CHAPTER I

INTRODUCTION

1.1 Introduction

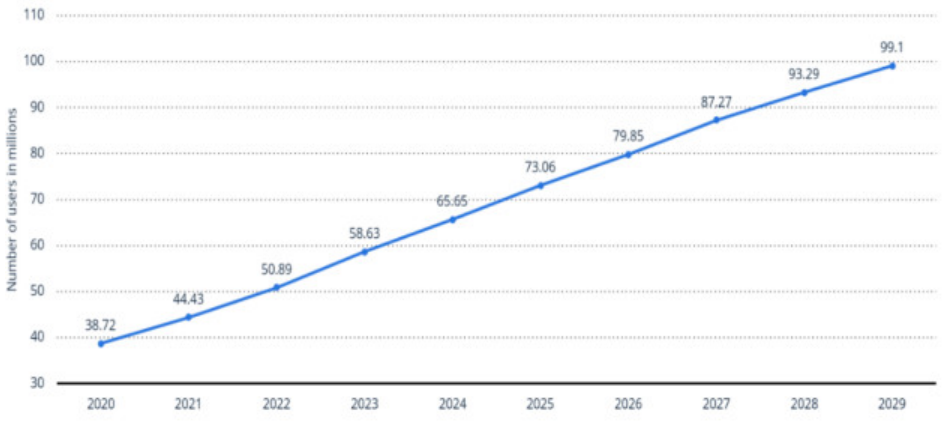
Artificial Intelligence (AI) is now becoming an alternative for companies in support and enhancing the business. Development in artificial intelligence technologies, one of the innovations that technological development has brought with the improving capabilities of computer hardware, allows the management applications turn into an intelligent process. Machine learning (ML) and deep learning (DL) methods, which are sub-branches of AI is an important factor. Through ML and DL, the machine can quickly analyze large and diverse data sets, and improve the accuracy of demand forecasting (Ünal, Erkayman, & Usanmaz, 2023).

Machine learning (ML) and deep learning (DL) are most prevalent in Industry 4.0, particularly within e-commerce. ML algorithms in this sector often function as recommendation engines, analyzing customer browsing and purchase history to provide tailored product suggestions. DL, on the other hand, is frequently utilized to enhance customer interaction through technologies like chatbots and virtual assistants (Enache, 2019).

Industry 4.0 centers on the humanization of technology, emphasizing the Internet of Things (IoT) and Artificial Intelligence (AI). This focus aims to minimize human error and reduce operational costs. Chatbots, or "chat robots," exemplify this humanization trend.

The shift towards online buying and selling presents operational ·nges. Limited buyer-seller interaction and round-the-clock purchasing ıinder online store efficiency. Repetitive customer inquiries regarding

product availability, sizing, and similar concerns strain resources. Consequently, e-commerce platforms like Tokopedia are leveraging AI-powered chatbots to streamline operations and enhance customer satisfaction (Lengnick-Hall, 2018) (Zhu, 2020).

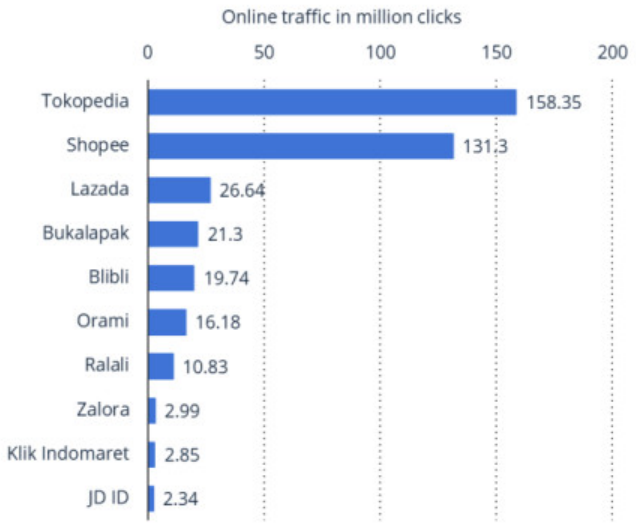


Sumber: Statista (diolah PDSI, Kementerian Perdagangan)

Figure 1.1 Graphic of the use of e-commerce

From the data obtained, it was found that since 2020, the number of e-commerce users has increased rapidly. This phenomenon is supported by changes in buyer behavior since the COVID-19 pandemic. The increase in e-commerce users is expected to increase until 2029 by more than 99 million users (Firmandani, Sya'bania, Abdani, & Madani, 2021).

Furthermore, referring to the data of e-commerce website visits in the second quarter of 2022 in Indonesia, Tokopedia became the most accessed e-commerce, which was then followed by shopee and several other e-commerce.



Sumber: iPrice Group; SimilarWeb; Statista (diolah PDSI, Kementerian Perdagangan)

Figure 1.2 E-commerce online traffic in Indonesia

The increasing interest of buyers in digital transactions further adds to the company's operations that need to be improved. For this reason, the use of Chatbot is applied to most e-commerce. The recent surge in chatbot use is primarily driven by the rapid development of Large Language Models (LLMs). These AI-powered models are the technological foundation of today's chatbots, experiencing a swift rise to prominence and increasingly widespread adoption across diverse platforms and services. Fundamentally, LLMs utilize Natural Language Processing (NLP) algorithms. This sophisticated processing enables it to both understand and respond to human text input. By grasping the subtleties of human language, LLMs create more natural and compelling interactions within chatbot interfaces (Yogesh K. Dwivedi, 2023).

E-commerce platforms utilize AI-powered chatbots to deliver personalized, ɛnt, and scalable customer service, enabling businesses to support a ng customer base with minimal human interaction. The use of AI-driven

chatbots for product selection during online shopping is a particularly significant advancement, as it improves user experience, simplifies decision-making, and enhances overall operational efficiency. Integrating AI into e-commerce has not only increased customer satisfaction but also streamlined operations by reducing the need for human involvement in customer support (Ebaietaka, 2024) (Abou Elmaaty & Ibrahim, 2023).

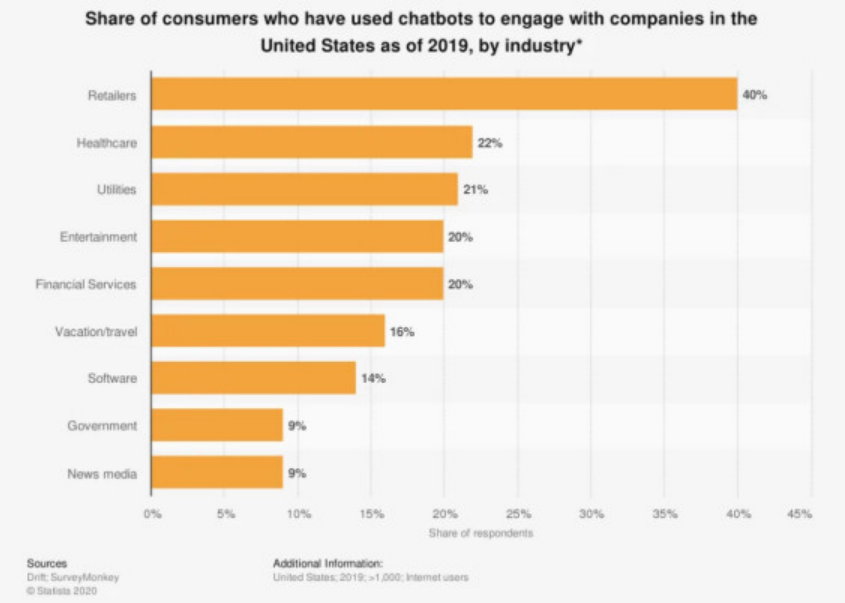


Figure 1.3 United States data on the use of chatbot based on industry

The research conducted in 2020 in the United States found that the use of Chatbot is contributes to the efficiency in the sales process. Furthermore, healthcare industry occupies the second highest position. AI is revolutionizing sales processes by enabling businesses to gather comprehensive data about their customers, automate routine tasks, and personalize interactions. By analyzing customer data, AI can identify patterns and insights that help sales ıs understand their customers better, predict their needs, and tailor their ɒach accordingly. This data-driven approach leads to more effective lead

generation, improved customer segmentation, and personalized marketing campaigns (Huseynov, 2023).

Furthermore, AI automates time-consuming tasks such as following up on abandoned carts, sending personalized emails, and scheduling appointments. This automation frees up sales representatives to focus on building relationships with customers and closing deals. AI-powered chatbots can also handle initial customer inquiries, providing instant support and guidance, while AI-driven analytics can identify high-potential leads and prioritize them for sales outreach. Simply, AI empowers sales teams to be more efficient, data-driven, and customer-centric, leading to increased productivity, higher conversion rates, and improved customer satisfaction.

Yelan Farma Pharmacy is a pharmacy that has been established since 2 January 2010 on Jalan Veteran Selatan, No. 275, Makassar. Yelan Farma is engaged in drugs that are sold offline and online by optimizing the use of online shop media such as Tokopedia to optimize Company performance.

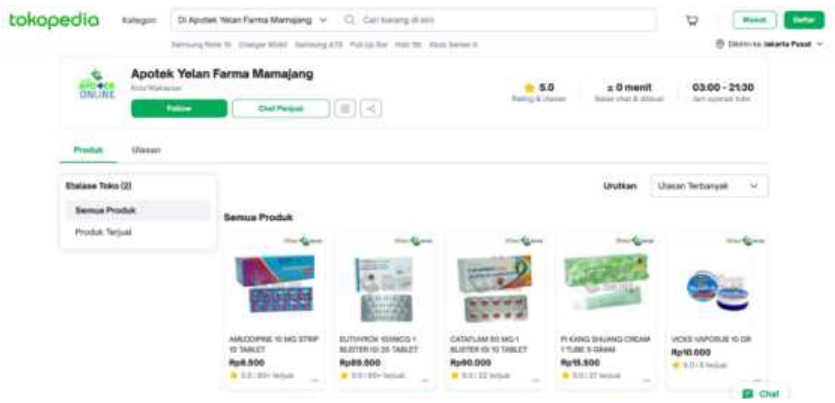


Figure 1.4 Yelan Farma on Tokopedia

The use of Tokopedia is very helpful in increasing sales and introducing the ɔany without regional restrictions. In addition, by maximizing the use of ɔots, sellers can also improve sales performance and customer

satisfaction, without the need to reply to messages manually. However, there are limitations regarding whether the chatbot can really fulfill “customer satisfaction” to the natural response that can be given by the chatbot. Also, whether the chatbot can to reply naturally so that the customers can interact comfortably. Therefore, this research aims to analyze the use of artificial intelligence for improve efficiency in e-commerce services using chatbot.

1.2 Research Questions

Based on the background that has been presented by the Author, the formulation of this research problems are:

1. What are the factors that influence efficiency through using chatbot at Tokopedia Yelan Farma Pharmacy Makassar?
2. How does chatbot contribute to improve operational in Tokopedia Yelan Farma Pharmacy Makassar?
3. How does chatbot improve customer satisfaction in Tokopedia Yelan Farma Pharmacy Makassar?

1.3 Research Objectives

Based on the background that has been presented by the Author, the formulation of this research objectives are:

1. To know the factors that influence efficiency through using chatbot at Tokopedia Yelan Farma Pharmacy Makassar.
2. To understand the use of chatbot which contribute to improve e-commerce services in Tokopedia Yelan Farma Pharmacy Makassar.

3. To understand how does chatbot improve customer satisfaction in Tokopedia Yelan Farma Pharmacy Makassar.

1.4 Research Purposes

The research purposes based on the research objectives are:

1.4.1 Theorical Purposes

This research is intended to increase knowledge about the use of chatbot which lead to efficiency. Furthermore, this research is expected to be a source of knowledge or reference for future research related to the use of AI in the pharmacy business.

1.4.2 Practice Purposes

This research aims to provide data on the practical use of chatbot in business to add insight into the effectiveness offered by chatbot in e-commerce, as well as provide considerations for the object of research, in this case Yelan Farma Pharmacy, in improving the effectiveness of e-commerce sevices using AI capabilities.

1.5 Writing Systematics

The systematic writing of this research consists of five chapters, namely:

CHAPTER I INTRODUCTION

This chapter will emphasize pertain the research background, research problem, research objectives, research objectives, and writing systematics.

R II LITERATURE REVIEW

This chapter will explain concerning the theoretical basis and empirical review based on the previous research.

CHAPTER III CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

This chapter will discuss concerning the research conceptual framework and hypothesis development.

CHAPTER IV RESEARCH METHOD

This research will discuss concerning the type and research plan, research location and time, population and sample, type and data sources, sampling technique, data collection technique, research variable and operational definition, research instruments, reliability test and validity, data analysis technique, and research road map.

CHAPTER V RESULT AND DISCUSSION

This research will discuss about the research results that include the general description of respondents as well as variable descriptions and variable score calculations, reliability and validity testing, hypothesis testing which includes multiple linear regression analysis, hypothesis testing, and the coefficient of determination, sufficient discussion of the use of chatbot to improve efficiency in e-commerce services at Tokopedia Yelan Farma Pharmacy Makassar.

CHAPTER VI CLOSING

This research will discuss concerning conclusion, recommendation, and limitation during the research process.

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Foundation

2.1.1 Artificial Intelligence Theory

The term artificial intelligence (AI) was introduced by John McCarthy, a Stanford University emeritus professor of computer science, and he defines it as “the science and engineering of making intelligent machines,” particularly intelligent software programs AI as a domain within computer science, is dedicated to crafting systems that can undertake tasks that traditionally require human cognitive abilities. The inception of the term "artificial intelligence" can be traced back to 1955 when John McCarthy introduced it, emphasizing the potential of machines to process language and tackle challenges typically associated with human cognition (Pournader, Ghaderi, Hassanzadegan, & Fahimnia, 2021).

AI aims to make machines observe and learn from people and solve problems or learn from the existing problem-solving. Rather, AI is also involved in learning real world problems which are highly challenging and finding novel solutions through experience techniques (McCarthy, Minsky, Rochester, & Shannon, 2006).

Delving into the multifaceted realm of AI, it can be categorized into distinct branches based on business core functionalities. One such branch focuses on the ability to sense and interact across various mediums, including text, audio, and video, encompassing areas like speech recognition, computer vision, and Natural Language Processing (NLP). The surge in AI's popularity can be attributed to ›rganizational and environmental factors, including dynamic customer ons, heightened global competition, comprehensive digitalization in

companies, and a swiftly evolving technological landscape (Pournader, Ghaderi, Hassanzadegan, & Fahimnia, 2021) (Helo & Hao, 2021).

Such advancements have enabled AI to transcend traditional computational boundaries, offering capabilities like machine learning and artificial neural networks that can process vast datasets and continually refine business performance with minimal human intervention (Helo & Hao, 2021).

The artificial intelligence is focus on science of intelligence, and as technology that simulates human intelligence in decision-making and problem-solving. Moreover, in AI, there are three (3) theories which are connected with each other, as prescribe below through Figure 2.1:

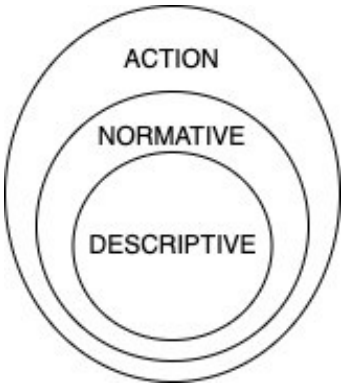


Figure 2.1 Relationship of AI Theories

2.1.2 Action Theory

The action theory is divided into action as events brought by an agent, action as result vs. action as means of result, potential action, mental attitudes, ıtic concept. Firstly, events brought by an agent means that a program chatbot requires an agent to operate it. Secondly, the action of result,

referring to Belnap and Perloff, an action is identified with the result it brings about. It is requires an impact of an action or cause effect of such actions. Thirdly potential action, in economic term, it is closely related to the forecast

2.1.2.1 Descriptive Theory

Descriptive theory in artificial intelligence (AI) seeks to explain and model how humans (or other intelligent agents) think and make decisions, instead of specifying how they should think or make decisions (which is the domain of normative or prescriptive theory). This theory focuses on capturing the cognitive processes, biases, limitations, and strategies that underlie intelligent behavior in real-world scenarios. In other words, descriptive theory in AI seeks to build computational models that mimic aspects of human thought, such as the use of heuristics and biases, limitations of rationality, learning and adaptation, and representation and reasoning.

The main goal of descriptive theory is to understand and explain the cognitive mechanisms that produce observed behaviors, even if those behaviors are suboptimal or incorrect. Descriptive theory in AI has applications in various fields, including cognitive modeling, human-computer interaction, explainable AI, and AI security.

2.1.2.2 Normative Theory

In artificial intelligence (AI), normative theory focuses on how humans should ideally and rationally think and make decisions. It provides a framework on ɔtimize decision-making and actions, ignoring the cognitive limitations and motions that might influence choices in the real world. The main goal of

normative theory is to define ideal standards for intelligence and rationality, which can then be used as benchmarks to evaluate and improve the performance of AI systems. The development of truly intelligent and effective AI systems also needs to consider descriptive aspects of human behavior. When the assumptions are accepted as applicable in a field, all the conclusions should also be accepted as true.

2.1.3 Factors that influence Artificial Intelligence in Improve Efficiency

According to Koehler, artificial intelligence can support companies that require technological renewal and high degrees of competitiveness and operational efficiency. AI-supported systems can optimize the ordering process. By using chatbots and virtual assistants, customers can place orders more efficiently, reducing the workload on customer service teams. AI can address common queries and assist customers in selecting products, ultimately improving operational efficiency (Koehler, 2016) (Helo & Hao, 2021).

The use of AI-powered chatbots allows companies to provide 24/7 support, answering customer inquiries quickly and efficiently. Chatbots can handle frequently asked questions and direct customers to the appropriate solutions, thereby reducing the workload on customer service staff (Dey, 2021).

2.1.4 Chat Robot (Chatbot)

2.1.4.1 Chatbot Definition

A computer program designed to simulate conversation with human users,
y over the Internet. Chatbots can mimic human conversation and entertain
t they are not built only for this. They are useful in applications such as

education, information retrieval, business, and e-commerce (Adamopoulou & Moussiades, 2020).

The Chatbot has several essential concepts, which are pattern matching, artificial intelligence markup language (AIML), latent semantic analysis (LSA), ChatScript, RiveScript, natural language processing, natural language understanding, entity, and context of such objects. Firstly, chatbots learn patterns that can then predict using algorithms. Secondly, AIML is based on pattern, response, category, and element marker approaches. Thirdly, LSA is used in the chatbot to reply to common questions that use AIML.

Fourth, chatscript is a chatbot engine designed to define conversation rules equipped with the ability to understand natural language, understand context, and produce fixed responses. Fifth, RiveScript is a scripting language for chatbot development. Sixth, NLP is artificial intelligence to explore and understand human language based on machine learning, NLP has become the main factor for chatbots to interact with humans. NLP is currently a very necessary feature in e-commerce, which will be discussed more specifically in the following subsections.

Seventh, NLU user intent and extracts domain-specific entities. Eighth, intent refers to actions corresponding to the steps the chatbot will take when specific intents are triggered by user inputs and may have parameters for specifying detailed information about it. Intent detection is typically formulated as sentence classification in which single or multiple intent labels are predicted for each sentence.

NLP in e-commerce chatbots enables more natural and relevant interactions between customers and computers. NLP allows the chatbot to understand the intent and meaning of customer input, including language nuances and synonyms. The chatbot then uses NLP to analyze that information and generate appropriate responses in easy-to-understand language. The benefits of NLP in e-commerce chatbots include improved customer experience, operational efficiency, personalization, unlimited time availability, and data collection. Examples of NLP usage in e-commerce chatbots are product search, product recommendation, general inquiries, and customer assistance. Challenges of NLP in e-commerce chatbots include understanding complex language and handling customer emotions.

NLP uses ML and DL with the objective of developing a technology that learns, and takes decisions based on what it learned, it was important to understand what a ML workflow is like and therefore, the literature revision is very focused on this point. The most widespread application of NLP is for chatbots. Essentially, an NLP refers to components that allow chatbots to carry out a conversation that's nearly identical to a person-to-person human conversation. NLPs use deep learning to not only study human input but also generate a human response.

Data scientist Ivo Nogueira in Sousa's research has identified recommender systems, machine translation, and chatbots as some of the most successful and lucrative applications of Natural Language Processing (NLP) today. Looking ahead, he believes that reinforcement learning, a machine learning e that involves rewarding desired behaviors and penalizing undesired ds immense potential (Sousa, 2022)

2.1.4.3 Chatbot role in improve customer service efficiency

E-commerce has been revolutionized by artificial intelligence, allowing companies to provide highly customized shopping experiences. By using machine learning to understand customer data, businesses can offer tailored services. AI also streamlines operations through automation, freeing up resources for strategic planning. In the rapidly expanding online marketplace, AI is essential for staying competitive. To meet rising consumer expectations for quick and seamless interactions, platforms are using AI to boost customer satisfaction. This includes the implementation of chatbots and virtual assistants, which offer immediate assistance and improve the overall shopping journey (Brown & Johnson, 2020) (García-Martínez, Fernández-Batanero, Fernández-Cerero, & León, 2023) (Kim & Lee, 2020) (Davis, 2022)((Huynh, Nguyen, Nguyen, & Dinh, 2023) ((Patel, et al., 2021).

These chatbots have been programmed with natural language processing (NLP) capabilities, which allow them to understand and respond to customer inquiries in a conversational and contextually appropriate manner. Farid Huseynov's study found that having AI chatbots available around-the-clock has been a key factor in improving customer satisfaction, especially for customers in different time zones who require support outside of traditional business hours. According to this study, consumers value the prompt and effective assistance that AI chatbots offer and frequently view them as more dependable and consistent than human agents. Data demonstrating a decrease in error rates and ·standings when using chatbots for routine inquiries supports this view ›v, 2023).

The study further notes that because AI chatbots eliminate the need for large customer support teams, their integration into customer service has resulted in significant cost savings for e-commerce platforms. The results also imply that AI chatbots improve overall customer satisfaction by guaranteeing that questions are answered promptly and efficiently, which makes for a more seamless customer experience (Huseynov, 2023).

These chatbots are an essential tool in contemporary e-commerce customer service because of their capacity to learn from interactions and continuously enhance their responses. Customers who interact with AI chatbots are also more likely to report positive experiences because they value the prompt resolution of their problems, according to the study. Additionally, the data demonstrates that platforms that use AI chatbots have seen higher rates of customer retention, suggesting that effective service delivery is a major factor in fostering loyalty. In conclusion, the study demonstrates that AI-powered chatbots are now an essential part of enhancing the efficacy and efficiency of customer support in the e-commerce sector (Sulastri, 2023).

2.1.5 Tokopedia

Tokopedia is an e-commerce platform that allows business owners in Indonesia to sell their products through an online platform. Tokopedia was founded by William Tanuwijaya and Leontinus Alpha Edison on February 6, 2009, then on August 17, 2009 it was officially launched to the public. Referring to the Tokopedia.com page, Tokopedia provides AI in the form of a Virtual Assistant ANYA. TANYA plays a role in answering questions with an integrated

chatbot system. The goal is that Tokopedia customers can submit complaints or problems and be given solutions quickly and directly.

In addition, the chatbot on Tokopedia can also connect buyers and sellers. However, this type of reply can be automatically answered by the chatbot based on the seller's request, or according to the reply format programmed by the seller.

2.2 Empirical Review

Table 2.1 Empirical review

No.	Researcher Name	Title	Research Result	Equality	Difference
1.	Maharashi Rahevar & Sachin Darji	THE ADOPTION OF AI-DRIVEN CHATBOTS INTO A RECOMMENDATIO N FOR E-COMMERCE SYSTEMS TO TARGETED CUSTOMER IN THE SELECTION OF PRODUCT (2024)	The research result shows that the operation of e-commerce continue to perceive AI's future prospects are likely to be the best prepared to ensure that the digital environment can still meet consumer demands while also improving the competitive edge.	Both research are conducted to consider the relation on the use of chatbots wutg the e-commerce.	The difference is that previous research focus on AI-powered customer experience for sales, AI-powered customer interaction, AI-personalized recommendation functions, and brand perception services
2.	Timothy Oke, Ayodeji Afolayan, Ramachandra	Impact of AI chatbots on youth consumer behavior in e-commerce: Evidence from Southwest, Nigeria	In this paper, the authors found the prevalence, influence, and effectiveness of AI Chatbots in shaping	Both research are analyzing on customer trust and encourage wider adoption	The study taken to eliminate perceived financial and product risks connected with online purchases.

No.	Researcher Name	Title	Research Result	Equality	Difference
	Mustafa Ayobami Raji	(2024)	purchasing decisions and overall consumer behavior among Nigerian youth in the dynamic sector of e-commerce, with a focus on Southwest Nigeria.	of AI chatbots,.	
3.	Tran Minh Tung	Personalized service, enhanced engagement, and data-driven strategies for e-commerce applications	The strategic incorporation of AI applications has resulted in measurable improvements in operational efficiency, customer satisfaction, and overall business outcomes.	The versatility and positive effects of AI in creating exceptional customer experiences.	This research is only discuss on the data driven strategies by not comprehensively discuss on chatbot
4.	Sabina-	AI-Driven Recommendations: A Systematic	Artificial intelligence works in conjunction with	Artificial intelligence may utilize	The difference is that this research

No.	Researcher Name	Title	Research Result	Equality	Difference
	Vasile-Daniel Păvăloaia.	Review of the State of the Art in E-Commerce (2023)	other technologies, such as blockchain, virtual reality, and augmented reality.	deep learning or machine learning techniques. The type of data also plays a role in determining the techniques used. Predictive modeling is applied to textual data, while image data requires image processing followed by AI algorithms for prediction.	

No.	Researcher Name	Title	Research Result	Equality	Difference
5.	Maharshi Rahevar & Sachin Darji	THE ADOPTION OF AI-DRIVEN CHATBOTS INTO A RECOMMENDATIO N FOR E-COMMERCE SYSTEMS TO TARGETED CUSTOMER IN THE SELECTION OF PRODUCT (2024)	This research found that chatbots improve customer trust, with a regression weight of 0.447 and a beta coefficient of 0.200. Overall, the study shows tha AI-powered chatbots significantly increase several aspects.	Chatbots have a favourable impact on consumer engagement and purchasing decisions.	The research looks into the Adoption of AI-Driven chatbots into a recommendation for E-Commerce systems to targeted customer in the selection of product, particularly their function in product selection and overall customer experience.
6.	Landim, Pereira, Thales Vieira, & De.	International Journal Chatbot design approaches for fashion Ecommerce: an interdisciplinary review (2021)	This paper presented an interdisciplinary, comprehensive review of what has been done in the field of conversational	Both research are analyzing the workflow of chatbot in e-commerce	The previous research are conducted by an interdisciplinary review.

No.	Researcher Name	Title	Research Result	Equality	Difference
			agents for fashion and retail e-commerce.		
7	Terrence Chong, Ting Yu, Debbie Isobel Keeling, & Ko de Ruyter	AI-chatbots on the services frontline addressing the challenges and opportunities of agency (2021)	The success of industry titans such as Amazon demonstrates the potential of AI-driven inventory management in improving operational efficiency and financial outcomes.	This study discusses on AI-Chatbots on services by addressing considering the pros and contras.	The difference is the Authors present a 3-level classification of AI-chatbot design (anthropomorphic role, appearance and interactivity) and examine how the combination of these three aspects of chatbot design impacts on the complementarities of agency
8	Hafize Nurgul Durmus	Artificial Intelligence in Marketing Communication: A Comprehensive	The synergy between AI and predictive analytics anticipates	Both research are focus on describe AI role in today's	The previous research take concern on AI as a general and not

No.	Researcher Name	Title	Research Result	Equality	Difference
		Exploration of the Integration and Impact of AI	consumer behavior, enabling precise targeting and optimizing the customer journey	demand, and its relation with chatbot.	specifically focus on chatbot in e-commerce.
9.	TANTY OKTAVIA, CAROLINE WIDIAWATI ARIFIN (2024)	REVOLUTIONIZING E-COMMERCE WITH AI CHATBOTS: ENHANCING CUSTOMER SATISFACTION AND PURCHASE DECISIONS IN ONLINE MARKETPLACE	The study underscores the importance of optimizing chatbot features to create a seamless and enjoyable shopping experience, ultimately boosting consumer satisfaction and encouraging repeat purchases.	Both research are focus on enhancing customer satisfaction and purchase decision by utilizing Chatbots.	The previous research is not focusing on a particular platform as this research is focus on Tokopedia.
10.	María D. Illescas-Manzano, Noé	Implementation of Chatbot in Online Commerce, and Open Innovation	This research work takes a step further and shows that implementing a chatbot through the	Both research are discussing the correlativity of digital	This research is focus on implementation of chatbot within the digital marketing

No.	Researcher Name	Title	Research Result	Equality	Difference
	fonso González, Car men Cristofol Rodríguez (2021)		ManyChat platform by a company that markets online has a positive impact on the capturing of leads.	marketing in promoting the use of chatbot.	strategy. While the present research was focus on the impact of the use of chatbot within the scope of customer satisfaction.
11.	Stefanus Ardhito Prasety, Alva Erwin, Maulahikmah Galinium (2018)	IMPLEMENTING INDONESIAN LANGUAGE CHATBOT FOR ECOMMERCE SITE USING ARTIFICIAL INTELLIGENCE MARKUP LANGUAGE (AIML)	The result shows that the Chatbot still needs improvement. Chatbot knowledge pattern matching rules should be enriched based on the questions that customers input in order to construct rules.	The equality over both research is the AIML and NLP are contributable for enhancing chatbot pattern of answers.	The differences are the research objectives, research questions and research method.
12.	Zifora Yanesya	Pengaruh Penggunaan Dan Respons Chatbot	This study demonstrates that chatbot usage and	Both research are discussing on relation	The difference is the previous research are using

No.	Researcher Name	Title	Research Result	Equality	Difference
	Miharni Tjokrosaputro	Terhadap Kepuasan Konsumen E-Commerce	response, mediated by extrinsic and intrinsic values, positively affect customer satisfaction.	between the use of chatbot has affected customers satisfaction.	extrinsic and intrinsic value of the customers, while the present research not limited to customer value.
13.	Riri Vebrianti, Muhammad Aras, Mega Silviana Sukarni Putri, Ida Ayu Swandewi. (2025)	AI Chatbots in E-Commerce: Enhancing Customer Engagement, Satisfaction and Loyalty	The findings reveal that chatbot service attributes significantly enhance customer satisfaction, strengthening customer loyalty.	Both research have similar dependent variable which is customer satisfaction.	The difference is the analysis method. In the previous research, the method is structural equation modelling. While the present research's analysis technique is through multiple regression and Slovin's sampling technique.
14		The Role of AI Chatbots on E-	The research emphasizes the	The equality of both research	The factor over the previous research

No.	Researcher Name	Title	Research Result	Equality	Difference
	Arta Moro Sundjaja, Mulvono	Commerce Platforms: Understanding its Influence on Customer Trust and Dependability	need to optimize chatbot features to build user trust and suggests that while humanlike characteristics can improve interactions the main focus should be on efficiency.	is chatbot has relation with efficiency which can be optimize if such characters are met.	is limited to customer trust (chatbot knowledge, humanlike qualities, responsiveness, and brand reputation).