

# THE IMPACT OF ARTIFICIAL INTELLIGENCE AND THE INTERNET OF THINGS ON THE QUALITY OF SERVICES

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# Chapter 1

- Introduction
- Problem Statement
- Objectives
- Research Strategy
- The Research Scope

## **Introduction**

In this research, I investigated how IOT and AI might help to build cyberattack detection systems. AI is regarded as a valuable tool for enhancing network security since it can examine enormous volumes of data and learn from evolving trends. Emphasizing deep learning models and innovative concepts like transfer learning and ensemble learning, this work aims to review detection systems implemented in IoT using machine learning techniques. 6 scientific articles were examined, identifying the weakness and strength points for the related studies.

## **Problem Statement**

The world is witnessing a large-scale scientific and technological revolution characterized by a rapid pace; Supply chain management processes represent an important element in the efficiency and effectiveness of organizations of all sizes, activities, objectives, and nature of work, which require these services to be highly efficient in performing work (Johnson, & Scholes, 2016, P:198).

The acceleration of technical and technological development and change has led to the emergence of the need to develop production mechanisms in various existing organizations by focusing on a comprehensive analysis of the internal and external environment of organizations and with the aim of developing appropriate visions for the future, and then setting applicable goals and strategies that are consistent with the capabilities of the organization and stakeholders (Allen, 2019, p. 114). Artificial intelligence is a product of theories of perception and learning and is linked to theories of logic, probability and computing, and has a close relationship with the way the human brain works, which made artificial intelligence an important and necessary strategy in many modern organizations (Yassin, 2018, p. 19).

The study (Kitsios, Kamariotou, 2021) indicated that artificial intelligence and IOT tools played a major role in many strategic developments within various organizations, and that it is necessary to align artificial intelligence tools within organizations, which leads to achieving many fruitful results on the practical and administrative side, and improving employee performance.

Activating artificial intelligence and IOT applications in organizations contributes to improving strategic thinking processes and improving the performance of employees in the organization, which would improve the quality of products and services, as in the digital age, organizations need more smart applications in the market environment such as artificial intelligence applications, which develop the performance of their employees, which helps these organizations achieve their goals and increase the quality of their services (Stone & Aravopoulou, 2020)

All organizations in the current era face many challenges as a result of rapid scientific and technical changes and developments. In the face of these inevitable challenges, traditional management with its various means has become unable to make the organization competitive. Therefore, this matter requires these organizations to use all available contemporary technical and administrative methods that enable them to compete with other organizations (Al-Douri and Saleh, 2019, p. 29). Using IOT and AI become necessary to enhance the different services in most organizations. The problem of the current research can be stated as follows: What is the impact of artificial intelligence and Internet of things with its various applications on the quality of services?

## **Objectives**

1. To comprehensively analyze the existing uses of AI and IOT.
  - To identify the key uses of current AI and IOT systems, as outlined in the literature.
  - To understand the impact of artificial intelligence and Internet of things with its various applications on the quality of services
2. To evaluate existing solutions, including explainable AI and IOT frameworks:
  - To explore alternative validation approaches proposed by scholars regarding the impact of artificial intelligence and Internet of things with its various applications on the quality of services
3. To propose a comprehensive framework for enhancing the use of artificial intelligence and Internet of things with its various applications on the quality of services.

- To develop a framework that addresses the impact of artificial intelligence and Internet of things with its various applications on the quality of services.

4. To validate the proposed framework in diverse AI and IOT application.

- To assess the generalizability and effectiveness of the proposed framework in various AI and IOT contexts.

5. To provide practical recommendations for the implementation of the proposed framework:

- To contribute to the ongoing discourse on responsible and trustworthy AI and IOT development and Deployment.

## **Research Strategy**

The researcher used the systematic review methodology. A systematic review goes beyond the usual literature review approach to ensure that documents on the same topic are comprehensive, while minimizing bias and subjectivity. Systematic review methodologies are starting to gain more attention as a better alternative to narrative literature reviews. Six research articles on botnet detection methods in IoT and AI networks form the basis of the study by a comparative analysis.

## **The Research Scope:**

The objective scope: This research is about the impact of artificial intelligence and the internet of things on the quality of services

The location scope: The research was conducted in Riyadh

The timing scope: The research was conducted in 2024, December.

## Chapter 2

### Literature Review

## Literature Review

There were many studies which threw light on the ARTIFICIAL INTELLIGENCE AND THE INTERNET OF THINGS and their effect on improving the products and services done in the different organizations. The most important studies related to this part can be stated as follows:

In the Study (Huang & Rust, 2021) which entitled "Strategic Framework for Artificial Intelligence in Marketing", where the study attempted to clarify the extent to which strategic thinking is related to artificial intelligence applications. The study demonstrated the importance of applying artificial intelligence models in marketing research and strategy related to the retail sector, targeting, positioning, and procedures. The study highlighted that mechanical artificial intelligence can be used to collect data and analyze operations in markets, that artificial intelligence applications are used to understand customer needs and desires, and that artificial intelligence is currently gaining importance in marketing, due to the increase in computing power and the availability of big data.

Another study conducted by (Kitsios, Kamariotou, 2021) which entitled "Artificial Intelligence and Business Strategy towards Digital Transformation - A Research Agenda", where the study aimed to clarify the impact of artificial intelligence on the development of business strategy in organizations. The study showed that artificial intelligence tools played a major role in many strategic developments within various organizations, and that it is necessary to align artificial intelligence and information technology tools with the organizational strategy within organizations, knowledge management, decision-making process, service innovation and value within various organizations. This leads to achieving many fruitful results on the practical and administrative side, developing supply services and increasing the level of job satisfaction, with the availability of wide opportunities and capabilities to generate new methods of administrative practices.

Another study conducted by (Stone, Aravopoulou, 2020) which entitled "Artificial Intelligence and its Effects on Strategic Marketing Decision-Making", where the study aimed to review the literature on artificial intelligence applications and their effect on strategic management and strategic decisions. The results of the study showed that there is little

research that addressed the effects of artificial intelligence applications on strategic decision-making. The results of the study also showed that artificial intelligence applications affect the effectiveness of decision-making in many areas of management, which affects the nature of strategic operations and strategic marketing decisions. The results showed that the level of success in applying artificial intelligence tools has strong implications for the development of services within various organizations, especially large organizations in competitive industries, as failure to apply artificial intelligence tools in the face of competition from other organizations may have a very serious impact on the revenues of those organizations, and artificial intelligence tools have a significant impact on strategic marketing decision-making.

Also, in the Study of (Allen, 2019) which entitled "Understanding China's Artificial Intelligence Strategy: Evidence of Chinese Strategic Thinking in Artificial Intelligence and National Security", where the study attempted to reveal the extent of the relationship between the development of artificial intelligence applications and the improvement of strategic thinking processes within organizations and the extent of this impact on cybersecurity policy in China, especially with regard to artificial intelligence. The study results showed the importance of institutional support for artificial intelligence, and that the success of artificial intelligence applications is linked to many social and political factors, and that China has done a great job in supporting artificial intelligence institutionally from the top down, rather than the bottom up, as is the case in its Western counterparts, with a variety of funding to ensure that private companies reach their strategic goals through the presence of a group of talented and distinguished leaders needed, as China realized that maintaining superiority in artificial intelligence is vital in the twenty-first century, and that by using artificial intelligence applications, China has been able to develop its products, as China excels in developing its own products compared to its counterparts from countries.

Another study conducted by (El Namaki, 2019) which Entitled "Will Artificial Intelligence Change the Strategic Competencies of Senior Management and the Level of Performance in Them?", the study attempted to clarify the extent of the impact of applying artificial intelligence mechanisms on developing the capabilities of strategic competencies in a number of organizations. The study showed that the use of artificial intelligence

applications helps develop the strategic thinking of leaders and heads of organizations, as well as helps improve the level of product quality and market innovations. The study also showed that the use of artificial intelligence tools helps bring about a fundamental change in services and provide a wide range of services for a quasi-revolutionary change driven by the innovations provided by artificial intelligence. The development of artificial intelligence applications and their use in organizations helps increase the effectiveness of strategic behaviors of institutions.

Also, the study of (Kno, Mana, 2019) which Entitled "How will artificial intelligence change the principles of strategic thinking", the study aimed to identify the extent of the impact of artificial intelligence on strategic thinking processes within organizations. The study indicated that there is a high probability that artificial intelligence applications will provide the answer to how to develop future services and service innovations in various markets, and that the use of artificial intelligence applications in various organizations has a major role in bringing about a major change in the nature and quality of services and business models provided to consumers. The results of the study indicated that artificial intelligence applications bring about a semi-revolutionary change based on the innovations provided by artificial intelligence, which include providing computing equipment that acts as catalysts to enhance organizations' ability to raise the quality of services, and also works to develop their employees. The study also highlighted that artificial intelligence applications positively affect the strategic thinking processes of institutions, as innovative patterns of artificial intelligence are integrated with the strategic behavior of organizations, which produces high-quality services.

Also, the study of (Abdul Latif, Al-Yousef, 2008), which entitled "The Impact of Using the Internet on the Structure of Demand for Hotel Services and Their Distribution" aimed to identify the impact of using Internet applications on improving hotel services. The study sample relied on the descriptive analytical approach. The study was conducted on a sample of 329 employees working in a number of hotels in Amman, Jordan. The study indicated that the Internet is a marketing tool with a high degree of interactivity and rapid access to local and global markets. The results of the study affirmed that there are many technological means that help hotel organizations use it as a distribution channel that ensures that their products reach these markets in a manner that suits the organization and customers, as well

as the Internet, as a tool for marketing communications in its various forms, allows the organization the ability to develop its services. The technological media used in the hotel sector are one of the most important distribution channels, thanks to their interactive characteristics, speed, and superior ability to organize the activities of the large events services sector. The study recommended the necessity of using the latest technological means in the field of hotel services, because Improves service performance and achieves customer satisfaction.

In a study conducted by (Magdalena, 2016), which entitled "The Internet of Things and Institutional Capabilities", the study aimed to determine the extent to which some institutions have the ability to market some events using the Internet of Things technology. The study used the descriptive comparative approach and the study sample included approximately 450 employees from various institutions. The study compared the effectiveness of activities in commercial and non-commercial institutions to identify the effectiveness of activities that use or plan to use the Internet of Things and that can be applied in information institutions. The results showed that it is advisable to use the Internet of Things in information institution services similar to what is implemented in various commercial institutions. The study recommended the necessity of using social media in marketing large and small events.

In another study conducted by (Hawkins, 2016), which entitled "Internet of Things Applications and Their Impact on Marketing Events in Some Entities", the study aimed to identify Internet of Things applications and their impact on entities or individuals; The study community included a number of different institutions that use modern and old technologies in marketing events. The study relied on the descriptive approach. The study confirmed that it is necessary to use the Internet of Things in managing various activities, and that the Internet of Things is an important means to successfully perform marketing tasks, and that the Internet of Things can enhance the relationship between the employee and the beneficiary. The study recommended the use of RFID tracking technology and communication technologies in marketing events in various fields.

In a study conducted by (Al-Fuqaha, et al, 2015), which entitled "Internet of Things: A Survey of Technologies, Protocols and Applications", the study aimed to identify the

importance and advantages of the Internet of Things. The study relied on the survey method, as the study was in the form of an exploratory research on enabling Internet of Things technologies in performing recreational and cultural activities for some institutions and trying to explore the relationship between the Internet of Things and other emerging technologies, including big data analytics and cloud computing, and providing information that helps improve integration between Internet of Things services. The study showed that the Internet of Things is capable of employing the latest developments, including RFID object tracking technology and communication technologies, Internet protocols. The study recommended enhancing technological awareness services and developing information support to serve institutions in organizing their work.

Also, there are some other studies related to this topic, including the following:

The study of (Kah Phooi Li Minn Ang and Ericmoore Ngharamike, 2022). The study results affirmed that IOT faces new difficulties as a result of the quick rise in data and service demands. The creation of intelligent structures and services for IOT, which will eventually comprise the IOT & AI, can be strongly influenced by emerging technology and clever approaches. In this article, we provide an overview of the latest advancements in artificial intelligence for IOT, discuss the different computational frameworks for IOT, and point out the opportunities and challenges for successfully implementing AI for IOT to solve complex issues for a range of applications. The study has shown that in recent years, billions of technical advancements and mobile devices have been developed and propagated. A rapid increase in IoT resources creates a large load on the existing infrastructure of the distributed sensor network. New intellectual technology and methods can play an important role in satisfying these new requirements. The study affirmed that most countries in the world have not yet begun to formulate their policies towards dealing with the Internet of Things and making the most of it in building the information society and knowledge economy. The effective role of information and communication technology in developing the quality of services in the tourism and hotel sector is evident. In light of this, modern technological and technical means must be used in the hotel sector and in various sectors.

Also, in the study of (Zakirullah Ezam, Amanullah Totakhail, Hamayoon Ghafory & Musawer Hakimi, 2024). The findings point to a situation ripe for change, demonstrating AI breakthroughs in fields including cybersecurity, home automation, manufacturing, healthcare, and urban planning. These advancements highlight how important AI is to increasing operational effectiveness, delivering better healthcare, raising the bar for residential living, and promoting sustainable urban growth. The study concluded that the combination of AI & IOT has attracted great interest from researchers and practitioners in recent years. This has had a profound impact on various areas of human life and industry. The combination of AI and IoT has given rise to smart devices that can make decisions on their own, revolutionizing sectors as diverse as healthcare, manufacturing, transportation, and smart cities. Leveraging AI algorithms, IoT devices have the ability to analyze complex data in real time, enhance processes, and adapt autonomously to dynamic situations. The integration of AI & IOT has led to a wide range of creative applications in many industries. These examples include forecast maintenance of production and remote monitoring of patients in healthcare. Nevertheless, the process of integrating these systems also increases several obstacles, such as confidentiality, data security and difficulty in implementing interactions. The study affirmed that the expansion of the Internet of Things has been led by the private sector and driven by the desire for profitability and competitiveness among producers of applications and smart devices in this profitable sector. There are currently no estimates of the size of the Internet of Things market, but preliminary figures indicate a large size that can be expanded geometrically. As for the governments that constitute the regulatory, supervisory and legislative body within their national borders, they are still in the process of exploring the dimensions of this phenomenon and its economic, social and even political repercussions.

Another study was conducted by (Ashish Ghosh, et al., 2018). The study results assured that IoT with AI can become a huge progress in the different fields. This is not just about saving money, smart things, reducing human effort or any trending hype. This is much more than that - easing human life. The third study shows that IoT consists of interconnected objects with embedded sensors that have the potential to generate or collect vast amounts of data. IoT systems can be integrated into larger systems that can be used for a variety of modern applications. Given the amount of data collected and the fact that it is

collected in real time, efficient data processing is essential to effectively use the information obtained. Data can be analyzed and used with AI to solve problems and make decisions. This study concluded that the technological and cognitive revolution has made a big difference in the subject of business management, as the widespread spread of these modern technologies has forced many business organizations to pay attention to this aspect and put it at the top of their priorities due to the great role of these technologies and their direct contributions to developing all institutions and improving their performance, as many modern technological means have been used such as networks, satellites, as well as geographic information systems, database management systems and multimedia in business management and organization.

In another study conducted by (Chowdhury Abida, Mahmudur Rahman, Syada Tasmia Alvi, 2021). The findings point to a situation ripe for change, demonstrating AI breakthroughs in fields including cybersecurity, home automation, manufacturing, healthcare, and urban planning.

These advancements highlight how important AI is to increasing operational effectiveness, delivering better healthcare, raising the bar for residential living, and promoting sustainable urban growth. The study concluded that information and communication technologies control everyday actions. It is becoming an important part of our critical infrastructure, connecting disparate devices across many dimensions: personal computers, sensors, surveillance, smart homes, entertainment, transportation, and video streaming are just a few examples. The accelerating trend of wireless communication is driving further innovation in Internet connectivity and mobile broadband. Infrastructure-free communication devices are ubiquitous, intelligent, powerful, connected, small, inexpensive, and easy to deploy and install, paving the way for a new future direction of ICT society: the Internet of Things. The study affirmed that the world is now experiencing a communications revolution in which most forms of management are digital; this revolution has enabled humanity to be provided with multiple options for receiving and distributing information; and people can now exchange millions of pieces of information; through various satellite broadcasting tools, cell phones, mobile computers, internet connections and other forms of digital communication.

Moreover, (Antar Abdul-Qawy & Magesh, 2021) conducted a study which affirmed that nowadays, the IoT, early defined as Machine-to-Machine (M2M) communications, becomes a key concern of ICT world and research communities. The study confirmed that IoT, initially defined as machine-to-machine communication, has now emerged as a key issue in the ICT world and the research community. This article provides an overview of the IoT paradigm, its concepts, principles, and potential benefits. It focuses on core IoT technologies, emerging protocols and common applications. This overview is useful for anyone starting out in the world of IoT and wanting to understand and participate in its development.

In another study conducted by (Yasith Subasinghe, 2024) whose results affirmed that the analysis highlights the key role of (AI) (IoT) in tackling urgent environmental issues and optimizing transport services for sustainable future goals. The study confirmed that the advent of AI & IOT is ushering in an era of profound change in transportation services, promoting sustainability, efficiency, and safety. The analysis highlights the important role that AI & IOT will play in addressing pressing environmental issues and optimizing transport services towards the goal of a sustainable future.

These studies show how increasingly IoT and AI have affected work enhanced by artificial intelligence. Although high detection accuracy and adaptability are constant strengths, problems still exist especially in the regard of significant computational resources and handling of unstructured or real-time data. While their scalability and interaction with real-world IoT systems demand more study, methods including ensemble learning and transfer learning show great promise. The findings highlight how effectively artificial intelligence-based models reduce false alert rates and increase detection accuracy. Up to 99.6% detection accuracy have been recorded using models including ELVA-IoT and transfer learning. The models shown better detecting power and handling of imbalanced data. Today's Internet of Things is shaped by the convergence and advancements in communication and sensor technologies. IOT faces new difficulties as a result of the quick rise in data and service demands. The creation of intelligent structures and services for IOT, which will eventually comprise the IOT & AI, can be strongly influenced by emerging technology and clever approaches.

## **Synthesis of Information**

The Synthesis of Information is strong. The results of the 6 selected articles are similar and these articles affirmed that combining several machine learning techniques including deep learning, transfer learning, and ensemble learning can considerably improve the identification of botnet attacks in IoT systems. Combining the strengths of several models in a multi-layered approach will help to solve imbalanced data problems, raise accuracy, and reduce false positives. Future research should thus concentrate on solving the challenge of using these models at scale while maintaining low resource use and efficiency.

## Chapter 3

- Research Methodology
- Expected Results
- Gantt Chart

### **Research Methodology:**

The descriptive approach will be relied on in terms of defining the study population and its sample. The descriptive approach does not depend on collecting, tabulating and tabulating data only, but includes an explanation for these data. It also attempts to describe the phenomenon or the subject of the study as it is at the present time with the aim of knowing it accurately, extracting weaknesses and strengths and knowing the relationships among its elements or social, psychological, educational or economic elements under certain influences. The researcher will use this approach to clarify the impact of artificial intelligence and the internet of things on the quality of services.

### **Research Tool:**

The electronic questionnaire will be relied on as a tool for the study, and this questionnaire will be directed to the university students, then we will extract the results through statistical processing, and then the results will be interpreted. The questionnaire is one of the best and most famous study tools used to collect primary field information for scientific research, as the researcher is the one who designs it and formulates the questions in a way that suits the subject of the scientific research and coordinates them. The researcher will clarify the purpose of conducting this questionnaire to clarify it to the people targeted to fill out the questionnaire.

### **Research Population:**

The study population is the broader group of people to whom the researcher intends to generalize the results of his study, and the sample is always a subset of this population. The study population will consist of university students.

### **The Research Sample:**

A sample is a smaller set of data that a researcher selects or draws from a larger population using a pre-determined selection bias method. These items are known as sample points, sample units, or observations. Creating a sample is an efficient way to conduct research.

The researcher will determine the sample in a (random sampling) manner due to the limitations of the study community, where we will list all the elements that have the possibility of application and the conditions of the sample will be determined based on the objectives of the study and the characteristics of the study community.

## **Expected Results**

1. Artificial intelligence is a product of theories of perception and learning and is linked to theories of logic, probability and computing, and is closely related to the way the human brain works, which has made artificial intelligence an important and necessary strategy in many modern companies and artificial intelligence tools play a major role in many strategic developments within various companies, and it is necessary to align artificial intelligence tools within companies, which leads to achieving many fruitful results on the practical and administrative side.
2. Artificial intelligence is used in many fields such as navigation, travel, banking and financial services, social media, media services, music and cinema, e-commerce and the smartphone industry.
3. Artificial intelligence has many characteristics, including: -
  - Using intelligence to solve urgent administrative problems.
  - The ability to think and perceive.
  - The ability to acquire knowledge.
  - The ability to understand from previous experiences.
  - The ability to use experiences and employ them in new situations.
  - The ability to use trial and error in exploring matters.
  - The ability to respond quickly to new situations.
  - The ability to learn with difficult cases.
  - The ability to visualize, create, understand and perceive visual matters.
  - The ability to provide information to support administrative decisions.
4. Artificial intelligence has basic objectives, which are:
  - Understanding what intelligence is.
  - Making devices more effective and useful.

5. The purpose of artificial intelligence is also to interpret the situation sometimes, as it is related to construction activity, and also related to the function of the situation, by solving problems, including planning problems, diagnostic problems.
6. Information technology and artificial intelligence mechanisms contribute to improving the competitive advantage of organizations that carry out supply services operations through their impact on the way business is carried out in the organization, as they contribute to increasing integration between parts of the organization and creating an information stock that helps raise the level of efficiency of the administrative apparatus in functions related to data processing, and information technology is considered one of the important resources for business organizations, contributing to providing the necessary services to customers, which makes it one of the most distinguished resources that helps develop the organization's competitive capabilities.
7. Governments should pay attention to providing and activating the Internet of Things. Examples of the need for early attention to this phenomenon include privacy, big data, cloud computing, and investment policies in infrastructure and superstructure. The challenges that accompany the widespread use of the Internet of Things are not hidden, such as the disappearance of some jobs that require compensation by creating job opportunities in new fields, with appropriate skills. This will motivate governments to pay adequate attention to qualification, training, and qualification.
8. Organizing business models is one of the important areas in which Internet of Things technologies and applications can be employed to be more developed, because organizing business models is one of the most important requirements of modern life, and Internet of Things technology and techniques can be exploited to improve business model organization services.
9. The expansion of the Internet of Things was led by the private sector and driven by the desire for profitability and competitiveness among producers of applications and smart devices in this profitable sector. There are currently no estimates of the size of the Internet of Things market, but preliminary figures indicate a large size that can be expanded geometrically.
10. As for the governments that constitute the regulatory, supervisory and legislative body w

11. Within their national borders, they are still in the process of exploring the dimensions of this phenomenon and its economic, social and even political repercussions. That is, most countries in the world have not yet begun to formulate their policies towards dealing with the Internet of Things and making the most of it in building the information society and knowledge economy.
12. In the industrial sector, the need to employ the Internet of Things in the production, distribution, operation and control of these various industries is increasing, whether they are computers or equipment.
13. It is known that big data requires the services of the Internet of Things in controlling and analyzing this data and reusing it. Without the Internet of Things, many ideas and development projects will remain mere dreams. Through the Internet of Things and with it, robots can be controlled; and many works can be carried out in the industrial, security, control and surveillance fields; Opening and closing doors and windows, and moving many connected, movable devices and equipment; thus, the Internet of Things will be the beating heart of the control room for business management.

## Gantt Chart

| WBS NUMBER | TASK TITLE               | DURATION | PCT OF TASK COMPLETE | WEEK 1 |   |   |   |   | WEEK 2 |   |   |   |   | WEEK 3 |   |   |   |   | WEEK 4 |   |   |   |   |
|------------|--------------------------|----------|----------------------|--------|---|---|---|---|--------|---|---|---|---|--------|---|---|---|---|--------|---|---|---|---|
|            |                          |          |                      | M      | T | W | R | F | M      | T | W | R | F | M      | T | W | R | F | M      | T | W | R | F |
| 1          | Chapter 1                | 7        |                      |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 1.1        | Objective                | 1        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 1.2        | The articles             | 3        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 1.3        | The articles Summaries   | 1        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 1.4        | Critical Analysis        | 1        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 1.5        | Synthesis of Information | 1        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 2          | Chapter 2                | 7        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 2.1        | Problem statement        | 2        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 2.2        | Literature review        | 5        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 3          | Chapter 3                | 7        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 3.1        | Methodology              | 3        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 3.2        | Expected results         | 4        | 100%                 |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 4          | Conclusion               | 3        | 0%                   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 5          | Recommendations          | 3        |                      |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |
| 6          | References               | 1        | 0%                   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |        |   |   |   |   |

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