies in collecting the necessary data about work and automating this process, as data collection used to take a long time in the past, but with technical solutions and the use of modern computers and data. Collecting from different sources has become much easier. The second is to analyze the collected data, then extract information from it, and convert the extracted information into knowledge. The third task is to use the knowledge gathered to make decisions to improve the business. (Montaño, 2023 ; Frankenfeld,2022)

2.4. THE USE OF BUSINESS INTELLIGENCE IN THE UNIVERSITY

Business intelligence in universities is the process of collecting data From various sources and using it to make better decisions and create more strategies that are effective. Data sources can include internal operating systems, external data sources such as surveys and web analytics, as well as data from external sources such as government and public organizations.

The data is analyzed using various tools and technologies to create dashboards, reports, and presentations that can be used to identify trends, measure performance, and identify areas for improvement. In addition, predictive analytics can be used to predict future trends and make effective decisions. Business intelligence enables use in universities to improve the efficiency, effectiveness, and quality of educational operations and services. (Apraksin et al., 2018)

2.5. METHODS FOR EFFECTIVENESS OF BUSINESS INTELLIGENCE WITHIN THE UNIVERSITY

Muhammad Bashir, Philip Collier, and Michael Davern identified measuring the effects of business intelligence systems and the relationship between business operations and organizational performance within the university in a set of steps as follows:

First**:** You can measure a university's ability to generate new knowledge by analyzing the research productivity of faculty and students, as well as the impact of research through citations and publications.

Second**:** To measure the university's ability to apply knowledge to create innovative products and services by assessing the number of patents, licenses, and branches it has created.

Third: Measuring the university's ability to make effective decisions by examining the number of strategic partnerships it has established, the number of faculty members and administrators involved in decision-making, and the amount of data and analyses used in decision-making.

Fourth: University can look at qualitative metrics such as student or alumni participation, or the quality of research output, and consider rankings and accreditation initiatives to gauge the quality and reputation of its business programs.

Fifth: Through data collected from surveys and feedback from students, faculty, administrators, and staff. (Bashir at al., 2018)

2.6. TERMINOLOGY OF STUDY

2.6.1. Business Intelligence

Business intelligence is one of the most prominent services provided by data management, which is the employment of technology in the process of retrieving, extracting, filtering, and analyzing enterprise data to produce brief, useful, and meaningful information to support and improve the decision-making process. This type of intelligence is usually presented in the form of written reports, a summary, or a presentation with graphs. The university can measure its performance and monitor its management more effectively through business intelligence. (Farsi & Saini, 2016)

2.6.2. Administrative Development

Introducing fundamental changes in public administration systems to ensure improved levels of performance and raising the efficiency of existing administrative systems by updating information dimensions, trends, and systems and making them more compatible with modern technological development. (Gharaibeh, 2017)

2.7. BUSINESS INTELLIGENCE STAGES

To apply business intelligence there are several stages; Its beginning is identifying the organization’s internal and external data sources, then defining the organization’s performance indicators, then extracting appropriate data from its sources, preparing and unifying its structure, and then starting the process of analyzing that. Data and reporting support decision-making to improve the performance of the organization. (Maheshwari, 2015)

2.7.1. Identifying Data Sources

What is meant here by data sources is where they are located or stored and in any of their various forms; It may be texts, tables, documents, audio or visual data...etc., which may be stored in databases on the organization's computer servers, or stored in cloud servers, or data files, or electronic files in its simple form such as application files (Word, (Excel, Text), and may also be on the website, and even in the organization's social media accounts.

2.7.2. Defined Key Performance Indicators

At this stage, the organization's performance indicators are determined to monitor business trends, measure, and find out if they are in the right direction, which guarantees the achievement of the organization's future strategy and vision, and thus achieves its success and ability to compete.

2.7.3. Data Mining

The data extraction stage consists of three processes:

Extract, transform, and save or store data (Load), this stage consists of several steps as follows:

- Decision-making support.
- Data analysis and reporting.
- Extraction of containers.
- Define performance indicators.
- Determine data sources.

- Among its functions are the following:

I-Data extraction (Extract) that is, obtaining access to data sources to extract what is necessary from them to complete the rest of the operations and information.

II-Transforming, formatting, organizing, and applying some operations to it, such as merging, data cleaning from errors and null values, and mapping from the fields of different sources that carry the same data but with different names such as (age) to the fields of data warehouses.

III-Preserving and storing data correctly for the analysis process in an organization's data source.

2.7.4. Data Analysis and Reporting

After extracting, converting, and saving the data in the appropriate form for its analysis process in tow, monitor, and evaluate the status of the organization's performance, determine its priorities, provide solutions, present opportunities to improve performance, and prepare static or dynamic reports using review techniques through business intelligence tools.

2.7.5. Supporting Decision-Making

After the comprehensive vision of the organization's performance has been formed through reports in the previous stage, and with reliable knowledge about the current situation and predictions for the future, appropriate decisions can be taken, and they are taken faster, thereby achieving the organization's essential advantage to improve performance and achieve goals; The impact of business intelligence on supporting decision-making, whether strategic or operational.

In the strategic decision-making process, the goal may be clear or unclear, so new possibilities and new paths to achieve goals are constantly searched for, while business intelligence helps analyze data for many possibilities, and generate new ideas that are found from data mining.

Operational decisions can be made more efficiently by using prior data analysis and then creating a classification and modeling system using the data. Developing a model that helps improve future operational decisions and business intelligence helps complete the decision-making process at the operational level and improves efficiency by making many operational decisions in a model-driven manner. (Maheshwari, 2015 ; Naraina, 2013)

2.8. BUSINESS INTELLIGENCE TOOLS

Business intelligence tools are software tools that enable data retrieval, analysis, and reporting, and include a wide range of software tools, namely: Data Warehouse, Data Mining, Online Analytical Processing, and Information Technologies Audit, helping organizations to establish good performance knowledge and short- and long-term strategic planning.

2.8.1 Data Warehouse

The data warehouse and its variables are the foundation of any business intelligence system. It includes historical data that has been organized, summarized, and reconstructed in the data warehouse to be available for analytical processing activities. It contains directed integrated and variable data. It includes business definitions, data quality analogies, organizational changes, business rules, assumptions, and other elements of interest. Metadata helps business users understand what is available to them, how to access it, what it means, what data to use, and when to use it. Metadata browsers also provide an easy-to-understand way to view a data warehouse.

2.8.2. Data Mining

Data mining is defined as the process of analyzing the organization's big data from its various storage sources (databases, data warehouses, websites), to find a logical relationship that summarizes the data in a new way that is understandable and useful. Using tools that search for trends or stale data, extract implicit, previously unknown information. Yet a way to develop business intelligence often uses a wide range of data mining techniques to get a better understanding of its operations and to solve all organizational problems.

It is also the process of exploring patterns and trends that go beyond analysis through the huge amount of data that is stored in the data warehouse through mathematical algorithms

and is usually used to identify useful statistical and mathematical techniques for organizations to extract and identify large information and knowledge, and evaluate future possibilities.

2.8.3. Online Analytical Processing (OLAP)

Online Analytical Processing (OLAP) is the technology behind many business intelligence applications. It is a powerful technology for data discovery, unlimited reporting, complex analytical calculations, predictive planning, and future trend determination. Multi-dimensional analysis of business data enables and provides the ability to perform difficult calculations, trend analysis, and complex data modeling, and is the basis for many types of business applications such as (business performance management, planning, budgeting, forecasting, financial reporting, analysis, knowledge discovery, and data warehouse reports). It also allows end users to perform customized analysis of data in multiple dimensions capable of realizing quick access to shared multi-dimensional information, which helps achieve the vision for better and appropriate decision-making. (Gharaibeh, 2017; Saleh, 2016)

2.9. UNIVERSITY OF MISURATA

2.9.1. An Introductory Overview of the University of Misurata

Misurata University is considered one of the oldest Libyan universities, famous for its scientific, research, cultural, artistic, and athletic excellence, and in all literary, social, and intellectual activities. Misurata University is home to one of the largest libraries in Libya. Misurata University has many cooperation and twinning agreements and educational programs with many local universities.

2.9.2. The Genesis of the University

The University of Misurata was established in 1984, and then it was developed in its current state in 2010 after the merger of the Seventh of October University with Al-Marqab University regarding the restructuring of Libyan universities. Approximately 18,402 students are studying at the University of Misurata, where students receive their education through good educational programs and curricula in various branches of science and knowledge. The university also evaluates and participates in many activities to serve the community.

2.9.3. University Mission and Vision

Our social responsibility: the development of knowledge, research, innovation, and entrepreneurship at the university, a vision of sustainability, and a unique comprehensive partnership locally and globally.

2.9.4. University Goals

The goals of the Misurata University are listed as:

- Improving educational services to raise the efficiency of educational outputs and developing a stimulating environment. And supportive of creativity and innovation.
- Increasing postgraduate programs and improving the quality of scientific research and investing in it.
- Improving the community participation of university employees and making distinguished contributions to community service.
- Promoting the development of the skills and capabilities of academic and administrative leaders through scientific and methodological frameworks
- Contemporary and innovative thinking in solving problems and developing media and communication to enhance the mental image.
- Increasing the efficiency of resources and applying the principles of rationalization and reducing waste.
- Improving and sustaining infrastructure and services by the standards of green universities and developing information technology services and applications.

2.10. ADMINISTRATIVE DEVELOPMENT

2.10.1. General

Development is one of the goals that every individual, society, and organization seeks to achieve, so the need for it is continuous and urgent for individuals, societies, and organizations.

The development process that takes place in various spheres of life is mainly aimed at achieving a high degree of perfection and improving human life.

There is no doubt that our current era imposes different and varied changes that reflect the amazing developments in various fields and capabilities that contribute to the continuity of success until it reaches creativity and the correction of methodological methods to keep pace with these developments.

Among the many areas of development are tourism development, economic development, social development, Cultural development, and scientific development, as well as administrative development, will talk about as follows (Ibietan,2014)

2.10.2. Concept of Administrative Development

Management development is the process of developing the administrative human side in the organization, through targeted and planned change that makes individuals, leaders, and organizations work better, efficiently, effectively, and with high quality. (Ibietan, 2014)

Development as the process of advancing the current situation in administrative work In various fields, through the use of modern administrative mechanisms that aim directly at organizing work in administrative aspects comprehensively, by defining a set of goals, making efforts to identify problems and weaknesses, and working to solve them. (Saleh, 2016)

Administrative development includes several concepts, namely: management, leadership experts, and human resources development, and among the definitions given to him that the management and leadership development process is the education of leaders and managers in the organization based on understanding and recognizing opportunities. On the other hand, the idea of improving the overall management capacity of the organization by using total quality management techniques has been added. (Hawajra & Kilani, 2019)

2.10.3. Importance of Administrative Development

The importance of administrative development lies in seeking to spread the culture of administrative thought and support development efforts at all administrative levels. By providing technical administrative consultancy to achieve high levels of performance by selecting new, innovative, and effective methods, and contributing to building and modernizing administrative development by supporting aspects of the administrative process,

in addition to setting a comprehensive development plan, studying the terms of reference for organizational units, simplifying work procedures and job descriptions, and defining job descriptions. Competencies of the administrative organizational units in the organization, disentangling them, preparing job description cards for the various jobs in the organization, and developing and updating them. Systems for evaluating the performance of employees, in addition to developing and improving their level of performance by selecting the best methods and modern scientific means in the field of management. (Ibietan,2014)

Administrative development ensures the fulfillment of supervisory roles over the work of the organization and administrative and financial auditing by the standards of review and oversight by the Board of Directors. It contributes to activating the role of risk management and monitoring, correcting and improving the internal operations of the organization, and achieving internal control.

Through administrative development, the degree of empowerment is raised, learning levels are intensified, competencies are raised, and support is provided to solve problems through continuous teamwork to manage the organization, with a special focus on developing the organization's culture in the work teams, and the formation of homogeneous and integrated teams using the role of the director has specialized in management development and all development science theories and techniques as well as research practices. (Hawajra, Kilani, 2019)

Administrative development is of great importance because it is an intended process for the development of potential, capabilities, and skills Individual human resources to deal with modern technologies and address surrounding challenges and changes, which contributes to implementing plans, achieving goals, and raising the level of organizational performance.

2.10.4. Administrative Development Goals

- Administrative development seeks to achieve several goals from different aspects. Regarding the side Human resources, including those related to performance and other technical, political, and legal aspects...etc. Here are the most important ones:

- Developing human resources, raising their performance and efficiency, refining their skills, and developing their capabilities.
- In addition to empowering leaders, and providing opportunities for workers to constantly raise their level of performance, to keep abreast of modern technical, professional, and administrative developments.
- Improving the general performance of organizations through improving work methods, simplifying procedures, and finding flexible ways. Providing advanced services in record time and with high quality, while laying the foundations that ensure the continuity of development.
- Adopting a comprehensive assessment of the institution's performance through the objectives set for it, including performance evaluation, the works that have been accomplished, and the determination of financial costs and employee performance.
- Develop the self-capabilities of the administrative bodies to keep pace with changes, diagnose and solve problems, as well as obstacles, and develop flexible future development plans based on the importance of defining general goals in quantitative, qualitative, and temporal dimensions.
- Expanding reliance on modern technologies to access electronic organizations, which contributes to building e-government projects and enhancing research activities and developments in these journals.
- Expanding the horizons of contributing to the development of advanced technology.
- Developing the formulation of administrative work, its methods, procedures, policies, legislation, and laws related to achieving accuracy and speed in decision-making. (Ibietan, 2014)

2.11. SOME BUSINESS INTELLIGENCE TECHNIQUES USED TO DISPLAY INFORMATION

Information review techniques are among the most important techniques for the success of business intelligence by providing information outputs to analysts and decision-makers.

Below we mention some of the techniques that are used in different forms, either alone or in combination to suit the goals.

2.11.1. Reports

Various reports can be generated by business intelligence in the administrative system, financial system, inquiries, etc...

The forms of these reports vary, including simple forms such as tables, and complex reports such as interactive reports that can be interacted with to access specific details.

2.11.2. Dashboard

The dashboard displays aggregate graphs of the current KPIs that display comprehensive statistics on how the organization is performing to activate the response to changes for the better. Within the business activity follow-up function, the dashboard displays indicators related to organizational performance management, compares them with the required metrics, and gives a quick look at the health of the institution's performance.

2.11.3. Scorecard

The performance measurement card is one of the latest technologies in measurement, as it provides senior leaders with a quick view and understanding of the organization's work, and contributes to the continuity of interest in measuring and improving organizational performance, and the performance measurement card is among the dashboard tools for being part of it and is a type of report that consists of a set of Often key business metrics. The performance indicator is displayed with multicolored illustrations and arrows indicating the direction of performance. (Missioro, 2022)

SECTION 3:
LITERATURE REVIEW

3.1. PREVIOUS STUDIES

Several studies have been conducted on the subject of (business intelligence). We will present here some studies as follows:

3.2. "Knowledge Management's Impact on Administrative Work in Northern Jordanian Universities".

This study aimed to identify the impact of knowledge management in its dimensions of generation, knowledge and information exchange, and the application of knowledge to develop administrative work in its dimensions (planning, organization, and decision-making) through business intelligence. (Data warehouse, data mining, and direct analytical processing). In addition to identifying the integration between business intelligence and knowledge management, the research followed the analytical descriptive approach, as this study is considered a field study, and questionnaires were distributed to the study sample as a data collection tool. One of the important results is the role of business intelligence in enhancing the impact of knowledge management on administrative development. This study presented a set of recommendations, the most important of which is the development of strategic plans that adopt the concepts of knowledge management and attention to it, and the costs of business intelligence operations in universities must be paid in exchange for integration between business intelligence, organization, and management. (Gharaibeh , 2017).

3.3. The mediating role of business agency capabilities between organizational leadership in Jordanian public universities.

This study aimed to analyze and measure the impact of organizational leadership in achieving strategic success through business intelligence capabilities in Jordanian public universities. The researcher used the descriptive analytical method and used the questionnaire

as the main tool for collecting information. After the analysis, the study concluded that there is an impact of organizational leadership in its dimensions on strategic success, as well as on business intelligence capabilities, in addition to an impact of business intelligence capabilities on strategic success, and indirect effect business intelligence capabilities on the relationship between organizational leadership and strategic success. In light of the results, this study recommended promoting entrepreneurial culture and linking it to objectives, performance, and strategies. He also recommended transforming the organizational structure from a bureaucratic structure to a flat, organic structure based on business intelligence capabilities and encouraging creative work. (Angeles et al., 2018)

3.4. Oriented Business Intelligence (SOBI) for University Academic and Financial Data Integration.

This study aimed to implement a service-oriented business relationship (SOBI) to integrate academic and financial data of Satya Wacana Christian University into a data warehouse, develop a data warehouse using the Galaxy system, and implement it using Building Query Language. 2012 SQL Server). One of the results of this study is that when implementing a service-oriented SOBI (SOBI), dashboard applications that manage the data integration process must be implemented and data integration is done on SOBl with the help of a web server by creating a service provider at the location of the data source and an application service requester (Dashboard)The service provider can be called by the Dashboard app to perform data retrieval from the data source and transfer the data to the data warehouse so that the entire ETL process is done by the web service. In addition, the dashboard application also synchronizes data from other sources through the web service so that the data to be combined is also more consistent. (Ramos et al., 2018)

3.5. business intelligence systems to support the university's strategy, Bucharest.

This research summarizes that business intelligence enables universities to measure, monitor, and manage their performance more effectively. The research provides a framework for developing a business intelligence solution for universities. It also introduces how the university can use business intelligence to evaluate the e-learning platform. The thesis also briefly explained a dimensional data model for evaluating an e-learning platform from a

usability point of view. The selection of the Dimensions data model was based on the need to analyze data at the university level. One of the study's most important findings is the dashboard, as it is the preferred method for presenting business information to users. The university can use the dashboard as a key component of a business intelligence solution. (Mihaela et al., 2020)

3.6. Business Intelligence Design Model (BIDM) for the university, Sohar University, Sultanate of Oman.

The business idea for this research paper is to present the Business Intelligence Design Model (BIDM) BIDM is a model that will help the university to use business intelligence systems to produce reports that achieve accuracy, reliability, and effectiveness to support decision-making processes. Information and knowledge are the backbones of the development of any organization because it is used in decision-making.

In addition, the level of management in any organization looks to ensure the quality and effectiveness of work performance depending on the knowledge to make the right decisions. Business intelligence can help organizations make the most of information and build a good knowledge base. Universities, like any organization, are looking to improve their work performance to keep pace with global development and to manage the increase in information needed for decision-making. (Farsi & Saini, 2016)

3.7. Business intelligence and analytics applications in Turkish universities, Izmir Bakirsay University, Turkey.

This study aimed to determine the extent to which business intelligence and analytics applications are used in Turkish universities. Because of changes in higher education, universities use business applications and analytics applications, which are private-sector practices. For this purpose, case studies were conducted in 12 Turkish universities with different personalities - the case studies were conducted face-to-face as semi-structured interviews. It is revealed that the entities use information systems for their business operations; through the study, it turns out that some universities lack the use of business

analytics applications, especially predictive and educational analytics. (Ülker & Coşkun, 2020)

3.8. BI governance framework for the university. University of La Costa, CUC, Barranquilla, Colombia.

This research aims to provide a business intelligence governance framework design for the University of La Costa, and it can be easily replicated in other institutions. For this purpose, a diagnostic was performed to determine the level of maturity in the analyses. From this foundation, a model is designed to strengthen organizational culture, infrastructure, data management, data analysis, and governance. The proposal considers defining the governance framework, guidelines, strategies, policies, processes, decision-making body, and roles. Therefore, the framework is designed to implement effective controls that ensure the success of business intelligence projects, achieve alignment of the development plan objectives with the analytical vision by designing a business intelligence governance proposal fully compatible with the context and needs of universities, and encourage the creation of business intelligence project initiatives, to meet the prevailing need for truthful information, which It can turn them into indispensable inputs for making important decisions. (Arturo et al., 2020)

SECTION 4:
METHODOLOGY

4.1. INTRODUCTION

The research used the descriptive approach to examine the different aspects of business intelligence. This involved studying some relevant literature from various electronic sources, including encyclopedias, blogs, e-books, academic journals, and international conferences.

The study approach was adopted at the University of Misurata on the subject of the role of business intelligence and administrative development from the point of view of managers, faculty members, and students at the university to determine the level of understanding. The role of business intelligence and the extent of its application in administrative development at the university level, as well as access to proposals that promote maximum benefit from the application of business intelligence in development.

4.1.1. Preparation of the Questionnaire

Among the tools used in this study is the questionnaire, which was prepared based on what was reported from previous studies, taking into account the specificity of its application at the University of Misurata. The data and its processing included several basic dimensions to answer the research questions It was formulated and translated from Arabic into English in a peaceful scientific language and answered using a Likert scale. A five-point scale for measuring sample responses according to the following ratings: (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree).

Validity and reliability were tested as described in the research and results section.

4.1.2. Implementation of the Questionnaire

The questionnaire was sent electronically to the target group at Misurata University, represented by academics and administrators who hold administrative positions, technicians, college directors, heads of departments, and students.

4.1.3. Data Collection

After the participants completed filling out the questions in the questionnaire, the data was collected and saved in a table.

4.1.4. Display Data

After collecting the data, it was displayed in an Excel table to be analyzed and to show the results of the survey.

4.1.5. Score Calculation

Using the SPSS statistical package program to analyze and organize the data.

The validity of the questionnaire is then analyzed using the Pearson correlation scale and Cronbach's alpha coefficient to calculate its reliability. The arithmetic mean (corresponding rate) is calculated on the answers of the study sample, and then the standard deviation is calculated to find out the extent of dispersion in those answers, and its representation in percentage and the relative importance (rank) of each paragraph.

4.2. VALIDITY

Validity is a term used in research to indicate the extent to which a study accurately measures or reflects what it is intended to measure or reflect. In other words, validity relates to the accuracy or reliability of the results obtained through the research process. In general, validity is essential to ensure the accuracy and reliability of study results.

Verify the validity of the questionnaire and the extent to which its paragraphs can be measured and cover the purpose for which it was designed in two ways as follows:

The validity of the internal consistency of the questionnaire items this is done by calculating the Pearson correlation coefficient for each paragraph with the total score of the dimension associated with it.

4.3. RELIABITIY

Reliability refers to consistency and reliance on something. It can refer to the consistency of a measurement or test, the consistency of an object in performing its intended function, or the consistency of a person in fulfilling their obligations and responsibilities. In

general, reliability refers to the degree to which something can be trusted to perform consistently over time and under various conditions. In engineering and technology, reliability is a critical consideration, as it affects the safety, efficiency, and functionality of many products and systems. In this study, reliability will be measured by calculating the Cronbach alpha coefficient for the internal consistency of the questionnaire elements to find out and verify the consistency in the study sample responses and the reliability coefficients for each dimension of the study sample.

4.4. CONSTRAINTS

The questionnaire was distributed to the participants electronically with the help of the e-mail list available at the university and the answers were collected anonymously, and it was not possible to distinguish between academic and administrative responses. There are administrative questions, and general questions in the questionnaire, but all questions were asked to all participants.

SECTION 5:
RESEARCH AND FINDINGS

5.1. STUDY TOOL

Among the tools used in this study is the questionnaire, which was prepared based on what was reported from previous studies, taking into account the specificity of its application at the University of Misurata. The questionnaire was sent electronically. They were formulated in peaceful scientific language and answered using a Likert scale.

5.2. STUDY POPULATION AND SAMPLE

The study population consists of the leaders of the University of Misurata, represented by academics and administrators who hold administrative positions, directors of faculties, heads of departments, students, and employees. The questionnaire was distributed to the University of Misurata electronically to 120 people, and (80) responses were received. As shown in the following: Table-1

Job title	Repetition	Ratio
University Professor	17	21.3%
Assistant Professor	10	12.5%
Head of Department	5	6.3%
Manager	3	3.8%
Employee	23	28.7%
Student	22	27.5%
Total	80	100,0%

Table-1 Showing the participants in the survey

- The questionnaire has 55 questions in total and is logically divided into eight sections.

Section one: demographic data. It consists of five questions**,** From 1 to 5.

Section two: is the organization's vision, planning, and business management. It consists of 8 questions, From 6 to 13.

Section Three: Senior Management Support. It consists of 9 Questions, From 14 to 22.

Section Four: Resources available in the organization. It consists of 5 questions, From 23 to 27.

Section Five: Information Technology Governance. It consists of 8 questions, From 28 to 35.

Section Six: Development and programming team skills. It consists of 7 questions, From 36 to 42.

Section Seven: A Culture of continuous development. It consists of 6 questions, From 43 to 48.

Section Eight: The quality of data available to the institution. It consists of 7 questions, From 49 to 55.

They were formulated in peaceful scientific language and answered using a Likert scale.

A five-point scale for measuring sample responses according to the following ratings: (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree).

The following table shows the dimensions included in a scale and the number of paragraphs for each dimension.

5.3. QUESTIONNAIRE CHARACTERISTICS

In this study, the data collected from the electronically distributed questionnaire was analyzed by verifying the validity and reliability of the study tool, which is the most important pillar, using statistical methods and basic criteria to determine the appropriate scale for the subject of the study through statistical analysis (SPSS) are as follows:

The First Section: explains the institution's vision, planning, business management, the university's vision, and the quality of the technological systems process within the university.Table-2

Question	1	2	3	4
Correlation coefficient	.803	798.	.808	.774
Question	5	6	7	8
Correlation coefficient	0. 780	0.828	0.792	0.848

Table-2 Pearson correlation coefficients the first section

The Second Section: Senior management support the extent to which senior management is inclined to support and adopt the business intelligence system inside the university.Table-3

Question	1	2	3	4	5
Correlation coefficient	0.762	0.806	0.817	0.857	0.787
Question	6	7	8	9	
Correlation coefficient	0.833	0.873	0.905	0.795	

Table-3 Pearson correlation coefficients the second Section

The Third Section: is the resources available in the institution, and the extent to which the university can provide the necessary resources to adopt the business intelligence system. Table-4

Question	1	2	3	4	5
Correlation coefficient	0.897	0.871	0.877	0.891	0.798

Table-4 Pearson correlation coefficients the third section

The Fourth Section: Information Technology Governance the extent to which the university relies on laws and regulations of the government of information technology to ensure its effectiveness and support for the strategic goals of the university.Table-5

Question	1	2	3	4
Correlation coefficient	0.802	0.884	0.828	0.854
Question	5	6	7	8
Correlation coefficient	0.881	0.846	0.849	0.800

Table-5 Pearson correlation coefficients, the fourth section

The Fifth Section is the skills of the development and programming team. The extent to which the technological skills and expertise of the development and programming team available at the university are available to adopt and implement the business intelligence system.Table-6

Question	1	2	3	4
Correlation coefficient	0.801	0.811	0.887	0.890
Question	5	6	7	
Correlation coefficient	0.884	0.828	0.832	

Table-6 Pearson correlation Coefficients the fifth Section

The Sixth Section: is the culture of continuous development. The extent to which the university relies on urging and empowering employees to continuously develop and search for ideas and innovation in the work environment.Table-7

Question	1	2	3
Correlation coefficient	0.884	0.853	0.810
Question	4	5	6
Correlation coefficient	0.852	0.910	0.719

Table-7 Pearson correlation coefficients the Sixth Section

The Seventh Section is the quality of data available to the institution. The extent of the quality of data available in the work environment.Table-8

Question	1	2	3	4
Correlation coefficient	0.806	0.885	0.749	0.763
Question	5	6	7	8
Correlation coefficient	0.865	0.863	0.692	0.769

Table-8 Pearson correlation coefficients the seventh Section

5.4. VALIDITY OF INTERNAL CONSISTENCY OF DIMENSIONS

In order to assess the internal consistency of the dimensions, the correlation coefficients were computed by comparing the total scores for each dimension of the questionnaire with the total score for the entire questionnaire. These correlation coefficients, depicted in the table provided, varied between 0.655 and 0.895). This range signifies the degree of association between each dimension and the overall questionnaire, thus indicating the internal consistency of the dimensions.Table-9

	Sections	Correlation Coefficient
1	The First Section	0.895
2	The Second Section	0.853
3	The Third Section	0.655
4	The Fourth Section	0.805
5	The Fifth Section	0.778
6	The Sixth Section	0.840
7	The Seventh Section	0.849

Table-9 the Correlation coefficient of the questionnaire

5.5. RELIABILITY

The stability was confirmed by relying on the calculation of the Cronbach alpha coefficient for the internal consistency of the paragraphs of the questionnaire in order to know the extent of consistency in the responses of the study sample and verify the degree of stability of the overall questionnaire and it was clear from the test results that the reliability coefficient reached (0.967), which is a high percentage that confirms the validity and stability of the scale and the validity of its results for application.Table-10

	Sections	The Cronbach alpha Coefficient.
1	The First Section	0.922
2	The Second Section	0.942
3	The Third Section	0.917
4	The Fourth Section	0.941
5	The Fifth Section	0.934
6	The Sixth Section	0.915
7	The Seventh Section	0.909
	The Total Questionnaire	0.976

Table-1*0* Cronbach's alpha test results for the sections in the questionnaire

5.6. FINDINGS IN THE RESPONSES

In this part of the study, the questionnaire answers were analyzed to answer the questions of this study and achieve its objectives. This is done through the use of statistical methods by collecting the scores of each answer on each item and then on each dimension and calculating the arithmetic mean and standard deviation for each item of the section to which it belongs, and calculating the percentage of the section.

5.6.1. The First Section

In this section, questions were raised about the university's vision and the feasibility of implementing technological systems within the institution. Participants' answers were collected using a Likert scale. Table-11 shows the mean and standard deviation of the responses. The results indicate that the average standard deviation of the section is 0.96474, indicating a moderate dispersion of the data around the total arithmetic mean of 2.941. For example, question 12 regarding the university determining the resources needed before implementing any new information system received the highest approval score from the respondents, with an arithmetic mean of 3.15 and a standard deviation of 1.179. In contrast, Question 7, which evaluated the university's use of administrative methods and processes to successfully achieve its goals, received the lowest average among all dimensions, with a value of 2.66 and a standard deviation of 1.183.When analyzing the results presented in the

table below, it can be concluded that a weak percentage (58.80%) of the study sample expressed a neutral opinion. This indicates that the majority of respondents believe that the university lacks a quality vision for the implementation of technological systems. This indicates a potential barrier to using business intelligence for managerial development within the university, particularly in terms of planning, organizing, directing, and controlling.

Table-11

Enterprise vision, planning, and business management			
The vision of the university and the feasibility of the process of technological systems within the university			
Number of Questions		Arithmetic mean	standard deviation
6	The university has clear and actionable strategies	2.87	1.170
7	The university uses administrative methods and processes that help achieve its goals successfully and effectively	2.66	1.183
8	University leadership is fully aware of environmental factors affecting work performance, such as laws, competition ,and innovation	3.01	1.177
9	The administrators at the university are highly knowledgeable about information technology.	2.83	1.146

10	Information systems available at the university contribute to achieving the university's strategic goals effectively	2.90	1.197
11	Before implementing any new information system within the university, the vision and objectives are clearly defined and prior to implementation.	3.03	1.230
12	Before applying any new information system within the university, the university determines all the resources necessary for its implementation.	3.15	1.179
13	Before applying any new information system within the university, the university determines the period of time required for its programming and application.	3.07	1.291
	Average	2.941	0.96474

Table -11 the first- section results

5.6.2. The Second Section

In this section, questions were raised about the position of senior management regarding the support and adoption of the business intelligence system in the university. Participants' answers were collected using a Likert scale. Table-12 shows the mean and standard deviation of the responses. The results indicate that the mean standard deviation of the section is 0.97802, which indicates a moderate scattering of the data around the total arithmetic mean of 3.0626.. In Question 19, participants highly approved the statement highlighting senior management's view of the business intelligence system as a strategic tool for achieving the university's goals. With an average rating of 3.21 and a standard deviation of 1.133, it stands out as one of the most posily received paragraphs among the respondents.

On the contrary, Question 20, which pertains to the university's utilization of administrative methods and processes to effectively accomplish its goals, received the lowest

average rating among all the statements within the dimension. The average value of 2.90, coupled with a standard deviation of 1.209, suggests a lower level of agreement among the participants regarding this matter. Analyzing the data presented, it can be concluded that a weak or neutral response was given by a significant percentage (61.24%) of the study sample. This finding indicates that the majority of respondents believe that the senior management of the University of Misurata lacks sufficient support and implementation of the business intelligence system within the university.Table-12

Senior management support			
The tendency of senior management to support and adopt the business intelligence system within the university			
Number of Questions		Arithmetic mean	standard deviation
14	The university's senior management supports information systems because it is a major reason for increasing competitiveness, growth, and excellence in the field of work.	2.94	1.107
15	The university's top management tends to solve problems and overcome obstacles while applying	3.07	1.113
16	The university's senior management encourages employees to use newly approved information systems, such as the business intelligence system	3.00	1.171
17	The university's senior management believes that the institution needs advanced data analysis and reporting to aid in the decision-making process.	3.20	1.203
18	e university's senior management is aware of the benefits and advantages resulting from the adoption of the business intelligence system	3.06	1.145

19	The university's senior management views the business intelligence system as a strategic tool to achieve the university's goals.	2.90	1.133
20	The university's senior management believes that adopting a business intelligence system will lead to a significant improvement in administrative decisions and performance quality.	2.90	1.209
21	The university's senior management has realistic expectations and achievable goals because of adopting the business intelligence system.	3.18	1.345
22	The university's senior management has the desire to provide the time and resources necessary for the university to implement a business intelligence system.	3.00	1.231
	Average	3.0626	0.97802

Table -12 the second- section results

5.6.3. The Third Section

In this section, questions were raised about the university's ability to provide the necessary resources to adopt a business intelligence system. Participants' answers were collected using a Likert scale. Table-13 shows the mean and standard deviation of the responses. The results recorded in the table showed the general arithmetic mean of the items in this section 3.0563 and the general standard deviation 1.03603. These two values show the centrality of the data and its moderate dispersion around the mean.

Question (27): The University has the time required to implement and complete the business intelligence system. It is one of the most approved items by the participants with an arithmetic average of (3.35), while in question (23) the university has (or is able to provide)

the necessary equipment to adopt and implement a business intelligence system. The arithmetic mean is the lowest among all items of the dimension by the participants,

with a value equal to (2.85). Looking at the data analysis results shown in the table below, we conclude that there is an average percentage (61.12%) that is considered weak or neutral in the responses of the study sample. This indicates that the majority of respondents believe that the ability of the university to provide the necessary resources to adopt a business intelligence system is limited or weak. Table -13

Resources available in the organization			
The ability of the university to provide the necessary resources to adopt the business intelligence system			
Number of Questions		Arithmetic mean	standard deviation
23	The university has (or is able to provide) the necessary equipment to adopt and implement a business intelligence system	2.85	1.338
24	The university has (or is able to provide) sufficient funding to cover the needs of applying business intelligence.	2.90	1.185
25	The university has or is able to provide enough human resources to complete the work and complete the business intelligence system.	3.07	1.125
26	The university has (or is able to provide) the technological resources (hardware, software) necessary to adopt the business intelligence system.	3.11	1.202
27	The university has the necessary endowment to implement and complete the business intelligence system.	3.35	1.148
	Average	3.0563	1.03603

Table -13 the third- section results

5.6.4. The Fourth Section

In this section, questions were raised about the university proving its commitment to the effectiveness and support of the strategic objectives through the application of information technology laws and regulations and adherence to them. Participants' answers were collected using a Likert scale. Table-14 shows the mean and standard deviation of the responses. The results indicate that the general arithmetic mean of the items is 2.7905, which indicates an average level of agreement among the participants. A standard deviation of 0.99301 indicates a moderate scattering of responses around the mean, indicating some variance of opinions. Among the statements, Question 31 received one of the highest average ratings of 2.96, with a standard deviation of 1.101. This statement highlights the involvement of members from all university departments in setting strategies and laws related to information technology. Conversely, Question 29 received the lowest average rating of 2.65 among all the items in the dimension. This statement pertains to information technology strategies and policies defining goals and expectations for using technology programs within the university, including related activities and responsibilities. It had a standard deviation of 1.220, indicating a lower level of agreement among the participants.

Upon examining the data analysis results, it can be inferred that an average of 55.80% of the study sample responded with weak or neutral sentiments. This indicates that the majority of respondents believe that the availability and adoption of information technology laws and regulations to ensure effectiveness and support for the university's strategic goals are limited or not fully realized.Table-14

IT Governance			
The Availability and reliance of the university on the laws and regulations of information technology to ensure its effectiveness and support for the strategic objectives of the university.			
Number of Questions		Arithmetic mean	Standard deviation
28	Strategies and laws related to information technology are developed in a flexible manner to suit the changes that occur in the university's work environment.	2.76	2.76
29	Members from all departments at the university participate in setting strategies and laws related to information technology	2.65	1.220
30	IT strategies and policies are written clearly so that the user can understand them	2.77	1.085
31	Information technology strategies and policies define goals and expectations for the use of technology programs within the university, such as activities and responsibilities related to employees	2.96	1.101
32	IT strategies and policies can be accessed and read by all employees using IT projects	2.75	1.262
33	The university has mechanisms for evaluating information technology projects and measuring performance to ensure product quality.	2.77	1.173
34	The university has data government laws through data preservation policies, privacy assurance, and access rights.	2.85	1.283
35	The university has laws that are a clear guide used when the institution adopts a large information system such as business intelligence.	2.82	1.187

	Average	2.7905	.99301

Table-14 the fourth section results

5.6.5. The Fifth Section

In this section, questions were raised about the availability of the technological skills and expertise of the development and programming team at the university necessary to adopt and implement a business intelligence system. Participants' answers were collected using a Likert scale. Table-15 shows the mean and standard deviation of the responses. The results indicate that the general arithmetic mean of the items in this dimension is 3.0543, which indicates an average level of agreement among the participants. An overall standard deviation of 0.91230 indicates that the responses are evenly distributed around the mean, indicating some variance in opinions. Among the statements, Question 40 received one of the highest average ratings of 3.13, with a standard deviation of 1.055. This statement emphasizes the high data analysis skills of the development and programming team, and it was highly approved by the participants. In contrast, Question 36 received the lowest average rating of 2.96 among all the items in the dimension. This statement pertains to the development and programming team's ability to solve technical problems during the application of the business intelligence system. It had a standard deviation of 1.164, suggesting a lower level of agreement among the participants.

Based on the data analysis results, it can be concluded that an average of 61.08% of the study sample responded with weak or neutral sentiments. This indicates that the majority of respondents believe that the university's ability to provide the necessary skills and technical expertise to the development and programming team for adopting and implementing a business intelligence system is inadequate or non-existent. Table -15

Development and programming team skills			
The availability of technological skills and expertise of the development and programming team available at the university are necessary to adopt and implement the business intelligence system.			
Number of Questions		Arithmetic mean	Standard deviation
36	The development and programming team has high skills in data analysis	2.96	1.164
37	The development and programming team has high skills in queries and building reports.	3.06	1.027
38	The development and programming team has high skills in linking and integrating programs and systems	3.10	1.058
39	The development and programming team possesses the latest technological knowledge, skills, and techniques, including data analysis, web programming, and open-source software.	2.99	1.153
40	The development and programming team has the ability to solve technical problems during the implementation of the business intelligence system	3.13	1.055
41	The development and programming team has previous experience in large information technology systems such as electronic services and business intelligence.	3.07	1.087
42	The development team includes members from the different departments and departments that benefit from the system, in addition to the technical members (programmers).	3.08	1.156
	Average	3.0543	.91230

Table -15 the fifth- section result

5.6.6. The Sixth Section

In this section, questions were raised about whether the university relies on motivating employees and enabling them to continuously develop and search for ideas and innovation in the work environment. Participants' answers were collected using a Likert scale. Table- 16 shows the mean and standard deviation of the responses. The results recorded in the table show that the general arithmetic mean of the sample in this dimension is (3.108), while the general standard deviation is 0.95539, which indicates that there is a moderate dispersion in the sample data around the arithmetic mean. Question (44) the university is working on conducting an institutional assessment (quality of performance, costs, and methods of work) to improve the future performance of work. It is one of the most approved items by the participants with an arithmetic average of (3.20) and a standard deviation of 1.037, while in question (43) the administration is constantly striving to improve the basic administrative operations of the university. It is the lowest among all items of the dimension by the participants, with a value equal to (3.00) and a standard deviation of 1.298. Looking at the data analysis results shown in the table below, we conclude that there is an average percentage (62.16%) that is slightly higher than the neutral percentage in the responses of the study sample. This indicates that the majority of respondents believe that the university's ability to motivate employees and enable them to continuously develop and search for ideas and innovation in the work environment is insufficient or not sufficiently organized to achieve aspirations and goals in the work environment. Table-16

A culture of continuous development			
The university depends on motivating employees and enabling them to continuously develop and search for ideas and innovation in the work environment			
Number of Questions		Arithmetic mean	standard deviation
43	The administration is constantly striving to improve the basic administrative processes of the university.	3.00	1.298

44	The university works on conducting institutional evaluation (quality of performance, costs, and methods of work) to improve the future performance of work.	3.20	1.037
45	Managers at the university realize that best practices in the field of work vary according to time, so they seek to develop continuously.	3.15	1.064
46	The university relies on data-driven performance improvements techniques such as continuous progressive improvement or quality management.	3.13	1.061
47	The university takes advantage of the available information on performance in previous years to improve future performance.	3.15	1.215
48	The university has training and educational programs aimed at developing the expertise and skills of employees.	3.01	1.127
	Average	3.1080	0.95539

Table-16 the sixth section results

5.6.7. The Seventh Section

In this section, questions were raised about measuring the quality of data available at the university. Participants' answers were collected using a Likert scale. Table-17 shows the mean and standard deviation of the responses. The results recorded in the table showed that the general arithmetic mean of the items in this dimension is 3.0773 and the general standard deviation is 0.96673. These two values show the centrality of the data and its moderate dispersion around the mean. Question (53) the data available at the university are reliable. It is one of the most approved paragraphs by the participants with an arithmetic mean of (3.27) and a standard deviation of 1.320, while in question (51) the data available at the university can be easily accessed and made available around the clock. It is the lowest among all items of the dimension by the participants, with a value equal to (2.87) and a standard deviation of

1.170.Looking at the data analysis results shown in the table below, we conclude that there is an average percentage (61.54%) that is slightly higher than the neutral percentage in the responses of the study sample. This indicates that the majority of the participants believe that the ability of the university administration to measure the quality of data available at the university is insufficient or inaccurate enough to achieve aspirations and goals in the work environment. This may be because there are not enough analysis techniques to make use of the data available at the university. Table -17

The quality of the data available to the institution Measuring the quality of data available at the university			
Number of Questions		Arithmetic mean	standard deviation
49	The data available at the university is highly accurate	2.93	1.302
50	The data available at the university is continuously and regularly updated	2.99	1.201
51	The data available at the university is easily accessible and available around the clock.	2.87	1.170
52	The data available at the university is clear and easy to understand.	3.03	1.082
53	The data available at the university is reliable.	3.27	1.320
54	The data available at the university is integrated and provides you with a comprehensive view and helps students and professors to clearly understand the mechanism of the university.	3.20	1.249
55	Most of the data available to the university is stored in a centralized and integrated database	3.17	1.171
	Average	3.0773	.96673

Table -17 the seventh section results

SECTION 6:
DISCUSSION & COMPARISON

6.1. ONE OF THE MOST IMPORTANT CONTRIBUTIONS OF THIS STUDY

It is considered one of the few studies that dealt with business intelligence in Libyan universities, the first applied study at the University of Misurata on the role of business intelligence in administrative development. In addition, this study covers theoretical and practical perspectives on applying business intelligence.

6.2. DISCUSSION AND COMPARISON OF PREVIOUS STUDIES

All previous studies agreed to clarify the concept of business intelligence and its role in developing administrative work, which is the general objective of this study.

In his early study (Gharaibah ,2017) adopts the descriptive analytical approach, whereby a field study is conducted by distributing questionnaires to collect data. One of the main findings of his study is that business intelligence plays an important role in enhancing the influence of knowledge management on managerial development. The results showed that there is a statistically significant effect of knowledge management and intelligence, which highlights the role of business intelligence in improving administrative work.

One of the remarkable similarities between this research and the Ghariba study is that they were conducted in Jordanian universities using the descriptive analytical approach and the use of questionnaires to collect data. Moreover, the two studies emphasize the importance of the relationship between business intelligence and the development of managerial work in the university context. In addition, this study explained and clarified the importance of using business intelligence applications to improve the quality of administrative work and decision-making processes.

In his early study (Angeles et al., 2018). The primary objective of this study was to analyze and assess the influence of organizational leadership on achieving strategic success through the utilization of business intelligence capabilities in a Jordanian public university. The researcher employed a descriptive-analytical approach and employed a questionnaire as

the primary data collection instrument. Following the analysis, the study established that organizational leadership, along with its various dimensions, significantly affects strategic success. Additionally, the study found that business intelligence capabilities have a direct impact on strategic success and an indirect impact on the relationship between organizational leadership and strategic success.

The study's recommendations emphasize the importance of fostering an entrepreneurial culture and aligning it with objectives, performance, and strategies. It also advocates for transforming the organizational structure from a bureaucratic hierarchy to a flat, organic structure that leverages business intelligence capabilities and encourages creativity. This study aligns with existing research by emphasizing the significance of leveraging business intelligence to enhance the administrative system and achieve strategic success in educational institutions. Similarly, to previous studies, the questionnaire was employed as a data collection tool among a comparable study population. However, there are notable distinctions between this study and prior research. The current study focuses on a single public university, while the examination of Jordanian universities encompasses a group of public universities. Moreover, this research specifically explores the analysis and measurement of the impact of organizational leadership on achieving strategic success through business intelligence capabilities. Conversely, the current research delves into the role of business intelligence applications in enhancing administrative work within the University of Misurata.

In his early study Mihaela Montan, Ana Ramona Bologa, Razvan Bologa, Alexandra Florya (Montan et al, 2020) The study stresses the importance of benefiting from business intelligence systems in universities to enhance their administrative systems.

Business intelligence applications enable universities to effectively measure, monitor and manage their performance. The study presents a framework for developing a business intelligence solution tailored to the needs of universities, including its application in evaluating e-learning platforms. It also provides a dimensional data model for evaluating the usability of the e-learning platform.

The University of Bucharest study also focused on using a dimensional data model for university-wide data analysis. It advocated the use of dashboards as the preferred method of presenting business information to users. The dashboard has been identified as the core component of a comprehensive business intelligence solution. On the other hand, the current research discussed the importance of using business intelligence systems in enhancing administrative work at the University of Misurata. The current research also explored the role of business intelligence at the University of Misurata and assessed the university's willingness to adopt such applications through the use of questionnaires to collect and analyze data.

In his early study Harold Arturo Compita Johanna Patricia , Roberto Morales (Compita ,2020) The study focuses on developing a business intelligence governance framework tailored to La Costa University. The framework aims to establish effective controls that ensure the success of business intelligence projects. It highlights the importance of using business intelligence applications to support decision-making and enhance operational efficiency within the university.

The University of La Costa study stresses the need for a governance proposal that is compatible with the university context and requirements. Encourages the initiation of business intelligence projects to meet the university's demand for reliable information that can serve as a critical input for decision-making. In contrast, the current study conducted at the University of Misurata also acknowledges the importance of integrating business intelligence within the university and implementing a training course to enhance administrative work. It evaluates the university's readiness to adopt a business intelligence system. The research used descriptive analysis using questionnaires as a means of data collection and analysis.

In his early study Gülen Ülker and Erman Coşkun **(**Ülker, 2021). The objective of the study was to assess the usage of business intelligence and analytics applications in universities. The researchers conducted case studies in 12 Turkish universities with varying characteristics. Semi-structured interviews were conducted in person to gather data, which was analyzed descriptively. The findings indicated that universities generally utilize

information systems for their business operations, and these systems are either fully or partially integrated. However, it was observed that some public universities lack the use of business analytics applications, particularly in the areas of predictive analytics and educational analytics. This study aligns with the current research in terms of evaluating the extent of business intelligence application usage in universities through descriptive analysis and recognizing their significance in advancing administrative work within universities. It is worth noting that the case studies in this research were conducted in 12 Turkish universities with diverse characteristics, utilizing face-to-face -semi structured interviews. Conversely, the current study focused on a single university, the University of Misurata, and employed questionnaires as the electronic data collection tool.

In his early, study Ahmed Farsi, Dinesh Kumar Saini (Farsi & Saini, 2016). The research paper introduces the Business Intelligence Design Model (BIDM) as a business idea to assist universities in using business intelligence systems to generate accurate, reliable, and effective reports that support decision-making processes. Information and knowledge play a crucial role in the development of any organization, serving as the foundation for decision-making. The BIDM utilizes the extension of data and information from the data warehouse, utilizing Oracle 11g as the database for querying and transforming university-wide information. By enhancing knowledge management and improving information, the BIDM contributes to overall organizational improvement. The user interaction aspect of the BIDM involves the utilization of BI Publisher Tools within the OBIEE application. This allows users to access reports that aid decision-making, providing a fresh perspective and enhancing university performance through knowledge-based insights. By examining this research, it becomes evident that it supports the importance of implementing business intelligence systems to enhance administrative work and improve decision-making within universities.

In contrast, the current research focuses on evaluating the extent of business intelligence system utilization at the University of Misurata and assessing the university's ability to adopt such systems. This research paper presents the design of a business intelligence model tailored for Sohar University in Oman. Its purpose is to facilitate the production of accurate, reliable, and effective reports for decision-making processes. On the

other hand, the current research examines the usage of business intelligence applications within the University of Misurata and assesses the university's readiness to adopt such a system.

SECTION 7:
RESULTS & RECOMMENDATION

7.1. Results

The results of the survey indicate that the participants' perceptions regarding the application of business intelligence for management development at the University of Misurata were mostly neutral or moderate. This indicates a low level of adoption, the relationship between business intelligence and management development at the University of Misurata was weak, according to the perceptions of the participants.

The results show a lack of clarity of vision and goals with regard to the use of business intelligence at the University of Misurata, which hinders its effective application in administrative development and university activities in general, according to the perceptions of the participants, Participants believe that there is insufficient support from senior management to adopt and apply business intelligence, which has led to reliance on traditional methods in the administrative system that impede administrative development.

7.2. Recommendations

It is crucial for the senior management of Misurata University to actively support and embrace business intelligence, putting forth greater efforts to implement it in a modern and efficient manner within their operations, Placing significant emphasis on the training of business intelligence and disseminating informative messages to leaders, faculty members, and university staff about the key advantages offered by business intelligence and its role in fostering administrative development, Inviting experts and specialists in the field of business intelligence to share their knowledge and raise awareness among leaders regarding the importance of its implementation within the university.

Recognizing the paramount importance of business intelligence for the growth and enhancement of administrative work at Misurata University, integrating it as an integral part of the university's organizational culture, Increasing the university's dedication to administrative development by studying experiences and best practices from international

organizations in developing countries that have effectively applied business intelligence, Ensuring continuous adaptation and updating of utilized business intelligence techniques to keep pace with the latest advancements in the field, Establishing connections with academic institutions, both locally and internationally, such as universities and research centers, to remain informed about the latest developments in business intelligence through relevant publications, Conduct additional empirical studies that explore the practical applications of business intelligence in local organizations to gain insights into the level of implementation and identify potential obstacles.

CONCLUSION

The analysis of the study sample regarding the implementation of business intelligence in administrative development and the readiness of Misurata University to adopt such techniques revealed a neutral or moderate response, indicating a weak level of adoption. It is evident that Misurata University faces challenges in utilizing business intelligence techniques for administrative development and has capacity problems in implementing a comprehensive business intelligence system. The vision and objectives of business intelligence at Misurata University are unclear, and there is a lack of sufficient understanding to effectively apply it to administrative development and the university's various departments. This could be attributed to factors such as limited resources, both financial and human, to support the adoption of a business intelligence system within the university, as well as a lack of comprehension regarding the significance of adopting and applying business intelligence in achieving the university's goals and improving administrative efficiency. Furthermore, it is recommended to conduct additional empirical studies that focus on the practical applications of business intelligence in local organizations, in order to gain a deeper understanding of the level of adoption and identify potential obstacles

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APPENDIX-1. MISURATA UNIVERSITY QUESTIONNAIRE

Business intelligence and its role in administrative development at the University of Misurata

Business Intelligence System

Definition: An integrated set of programs that collect, store and analyze data from inside or outside the university. The knowledge generated by the analysis process is managed to provide useful information to decision-makers. In short, it aims to benefit from the data available to the university in supporting and improving the decision-making process and developing the administrative system.

The age

☐ Less than 30 ☐ From 30 to 39 ☐ From 40 to 49

☐ 50 and over

Gender

☐ female ☐ Male

Number of years of service

☐ Less than 5 years old ☐ 6 to 10 years old ☐ 11 to 15 years old

☐ over 15 years old

Job titles

- ☐ University Professor
- ☐ Assistant Professor
- ☐ Head of Department
- ☐ General Manager
- ☐ Employee

Information technology background

- ☐ Excellent background
- ☐ good background
- ☐ medium
- ☐ background
- ☐ weak background

Enterprise vision, planning, and business management					
To what extent do you agree on the following paragraphs with a clear measurement, the vision of the university, and the feasibility of the process of technological systems within the university? 1- Strongly disagree .....5- Strongly agree.					
Questions	1	2	3	4	5
1 The university has clear and actionable strategies					
2 The university uses administrative methods and processes that help achieve its goals successfully and effectively					
3 University leadership is fully aware of environmental factors affecting work performance, such as laws, competition, and innovation					
4 The administrators at the university are highly knowledgeable about information technology.					
5 Information systems available at the university contribute to achieving the university's strategic goals effectively					
6 Before implementing any new information system within the university, the vision and objectives are clearly defined and prior to implementation.					
7 Before applying any new information system within the university, the university determines all the resources necessary for its implementation.					
8 Before applying any new information system within the university, the university determines the period of time required for its programming and application.					

Senior management support

To what extent do you agree with the following paragraphs about measuring the tendency of senior management to support and adopt a business intelligence system within your organization? 1- Strongly disagree .....5- Strongly agree.

	Questions	1	2	3	4	5
9	The university's senior management supports information systems because it is a major reason for increasing competitiveness, growth, and excellence in the field of work.					
10	The university's top management tends to solve problems and overcome obstacles while applying newly approved information systems such as business intelligence systems.					
11	The university's senior management encourages employees to use newly approved information systems, such as the business intelligence system.					
12	The university's senior management believes that the institution needs advanced data analysis and reporting to aid in the decision-making process.					
13	The university's senior management is aware of the benefits and advantages resulting from the adoption of the business intelligence system					
14	The university's senior management views the business intelligence system as a strategic tool to achieve the university's goals.					
15	The university's senior management believes that adopting a business intelligence system will lead to a significant improvement in administrative decisions and performance quality.					
16	The university's senior management has realistic expectations and achievable goals as a result of adopting the business intelligence system.					
17	The university's senior management has the desire to provide the time and resources necessary for the university to implement a business intelligence system.					

Resources available in the organization						
To what extent do you agree with the following paragraphs about measuring the university's ability to provide the necessary resources to adopt the business intelligence system? 1- Strongly disagree ..... 5 Strongly agree						
Questions		1	2	3	4	5
18	The university has (or is able to provide) the necessary equipment to adopt and implement a business intelligence system					
19	The university has (or is able to provide) sufficient funding to cover the needs of applying business intelligence					
20	The university has or is able to provide enough human resources to complete the work and complete the business intelligence system.					
21	The university has (or is able to provide) the technological resources (hardware, software) necessary to adopt the business intelligence system.					
22	The university has the necessary endowment to implement and complete the business intelligence system					

Resources available in the organization

To what extent do you agree with the following paragraphs about measuring the university's ability to provide the necessary resources to adopt the business intelligence system? 1- Strongly disagree ..... 5 Strongly agree.

Questions		1	2	3	4	5
23	The university has (or is able to provide) the necessary equipment to adopt and implement a business intelligence system					
24	The university has (or is able to provide) sufficient funding to cover the needs of applying business intelligence.					
25	The university has or is able to provide enough human resources to complete the work and complete the business intelligence system.					
26	The university has (or is able to provide) the technological resources (hardware, software) necessary to adopt the business intelligence system.					
27	The university has the necessary endowment to implement and complete the business intelligence system.					

IT Governance					
To what extent do you agree with the following paragraphs related to measuring the university's availability and reliance on IT laws and regulations to ensure its effectiveness and support for the strategic goals of the university?1- Strongly disagree ..... 5 Strongly agree.					
Questions	1	2	3	4	5
28 Strategies and laws related to information technology are developed in a flexible manner to suit the changes that occur in the university's work environment.					
29 Members from all departments at the university participate in setting strategies and laws related to information technology					
30 IT strategies and policies are written clearly so that the user can understand them					
31 Information technology strategies and policies define goals and expectations for the use of technology programs within the university, such as activities and responsibilities related to employees					
32 IT strategies and policies can be accessed and read by all employees using IT projects					
33 The university has mechanisms for evaluating information technology projects and measuring performance to ensure product quality.					
34 The university has data government laws through data preservation policies, privacy assurance, and access rights.					
35 The university has laws that are a clear guide used when the institution adopts a large information system such as business intelligence.					

Development and programming team skills						
To what extent do you agree with the following paragraphs about measuring the availability of technological skills and expertise of the development and programming team available at the university necessary to adopt and implement the business intelligence system? 1- Strongly disagree ..... 5 Strongly agree.						
Questions		1	2	3	4	5
36	The development and programming team has high skills in data analysis					
37	The development and programming team has high skills in queries and building reports.					
38	The development and programming team has high skills in linking and integrating programs and systems					
39	The development and programming team possesses the latest technological knowledge, skills, and techniques, including data analysis, web programming, and open-source software.					
40	The development and programming team has the ability to solve technical problems during the implementation of the business intelligence system					
41	The development and programming team has previous experience in large information technology systems such as electronic services and business intelligence.					
42	The development team includes members from the different departments and departments that benefit from the system, in addition to the technical members (programmers).					

A culture of continuous development						
To what extent do you agree with the following paragraphs about measuring the university's dependence on motivating employees and enabling them to continuously develop and search for ideas and innovation in the work environment? 51- Strongly disagree ..... Strongly agree.						
Questions		1	2	3	4	5
43	The administration is constantly striving to improve the basic administrative processes of the university.					
44	The university works on conducting institutional evaluation (quality of performance, costs, and methods of work) to improve the future performance of work.					
45	Managers at the university realize that best practices in the field of work vary according to time, so they seek to develop continuously.					
46	The university relies on data-driven performance improvement techniques such as continuous progressive improvement or quality management.					
47	The university takes advantage of the available information on performance in previous years to improve future performance.					
48	The university has training and educational programs aimed at developing the expertise and skills of employees.					

The quality of the data available to the institution						
To what extent do you agree with the following paragraphs related to measuring the quality of data available in the work environment? 1-Strongly disagree ..... 5 Strongly agree.						
Questions		1	2	3	4	5
49	The data available at the university is highly accurate					
50	The data available at the university is continuously and regularly updated					
51	The data available at the university is easily accessible and available around the clock.					
52	The data available at the university is clear and easy to understand.					
53	The data available at the university is reliable.					
54	The data available at the university is integrated and provides you with a comprehensive view and helps students and professors to clearly understand the mechanism of the university.					
55	Most of the data available to the university is stored in a centralized and integrated database.					

	[TITLE OF THESIS] [Student's Name Surname] [Year]	 Ankara Science University Graduate School of Studies Management Information Systems Division of Humanities and social sciences **BUSINESS INTELLIGENCE AND ITS ROLE IN ADMINISTRATIVE DEVELOPMENT AT THE UNIVERSITY OF MISURATA** Mustafi BADI Master's Thesis Ankara, [2023]