

Analyzing The Role of Data Analytics in Business Decision Making in NEOM

Table of Contents

1. Chapter 1: Introduction.....	2
1.1. Research Background.....	3
1.2. Research Problem.....	4
1.2.1. Theoretical Gaps	4
1.2.2. Practical Gaps.....	4
1.3. Research Significance.....	4
1.3.1. Theoretical Level	4
1.3.2. Practical Level.....	5
1.4. Research Questions	5
1.5. Research Objectives	5
1.6. Research Hypotheses.....	5
1.7. Research Model	6
1.8. Research Methodology	6
1.9. Scope of Study.....	7
1.10. The Suggested Project Structure.....	8
2. Chapter 2: Literature Review.....	10
2.1. Introduction	11
2.2. The Independent Variable	11
2.3. The Dependent Variable.....	12
2.4. The Relationship Between The Independent and The Dependent Variables	12
2.5. Conclusion.....	13
References.....	14

1. Chapter 1: Introduction

1.1. Research Background

The current business landscape is undergoing significant transformation driven by the rapid evolution of technology, especially in the field of data analytics. Organizations in many businesses and industries have been leveraging data-driven insights to enhance their decision making and improve their operational efficiency as well as strengthen their competitive position and gain a competitive advantage. Data analytics is a very effective tool in smart cities like NEOM.

NEOM is a smart city built at the northwest coast of Saudi Arabia. It was launched in 2017 to be a hub for innovation, artificial intelligence, and digital transformation where real-time data analytics is integrated into the business decision making process within renewable energy, tourism, healthcare, and logistics sectors.

According to McAfee and Brynjolfsson (2012) data-driven organizations exceed their competitors by making more informed strategic decisions. Furthermore, Davenport and Harris (2017) emphasize that organizations in rapidly evolving markets can enhance operational efficiency, improve customer engagement, and gain a competitive advantage by leveraging data analytics. The significance of data analytics in smart cities was discussed by Kitchen (2014). Additionally, Wamba et al. (2017) analyzed the role of big data in enhancing business intelligence and predictive decision-making organizations to gain competitive advantage. However, despite these extensive studies, there is a need to address the role of data analytics applications in business decision making within smart cities like NEOM.

Therefore, this study aims to analyze the role of data-driven decision-making in NEOM's unique business environment. It seeks to contribute valuable insights to

businesses operating within NEOM that can leverage data-driven decision-making to achieve long-term success.

1.2. Research Problem

Data analytics is changing business decision-making, but its applications in smart cities like NEOM are still unclear. Current research focuses on existing markets which leaves a gap in understanding how businesses in smart cities leverage data analytics.

1.2.1. Theoretical Gaps

Most research examine data analytics in traditional business environments, but few focus on its role in smart cities like NEOM, where businesses operate within a new digital environment.

1.2.2. Practical Gaps

Although data analytics is an essential tool for decision-making in smart cities like NEOM, a lack of historical data impacts the effectiveness of data-driven decision-making.

Therefore, the research question is how is data analytics utilized in business decision-making within NEOM?

1.3. Research Significance

This study is significant on both theoretical and practical levels, providing an understanding on how businesses in NEOM utilize data analytics for decisions.

1.3.1. Theoretical Level

Current research focuses on data analytics in existing markets, but few are about its role in smart cities like NEOM. This study fills that gap by examining how businesses in NEOM utilize data analytics in the decision-making process.

1.3.2. Practical Level

This study benefit stakeholder in businesses to gain insights into best practices and challenges. Additionally, researchers can expand studies on data analytics in smart cities.

1.4. Research Questions

- How do businesses in NEOM collect and analyze data for decision-making?
- What types of data are most valuable for decision making in NEOM?
- What challenges do businesses in NEOM face in utilizing data analytics for decision-making?
- How do data-driven decisions impact business operations in NEOM?

1.5. Research Objectives

To answer the research question, the following research objectives have been identified:

- To examine how businesses in NEOM collect and analyze data for decision making.
- To identify the key types of data used in decision making.
- To investigate the challenges that businesses face in utilizing data analytics for decision making.
- To assess the impact of data-driven decisions on the operations in NEOM.

1.6. Research Hypotheses

The following hypotheses are proposed relationship between variables:

- Businesses in NEOM face significant challenges in utilizing data analytics due to issues like data quality and integration.

- Data-driven decision-making has a positive effect on operational efficiency and the business performance in NEOM.
- Businesses in NEOM get a competitive edge over their rivals by integrating data analytics into their decision-making process.

1.7. Research Model

The research model is illustrated in Figure 1.

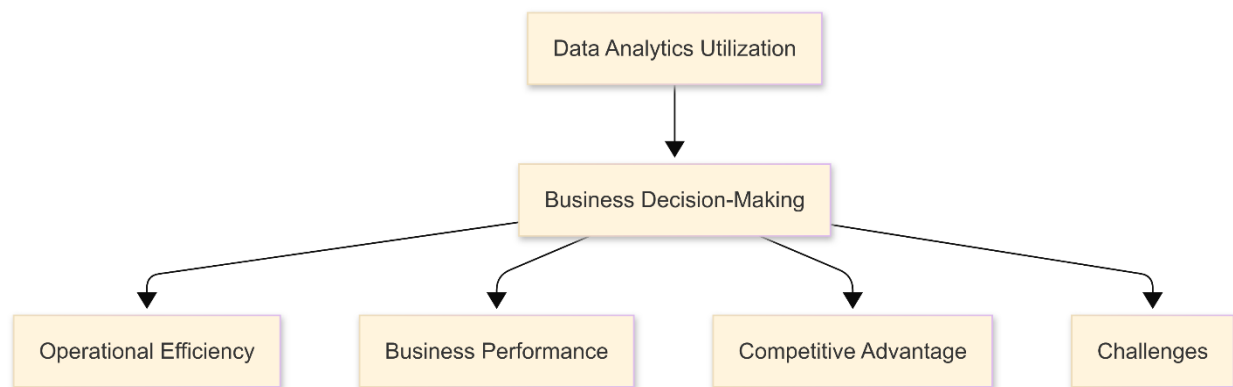


Figure 1. The research model diagram.

1.8. Research Methodology

For this study, a qualitative approach will be taken, with secondary data from NEOM's official reports being analyzed to understand how data analytics is utilized in business decision-making. Data will be collected from NEOM's official reports, which include strategic documents, business case studies, and performance metrics. These reports provide valuable insights into how data analytics is being integrated into various key sectors.

Moreover, a descriptive research design will be used, as it is ideal for documenting and explaining the current practices of data analytics in decision-making within NEOM. This design allows for a clear presentation of how data analytics is currently being applied and its effects.

The sample will consist of all publicly available reports from NEOM. These reports are rich in information about how data analytics is being used, and the most relevant documents will be selected for analysis.

In addition, a thematic analysis will be conducted to identify key patterns and themes related to the use of data analytics. The analysis will focus on how businesses in NEOM apply data analytics in decision-making, the types of data used, the challenges faced, and the impact on operational efficiency, business performance, and competitive advantage.

Since only publicly available data will be used, no ethical concerns regarding confidentiality will arise. Proper citation of all sources will be ensured, maintaining transparency. As no personal or sensitive data will be collected, the study will not face significant ethical challenges.

The main limitation is that the study will rely solely on publicly available reports, which may not fully capture all aspects of how data analytics are used in business decision-making in NEOM.

1.9. Scope of Study

The research will look at businesses operating within NEOM, a smart city on Saudi Arabia's northwest coast. It will consider how data-driven decision-making has evolved over the past 3 to 5 years, tracking NEOM's growth and development since its launch in 2017.

The scope of this study focuses on understanding how businesses in NEOM are using data analytics to make decisions. Specifically, it will explore:

- The types of data collected and analyzed across different sectors in NEOM, such as renewable energy, healthcare, logistics, and tourism.

- The methods that businesses in NEOM use to carry out their data analytics.
- The challenges these businesses face when trying to implement and use data analytics for decision-making.
- The effects of data-driven decisions on business operations, particularly in terms of improving efficiency and gaining a competitive edge.

1.10. The Suggested Project Structure

The proposed structure for the research project is as follows (Midocean University, 2023):

1. Introduction: it provides an overview of the study including the background information, research problem, objectives, and the significance of the research.
 - 1.1. Research background: it illustrates the historical roots of the project idea.
 - 1.2. Research problem: it reflects the gap in the current literature or practice that the project seeks to investigate and address.
 - 1.3. Research significance: it clarifies the importance of the study at the theoretical level, and the empirical level.
 - 1.4. Research questions: it presents the specific hypotheses that will be tested in the project.
 - 1.5. Research objectives: it identifies the specific goals and outcomes that the project aims to achieve.
 - 1.6. Research hypotheses: it presents the specific hypotheses that will be tested in the project.
 - 1.7. Scope of the study: it defines the scope of the project work.
2. Literature review: it presents a critical analysis of existing research and literature relevant to the project on data analytics in business decision-making,

the role of data analytics in smart cities, and the challenges and opportunities in applying data analytics in smart cities

3. Research methodology: it details the methods and procedures used to conduct the research including information about the research design, data collection methods, sample selection, and data analysis techniques.
4. Analysis and results: it describes and discusses the statistical analysis for the research findings.
5. Discussion: it connects the project findings with literature.
6. Conclusion and recommendations: it summarizes the key findings and provides suggestions for future research
7. References: it provides comprehensive list of academic sources and references used throughout the study.
8. Appendices: it contains additional material and any other relevant documents, where applicable.

2.Chapter 2: Literature Review

2.1. Introduction

Using data analytics to guide business decisions has become a key driver in boosting performance and staying competitive, especially in smart cities like NEOM. This chapter explores what current research says about how businesses are using data analytics, the part it plays in the development of smart cities, and the main challenges and opportunities that come with its use.

2.2. The Independent Variable

Data analytics, as the independent variable in this study, encompasses the processes of collecting, processing, and analyzing data to inform decision-making. McAfee and Brynjolfsson (2012) highlight how data analytics can be a game-changer for businesses, helping them outpace competitors by boosting productivity and fostering innovation. Davenport and Harris (2017) emphasize that when done effectively, data analytics gives businesses actionable insights, streamlines processes, and reduces uncertainty in decision-making.

Big data analytics takes this even further by adding advanced methods like machine learning, predictive modeling, and real-time data processing (Wamba et al., 2017). In the case of smart cities, data analytics bring together data from IoT devices, sensors, and digital platforms across areas like energy, healthcare, logistics, and tourism (Kitchin, 2014).

However, the success of data analytics depends on factors like data quality, integration, and how prepared an organization is (Gandomi & Haider, 2015). In smart cities like NEOM, where historical data may be limited, it's crucial for analytics systems to focus on real-time analysis and flexible models that can adapt as the city evolves (Hashem et al., 2016).

2.3. The Dependent Variable

In this study, business decision-making is the dependent variable. It refers to how organizations assess information and choose strategies or actions to achieve their goals. The effectiveness of decision-making depends on factors like the quality of available data, the tools used to analyze it, and the organizational culture (Chen et al., 2012).

In the past, decision-making often relied on managers' intuition and past experiences. But with the rise of data analytics, decisions are now more often based on hard data and predictive insights. As a result, data-driven decision-making has been shown to boost efficiency, cut costs, and encourage innovation (Davenport & Harris, 2017).

In smart cities like NEOM, where digital systems and real-time data collection are built into daily operations, business decisions are expected to be more flexible and accurate. However, challenges like fragmented data, underdeveloped infrastructure, and gaps in technical skills could prevent these benefits from being fully realized (Redman, 1998; Al Nuaimi et al., 2015).

2.4. The Relationship Between The Independent and The Dependent Variables

Many studies highlight a strong link between using data analytics and better business decision-making outcomes. McAfee and Brynjolfsson (2012) provide evidence that organizations driven by data tend to make better strategic decisions and perform better financially. Similarly, Wamba et al. (2017) show that having strong data analytics capabilities helps businesses become more agile, responsive to customers, and competitive.

In the context of smart cities, Kitchin (2014) argues that real-time data lets businesses react quickly to shifts in the environment or market. Batty et al. (2012) point out that integrating urban data into business models allows for proactive decision-making, rather than simply reacting to events. However, some studies also highlight challenges such as data governance, security concerns, and ethical issues, which may impact this relationship (Gandomi & Haider, 2015; Hashem et al., 2016).

In the case of NEOM, this relationship has not been fully explored, which is a key gap this study aims to address. Given NEOM's reliance on real-time data, AI, and digital systems, it offers a unique opportunity to study how data analytics impacts decision-making in a fully digital business environment.

2.5. Conclusion

The literature review shows that data analytics is crucial for improving business decision-making, particularly in digitally advanced environments like smart cities. While many studies highlight the benefits of analytics in traditional settings, there's still a gap in understanding how it works in new, digital-first urban environments like NEOM. This review emphasizes the importance of exploring how data analytics impacts business operations, efficiency, and competitiveness in these types of settings, which is why this study focuses on that area.

References

- Al Nuaimi, E., Al Neyadi, H., Mohamed, N., & Al-Jaroodi, J. (2015). Applications of big data to smart cities. *Journal of Internet Services and Applications*, 6(1), 1–15. <https://doi.org/10.1186/s13174-015-0041-5>.
- Batty, M., Axhausen, K. W., Giannotti, F., Pozdnoukhov, A., Bazzani, A., Wachowicz, M., ... & Portugali, Y. (2012). Smart cities of the future. *The European Physical Journal Special Topics*, 214(1), 481–518. <https://doi.org/10.1140/epjst/e2012-01703-3>.
- Davenport, T. H., & Harris, J. G. (2017). *Competing on analytics: The new science of winning*. Harvard Business Review Press.
- Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MIS Quarterly*, 36(4), 1165–1188. <https://doi.org/10.2307/41703503>.
- Gandomi, A., & Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International Journal of Information Management*, 35(2), 137–144. <https://doi.org/10.1016/j.ijinfomgt.2014.10.007>.
- Hashem, I. A. T., Yaqoob, I., Anuar, N. B., Mokhtar, S., Gani, A., & Khan, S. U. (2016). The rise of “big data” on cloud computing: Review and open research issues. *Information Systems*, 47, 98–115. <https://doi.org/10.1016/j.is.2014.07.006>.
- Kitchin, R. (2014). The real-time city? Big data and smart urbanism. *GeoJournal*, 79(1), 1-14. <https://doi.org/10.1007/s10708-013-9516-8>.
- McAfee, A., & Brynjolfsson, E. (2012). *Big data: The management revolution*. Harvard Business Review, 90(10), 60-68.
- Midocean University. (2023). Student Guide for Final Project.

Redman, T. C. (1998). The impact of poor data quality on the typical enterprise. *Communications of the ACM*, 41(2), 79–82. <https://doi.org/10.1145/269012.269025>.

Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J. F., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356–365. <https://doi.org/10.1016/j.jbusres.2016.08.009>.