THE CHANGING E-COMMERCE INDUSTRY WITH ROBOTIC PROCESS AUTOMATION (RPA) ON CHATBOT SERVICES AND SUSTAINABILITY PRACTICES IN MALAYSIA

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APPROVAL

"I hereby declare that I have read through this thesis and, in my opinion, that this thesis is adequate in terms of scope and quality, which fulfil the requirements for the award of Bachelor of Technology Management (Technology Innovation) with Honors."

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DECLARATION OF ORIGINAL WORK

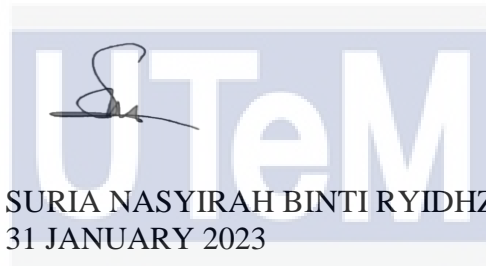"I hereby declare that this thesis with the title

'THE CHANGING E-COMMERCE INDUSTRY WITH ROBOTIC PROCESS AUTOMATION (RPA) ON CHATBOT SERVICES AND SUSTAINABILITY PRACTICES IN MALAYSIA'

is the result of my own research except as cited in references"

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DEDICATION

I would like to dedicate my appreciation to my beloved family member, a specialist to my lovely father, my brothers and aunty and my friends who always supported and motivated me all the time, and my supervisor, Assoc. Prof. Dr Mohd Syaiful Rizal Bin Abdul Hamid and my panel Dr Johanna Binti Abdullah Jaafar, who encouraged me and guided me with theirknowledge throughout this research, and course mates who have shared their experience in order to help me complete this research.

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ABSTRACT

Advances in technology have always been important stepping stones in the evolution of e-commerce business practices. As of today, the progressive growth in Robotic Process Automation (RPA) on chatbot servers and sustainable practices and initiatives has created a trend in producing green customers in the e-commerce industry. E-commerce companies and SMEs have been implementing Robotic Process Automation (RPA) on chatbot servers and sustainable initiatives subconsciously in their operation and management, mainly targeting environmental sustainability and social sustainability. Therefore, this research is to study the changing E-commerce industry with Robotic Process Automation (RPA) on chatbot services and sustainability practices in Malaysia, which act as a guide to environmental responsibility. In this regard, the main question arises: what is the changing E-commerce industry with Robotic Process Automation (RPA) on chatbot services and sustainability practices in Malaysia? To be able to answer this, three case studies and interviews were conducted online via google meet for both The TopapMalaysia and The Shaklee Selangor. The findings of this research contribute to e-commerce companies need to use RPA on chatbots and sustainable practices in the organization, therefore developing the business to the next level.

Keywords: Robotic Process Automation (RPA), Chatbot Server, Sustainability, E-commerce Industry, Environmental Sustainability, Social Sustainability

ABSTRAK

Kemajuan dalam teknologi sentiasa menjadi batu loncatan penting dalam evolusi amalan perniagaan e-dagang. Sehingga hari ini, pertumbuhan progresif dalam Automasi Proses Robotik (RPA) pada pelayan chatbot dan amalan serta inisiatif yang mampan telah mewujudkan trend dalam menghasilkan pelanggan hijau dalam industri e-dagang. Syarikat e-dagang dan PKS telah melaksanakan Automasi Proses Robot (RPA) pada pelayan chatbot dan inisiatif mampan secara tidak sedar dalam operasi dan pengurusan mereka, terutamanya menyasarkan kemampanan alam sekitar dan kemampanan sosial. Oleh itu, penyelidikan ini adalah untuk mengkaji perubahan industri E-dagang dengan Robotic Process Automation (RPA) mengenai perkhidmatan chatbot dan amalan kemampanan di Malaysia, yang bertindak sebagai panduan kepada tanggungjawab alam sekitar. Dalam hal ini, persoalan utama timbul: apakah perubahan industri E-dagang dengan Robotic Process Automation (RPA) pada perkhidmatan chatbot dan amalan kemampanan di Malaysia? Untuk menjawabnya, tiga kajian kes dan temu bual telah dijalankan secara dalam talian melalui google meet untuk The TopapMalaysia dan The Shaklee Selangor. Penemuan penyelidikan ini menyumbang kepada syarikat e-dagang perlu menggunakan RPA pada chatbots dan amalan mampan dalam organisasi, oleh itu membangunkan perniagaan ke peringkat seterusnya.

Kata kunci: Automasi Proses Robotik (RPA), Pelayan Chatbot, Kemampanan, Industri E-Dagang, Kelestarian Alam Sekitar, Kelestarian Sosial

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LIST OF ABBREVIATIONS

ABBREVIATIONS	Meaning
24/7	24 Hours A Day, Seven Days A Week
3R	Reduce, Reuse, and Recycle
4R	Refuse, Reduce, Reuse, and Recycle
AI	Artificial Intelligence
API	Application Programming Interface
B2B	Business-to-business
B2C	Business-to-consumer
C2B	Consumer to business
C2C	Consumer-to-consumer
CAGR	Compound Annual Growth Rate
CEH	Customer Engagement Hub
COD	Cash-On-Delivery
EDI	Electronic Data Interchange
FAQ	Frequently Asked Questions
FB	Facebook
GUI	Graphical User Interface
IG	Instagram
IoT	Internet of Things
IT	Information Technology
ML	Machine Learning
NLP	Natural Language Processing
O2O	Online-To-Offline
OCR	Optical Character Recognition
RPA	Robotic Process Automation
SMEs	Small and Medium-Sized Enterprises

TTS	Text-To-Speech
YES	Youth Entrepreneur System
CSR	Corporate Social Responsibility
Co2	Carbon Dioxide

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Advances in technology have always been important stepping stones in the evolution of e-commerce business practices. There are many examples of groundbreaking technology advancements that have reshaped e-commerce business operations in the digital world. In fact, the e-commerce industry gets many benefits from using Robotic Process Automation (RPA) software such as chatbot servers. It facilitates the use of automation technologies to give the needed functions in time-consuming back-office processes, such as data extraction and file transfers. Robotic automation is mostly based on the use of software tools to replicate the actions in human interfaces across several software programs in order to carry out various activities in e-commerce.

This chapter will explain an overview of the changing e-commerce industry with Robotic Process Automation (RPA) on chatbot services and sustainability practices in Malaysia. This chapter will briefly explain the correlation between the role of RPA on the chatbot server and sustainability, which are the environmental commitment and social engagement in the e-commerce industry. The researcher also discussed the problem statement, research question, research objectives, scope of the study, significance of the study, and the limitation of the study.

1.1 Background of Study

The vast majority of people now have smartphones equipped with instant messaging or social networking applications, and they may use these to communicate with retailers and manufacturers; therefore, it would be revolutionary if businesses could quickly and easily respond to customers' inquiries via these channels around the clock (Cui et al., 2017). According to Oliinyk (2021), technological advancement is transforming e-commerce and making it more efficient and customer-focused than ever before. In the digital era, there are many changes in the commerce industry, such as changes from traditional commerce to e-commerce. The e-commerce industry has always faced hurdles due to the fact that technology has constantly evolved with the times.

E-commerce is experiencing a huge shift as a result of fast technological development, and it is becoming more efficient and customer-centric than ever before. Artificial Intelligence (AI), machine learning, and augmented reality is already being extensively employed (RPA) in e-commerce, benefiting both businesses and consumers (Bloomenthal, 2022). Robotic Process Automation is another technology that adds to e-commerce development. E-commerce owners will be able to run businesses more efficiently and effectively by using RPA (Xiao & Benbasat, 2007).

According to Adamopoulou & Moussiades (2020), chatbots employ Artificial Intelligence (AI) and Natural Language Processing (NLP) to facilitate user interaction with websites and mobile applications through text, images, and sound. Chatbots are able to mimic human communication, process basic tasks automatically, and interpret spoken language. Messenger applications, mobile apps, websites, phone lines, and voice-enabled apps are just some of the places where the company might find chatbots in use. E-commerce online stores may use chatbots, which are based on artificial intelligence, to interact with clients at every stage of the buying process. These chatbots may be used by online retailers to field inquiries about their wares on the company's website or any number of other messaging services (Oliinyk, 2021).

The Top 10 Most Visited E-commerce Websites in Southeast Asia
Total average visits obtained by each platform in 2020

Rank	Platform	Visits
1	Shopee	281,385,626
2	Lazada	137,154,967
3	tokopedia	88,889,000
4	Bukalapak	35,728,425
5	thegioididong	28,650,650
6	TIKI	22,491,175
7	blibli	19,253,900
8	Sendo.vn	14,348,450
9	Bach hoa XANH	8,828,825
10	FPT Shop.com.vn	7,282,700

Methodology: Data was collected on SimilarWeb, which accumulated the total average visits (desktop & mobile web only) obtained by each e-commerce company across 6 countries in Southeast Asia. The displayed traffic figures are taken from the average web traffic from January to December 2020.

Figure 1.1: The Top 10 Most Visited E-Commerce Website In South Asia 2020

Source: 'Map of E-commerce Yearend Report 2020', iPrice (2021)

Based on figure1 it shows the list of websites used by South Asia in 2020. Singapore saw the greatest yearly rise in online shopping platform traffic (35%), followed by the Philippines (21%), Vietnam (19%), Malaysia (17%), Thailand (15%), and Indonesia (6%). Southeast Asian consumers paid an average of US$32 for each purchase in 2020, up 19% from 2019. The average basket size in Singapore and Malaysia was US$61 and US$41, respectively. The rate of shopping app uninstallation grew during the year, indicating that customers were more discriminating after a period of testing (The Top 10 Most Visited Southeast Asia Ecommerce Sites | Data, 2021)

Therefore most e-commerce websites using RPA on the chatbot serve as a virtual assistant. Used in online shops, it provides instantaneous responses to a wide variety of consumer questions, enhances the shopping experience, and boosts revenue. The widespread use of AI chatbots has increased rapidly in recent years. Customers like them because they provide useful information, enhance their shopping experience, and allow them to serve themselves (Szaniawska-Schiavo, 2022).

According to Dilmegani (2022), chatbots may enhance conversion rates by up to 67%. Therefore, e-commerce bots may help customers out by giving them suggestions and answering questions while they purchase online. This eliminates uncertainties and quickens the customer's path to purchase. Hidden power typically lies under a chatbot widget's seemingly innocuous design. It has the ability to automatically gather contact information from the website's visitors by asking them a series of qualifying questions. According to Dilmegani (2023), 55% of organizations that use chatbots produce a higher amount of high-quality leads.

A chatbot restricts its ability to converse when it must adhere to a predetermined set of rules. A computer is only as smart as the code that controls it, and it can only answer a limited number of questions and use a limited language. A financial automation system that uses a series of questions to determine the caller's intent is an example of a restricted bot (Frankenfield, 2022). There are the types of chatbot servers in e-commerce, such as Menu-based chatbots, Linguistic Based or Rule-Based Chatbots, Keyword recognition-based chatbots, Machine Learning chatbots, The hybrid model, and Voice bots.

According to Nielsen's "Unpacking the Sustainability Landscape," 73% of customers are ready to adjust their behaviour to lessen their environmental effects. There is a widespread belief that e-commerce is a sustainable activity, and the information provided here is intended to provide light on the environmental effects of e-commerce (Collins, 2021).

The difficulties for businesses are in recognizing how each new technological system will affect the company, society, and environment, as well as the benefits and drawbacks of such changes. This included everything from social media guidelines to the Internet of Things (IoT)-driven environmental efficiency to AI-led analytics to coded ethics. The people making the technology shouldn't be the only ones concerned with commercial ethics. It should be a top priority for every department in every company. This study summarises the results of an investigation into the changing e-commerce industry with Robotic Process Automation (RPA) on chatbot services and sustainability practices in Malaysia. Specific attention is paid to the influencing factors, such as environmental commitment and social engagement.

1.2 Problem statement

The RPA on the chatbot server has been the most world-important server to all companies including to e-commerce industry. According to BasuMallick (2022), a majority of businesses will have included a form of chatbot in their operations. The worldwide chatbot market is predicted to develop at a compound annual growth rate (CAGR) of 25.7% from 2022 to 2030. The market is likely to be driven by organizations' increased use of customer service activities to minimize operational expenses. Chatbots may be employed by e-commerce companies for returns and exchanges, according to Nagar (2022). Deploying Chatbots may automate around 35% of the tasks performed by a human, resulting in significant yearly savings in total expenditures. In 2021, the e-commerce category will have a revenue share of more than 20.0% of the market (Grand View Research, 2019).
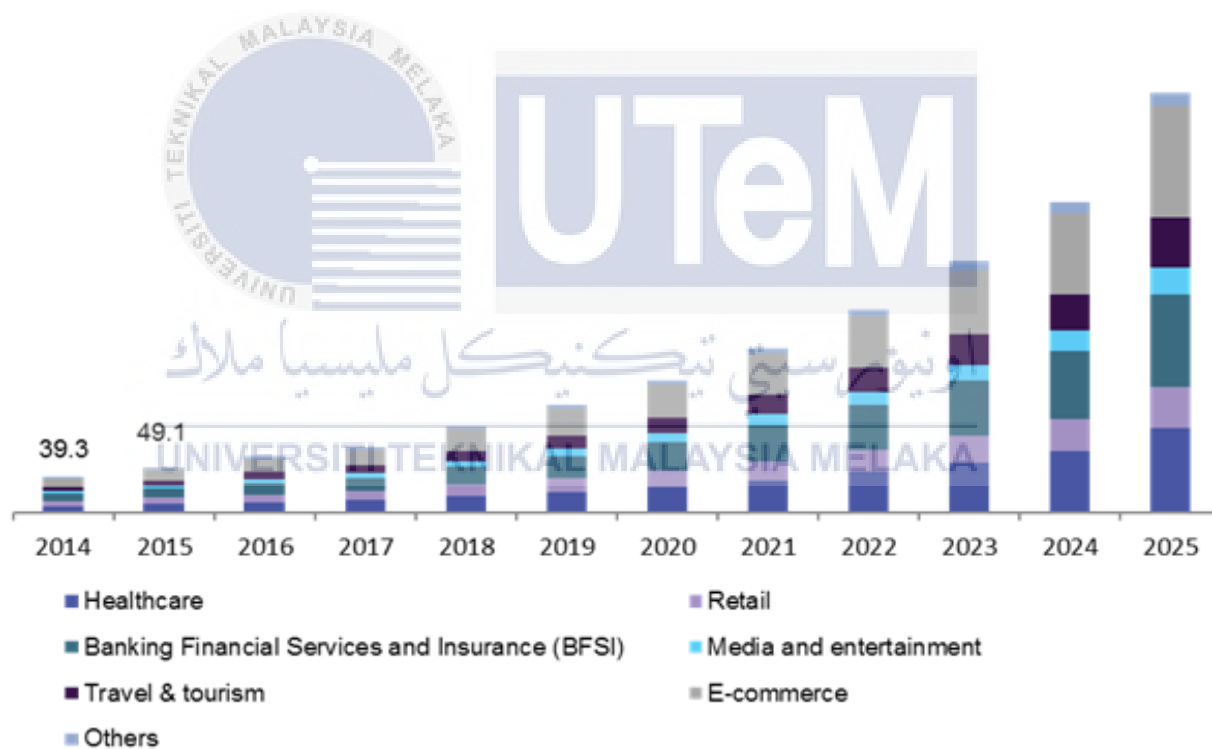

Figure 1.2: U.S. Chatbot Market by Vertical, 2014–2025 (USD Million)

Source: Grand View Research (2019)

Therefore, according to the research of Vue.Ai et al. (2022) found that e-commerce chatbots are extensively employed in business and even assist e-commerce companies in generating more money, saving time, reducing sales cycles, enhancing conversion, and aiding in cross-platform performance. Chatbots are also language neutral and may serve a genuinely multinational audience when compared to other sectors since retail e-commerce sales globally totalled $2.3 trillion in 2017. Likewise, 24/7 support is regarded as the most vital in the world for customer services on RPA on the chatbot server in e-commerce (Fernandes, 2022). A well-designed chatbot, in fact, can answer up to 80% of common inquiries (Skowronek, n.d). As a result of its fast development, the e-commerce business has garnered increasing attention and controversy over the years, despite great efforts in terms of scientific breakthroughs and chatbot practice (Thakkar, 2022).

Moreover, e-commerce sales increased by 27.6% between 2019 and 2020, making up 18% of total retail sales throughout the world. Online shopping has boomed throughout the epidemic, and now it takes one billion trees to produce a year's worth of cardboard packing, or around 5,000 products each second (Harbaugh, 2022). Consequently, as e-commerce expands, so does the damage it does to the planet. For instance, there are apparent environmental implications, such as a cardboard box to recycle or plastic wrapping to the trash, and an unseen footprint for each shipment dispatched, such as the carbon dioxide emitted in transportation and delivery. However, according to Sustainable San Antonio, applying 3R and 4R minimizes trash output, and the company or business reduces waste, which saves both energy and landfill space (Collins, 2021). Moreover, by reducing the amount of trash people produce, 3R or 4R cuts down on the amount of space and money landfills use. Due to environmental laws and public resistance, finding a suitable location for a new landfill has become a time-consuming and costly process (Sharma et al., 2021). Therefore, most e-commerce websites use the services of an environmentally friendly courier. In fact, according to Packaton (2020), the majority of courier in Malaysia collaborates extensively with policymakers throughout the globe to promote sustainable packaging alternatives. Since the courier utilized a sustainable and biodegradable packing option, they were able to lessen their environmental impact and make the world a somewhat better place to live.

Besides that, according to Miva (2021), with the advent of e-commerce, consumers are able to make purchases from anywhere in the world; this shift in consumer behaviour has resulted in a greater emphasis on the customer experience, which in turn has fueled expansion across all business models; and retailers are able to expand their potential market share by reaching a wider audience. According to Statista (2022), the top 100 online businesses in Malaysia generated roughly $1,247,000,000 in net sales in 2021. However, according to the Department of Statistics Malaysia's Annual Report on Small and Medium Enterprises (SMEs) for 2020, the SME sector's GDP shrank when it fell by 7.3%. Therefore, the government of Malaysia has implemented a number of initiatives aimed at assisting small and medium-sized enterprises (SMEs). Minister of Communications and Multimedia Tan Sri Annuar Musa said on September 7 that the government would provide more than RM 40 million to small and medium-sized enterprises (SMEs). Also, the government encouraged 300,000 SMEs to embrace digitalization with initiatives including SayaDigital, Go e-commerce, and Shop Malaysia Online. Furthermore, municipal governments are urging businesses to participate in the online market (Alias, 2020).

Although corporations are beginning to see the usefulness of RPA on chatbots, the system is not being utilized regularly by staff, who instead depend on conventional methods for responding to customers and collecting data to analyze customer problems (Somasundaram, 2021). Some e-commerce firm users were unfamiliar with the RPA on the chatbot. According to Ajith (2022), since RPA on the chatbot is still in the know-how, acceptance of new technology becomes a key hurdle in the adoption process. It will occur when management fails to prioritize offering RPA training and support for chatbots as a corporate priority. Furthermore, some senior management professionals are unsure about the purpose of RPA on the chatbot used in their firm. Thus the adoption of the chatbot with an unclear target and goal of RPA on the chatbot on e-commerce may fail (Somasundaram, 2021). As a result, this research was carried out to investigate the changing e-commerce industry with Robotic Process Automation (RPA) on chatbot services and sustainability practices.

1.3 Research questions

The research question is the most important aspect of the thesis, as it would focus on the area of interest, determine the correct methodology, and constantly direct this research through the research phases, which consisted primarily of inquiry, analysis, and reporting. In this study, researchers are attempting to answer these questions:

I.   What is the impact on the environment and social sustainability through the changing e-commerce industry in Robotic Process Automation (RPA) on chatbot servers in Malaysia?

II.   How to address the knowledge gap relating to Robotic Process Automation (RPA) on the chatbot server on sustainability practice in the e-commerce industry?

III. What are the benefits of implementing Robotic Process Automation (RPA) on the chatbot server and sustainability practice in the e-commerce industry?

1.4 Research objectives

The objective of the research was to study the changing e-commerce industry with Robotic Process Automation (RPA) on chatbot services and sustainability practices in Malaysia. In order to fully achieve the thesis purpose, research objectives were developed to guide through this research.

I.   To evaluate the impact on the environment and social sustainability through the industry in Robotic Process Automation (RPA) on chatbot servers in the e-commerce industry.

II.   To address the knowledge gap through an in-depth insight into the chatbot server of the e-commerce industry on environment engagement and social engagement in their management, operation, and customer services.

III. To highlight the benefits of Robotic Process Automation (RPA) on the chatbot server to businesses, their customers, and the environment.

1.5 Significances of Study

In accordance with the research objectives, this study is anticipated to uncover the impact on the environment and social sustainability through the changing e-commerce industry in Robotic Process Automation (RPA) on a chatbot server in Malaysia. Therefore, the research seeks to gather information and disseminate thoughts on the impact on the environment and social sustainability through the changing e-commerce industry in Robotic Process Automation (RPA) on a chatbot server in Malaysia. Moreover, this research will benefit the company and SME by increasing awareness of the importance of Robotic Process Automation (RPA) on chatbot servers and sustainability practices in management, operation, and customer services to the e-commerce industry in Malaysia. This research identifies the advantages of Robotic Process Automation (RPA) on chatbot servers and sustainability practices in the e-commerce industry in Malaysia. In fact, this research will also assist companies and SMEs in the e-commerce industry to assess environmental and social sustainability, thus enabling them to make decisions on strategies for improving the environment and customer experience.

1.6 Scope of research

This research focuses on accessing the environment and social sustainability through the changing E-commerce industry with Robotic Process Automation (RPA) on chatbot services and sustainability practices in Malaysia. The research will reflect on the implementation of Robotic Process Automation (RPA) on chatbot servers and sustainability practices in the changing e-commerce industry to draw out relevant conclusions about the influence, contributions, and company's impact and contribution to its growth. The research will focus on assessing the efficacy and benefit of the changing e-commerce industry in Robotic Process Automation (RPA) on chatbot servers in Malaysia. It is to evaluate the capabilities of Robotic Process Automation (RPA) and sustainability practices in order to enable the company to make decisions on the strategies for improving management, operation, and customer services performance. Furthermore, this research will use the qualitative method to explain in-depth, based on social and environmental sustainability, how the change in the e-commerce industry is influenced by Robotic Process Automation (RPA) on chatbot servers and sustainability practices in Malaysia. In addition, Malaysia was chosen as