A STUDY OF PERCEPTIONS AND BARRIERS OF BINGOBOX TECHNOLOGY IN MALAYSIA.

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This thesis is submitted in partial fulfilment of the requirements for the award of Bachelor of Technology Management (Technology Innovation) with Honors

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APPROVAL

'I hereby declare that I have read and go through this dissertation/report/thesis and certify that, this thesis is satisfactory in the sense of scope and quality as a partial fulfilment the requirements for the award of Bachelor of Technology Management (Innovation) with Honours and will submitted to the Universiti Teknikal Malaysia Melaka.'

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DECLARATION

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is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in the candidature of any other degree.

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DEDICATION

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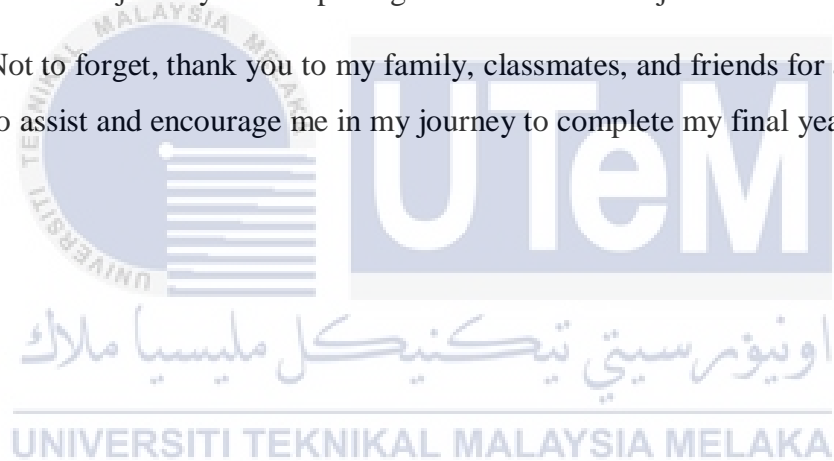
ABSTRACT

Since pandemic COVID-19 have been widely spread throughout the globe, people tend to take precaution in order not to have contact with the virus themselves. This automatically shift the way on how we as a consumer, buying our products. From traditional ways of going to physical stores and paying with cash, we now have option to go cashless and contactless with the emerging of unmanned store. The researcher believe that this new technology could be helpful for customer to finally shop safely without worrying about contacting the virus. However, this is a relatively new concept and technology in Malaysia. Hence, the purpose of this research conducted to investigate the customer perceptions and the barriers of using unmanned store which is BingoBox in Malaysia. The qualitative research method was used to collect information through an online interview session with 5 respondents that resides or work in Kuala Lumpur and Selangor that have or at least acknowledge the existence of BingoBox. There are three perceptions on unmanned store technology which are ease of useness, facilitating condition and price value. Meanwhile there are four barriers of using BingoBox technology which are usage, technology readiness and psychological behavior, security and image barrier. Through this research, the researcher hope that it would help those who are interested in opening their own unmanned store to know more from customer perspective.

Keywords – *Unmanned Store, BingoBox, customer perceptions, barriers*

ABSTRAK

Memandangkan wabak COVID-19 telah merebak secara meluas ke seluruh dunia, orang ramai cenderung untuk mengambil langkah berjaga-jaga agar tidak berjangkit dengan virus itu sendiri. Ini secara automatiknya mengubah cara kita sebagai pengguna, membeli produk kita. Daripada cara tradisional iaitu pergi ke kedai fizikal dan membayar dengan tunai, kami kini mempunyai pilihan untuk pergi tanpa tunai dan tanpa sentuhan dengan kemunculan kedai tanpa pemandu. Penyelidik percaya bahawa teknologi baharu ini boleh membantu pelanggan untuk membeli-belah dengan selamat tanpa perlu risau tentang virus. Walau bagaimanapun, ini adalah konsep dan teknologi yang agak baru di Malaysia. Justeru, tujuan kajian ini dijalankan adalah untuk menyiasat persepsi pelanggan dan halangan penggunaan kedai tanpa bantuan manusia iaitu BingoBox di Malaysia. Kaedah kajian kualitatif digunakan untuk mengumpul maklumat melalui sesi temu bual dalam talian dan juga secara bersemuka dengan 5 orang responden yang menetap atau bekerja di Kuala Lumpur dan Selangor yang mengenali atau sekurang-kurangnya mengetahui akan kewujudan BingoBox. Terdapat tiga persepsi terhadap teknologi kedai tanpa bantuan manusia ini iaitu kemudahan kegunaan, keadaan memudahkan dan nilai harga. Sementara itu terdapat empat halangan penggunaan teknologi BingoBox iaitu penggunaan, kesediaan teknologi dan tingkah laku psikologi, keselamatan dan halangan imej. Melalui kajian ini, pengkaji berharap ia dapat membantu mereka yang berminat membuka kedai tanpa pemandu sendiri untuk mengetahui lebih lanjut dari sudut pelanggan.

Kata Kunci – Kedai Tanpa Bantuan Manusia, BingoBox, Persepsi Pelanggan, halangan

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LIST OF ABBREVIATION

ABBREVIATION	MEANING
IoT	Internet of Things
AI	Artificial Intelligence
IBM	International Business Machines
RFID	Radio Frequency Identification
4IR	Fourth Industrial Revolution
RMKe-12	Rancangan Malaysia ke-12
WKB	Wawasan Kemakmuran Bersama
EPU	Economy Planning Unit
PMO	Prime Minister Department
R&D&C&I	Research, Development, Commercialization and Innovation
TAM	Technology Acceptance Model
KL	Kuala Lumpur
WHO	World Health Organization
COVID -19	Coronavirus Disease 2019
MCO	Movement Control Order
CDC	Centre for Disease Control and Prevention
GDP	Gross Domestic Product
SRT	Smart Retail Technology
UID	Unique Identifiers
IP	Internet Protocol
CRM	Customer Relationship Management

NFC	Near Field Communication
QR CODE	Quick Response Code
CEO	Chief Executive Officer
TR	Technology Readiness

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CHAPTER 1

INTRODUCTION

1.0   INTRODUCTION

This research study's introduction begins with a brief overview of the research context, and the following description of the unmanned shop technology in Malaysia is given without going into excessive detail. The statement of the problem, the research questions, the research objectives, and the scope of the investigation, the noteworthy findings, and the limitations of the study will come later. After that, the chapter comes to an end with the summary.

1.1   BACKGROUND OF STUDY

The convenience store sector of the retail industry in this country is seeing particularly rapid growth as of late. During the period between 2016 and 2022, it is anticipated that the total number of convenience stores in Malaysia would increase at a compound annual growth rate of 6%. This demonstrates without a doubt that convenience stores have always been an important part of the modern supermarket retail industry. These shoppers recognised this channel of shopping for its handy locations, extended hours of operation, one-stop shopping, grab-and-go food options, and quick transactions. Convenience stores offer speed of service to time-starved consumers, who want to get in and out of the store quickly. Artificial intelligence was used at the convenience shop in order to increase its overall performance. Artificial intelligence is also being utilised in the retail business to analyse massive amounts of data in order to forecast client demand and preferences.

Nowadays, IoT and Artificial Intelligence (AI) technology has disrupted many industries. It is simulate human processes by computer systems that including computer science, symbolic learning, and machine learning. Currently, there are mainly two types of existing AI that are Reactive machines and Limited memory. Reactive machines were designed for narrow purposes. A famous example is IBM's Deep Blue, a machine that beat chess Grandmaster, Garry Kasparov in 1997. Reactive machine that sees the pieces on a chess board and reacts to them. But it does not have memory and cannot use earlier information to predict future actions for improvement. Limited memory can use previous information to tell future decisions such as self-driving cars. AI tools have several functions for businesses such as image recognition, speech recognition, chatbot, natural language generation, sentiment analysis, etc. (Margaret Rouse, 2017).

The retail store sector is currently experiencing an up and coming trend that involves using IoT and AI technology in their store. This trend could be seen in smaller stores that are starting to not use any physical worker 24 hours a day, seven days a week. Alternately referred to as cashier less supermarkets, automated micro markets, Just Walk Out, and Grab'n'Go, container boxes, mini/micro stores, digital self-service stores. These container boxes or small stores often stock fewer than one thousand goods and provide clients with the essential assortment necessary to meet their day-to-day needs. Either they are put in high-traffic areas such as train stations, petrol stations, hospitals, or universities, or they are put in rural areas that do not have any local suppliers. They are computerised and unmanned, which means that

humans are not responsible for their operation. There is no personnel at all, thus there are no waiters or cashiers.

One of the example of a well-known convenience store that implemented AI fully are Amazon Go. Amazon Go is a smart convenience store. Since 2017, customers in the United States have been able to buy things without being checked out by a cashier or via a self-checkout system, thanks to AI. Customers spend around 50% more in Amazon Go stores than in conventional convenience stores as a result of this (Adam Levy, 2019).

Amazon Go, a smart convenience store, is only available in the United States. Since August 2017, China has had Hema, Alibaba's new retail division. In the "supermarket + catering" business strategy, Hema combines "online + offline + logistics." Customers can order things online and have them delivered in 30 minutes with free delivery within 3 kilometres using the Hema app. Hema's offline store serves as a warehouse and distribution hub as well as a retail. Hema improved customer experience by optimising in-store layouts, designing the dining space on the supermarket's edge area to provide customers with a calm dining atmosphere, and improving service quality by offering detailed information about each product on the app (Shuyuan Zhang and Hao Wei, 2018).

In Malaysia, there is a pilot convenience store known as BingoBox that does not employ any workers. However, the self-checkout system is necessary for both establishments.. The initial objective of this project is to gain an understanding of the perception held by customers in Malaysia regarding BingoBox technology. The second objective is to gain an understanding of the challenges or barriers associated with using unmanned stores like BingoBox in Kuala Lumpur, Malaysia.

1.1.1   TECHNOLOGY

A store that does not have a checkout line is known as an unmanned store or widely known as cashier-less store. This type of store gives consumers the ability to go in, shop, and then leave without having to wait in line to pay for their purchases (Mobidev, 2022). Using a combination of software with artificial intelligence and sensors and devices connected to the internet of things, this procedure has been totally automated. It's not a new trend in the retail industry to use cameras powered by AI. For instance, similar technologies are utilised in the

investigation of theft and fraud. On the other hand, the implementation of artificial intelligence in the cashierless store concept takes things to an entirely new level.

It is necessary for Internet of Things (IoT) devices and computer vision software to work together for cashier less technology to be implemented in a store so that it is secure, productive, and simple to use. Customers may stroll in, get what they want, and walk out without any hassles because to this mix. It would appear that the future of the retail industry would be one in which almost no interaction with a human being will be required in order to make a purchase. Technology is working overtime behind the scenes to ensure that every transaction is logged and nothing is taken.

A cashierless business may appear to be a mystery; yet, the concept behind it is actually quite straightforward. The only difference from making a purchase on the internet is that when you're done, you actually have physical products in your possession. The cashierless technology utilises computer vision, deep learning, Internet of Things (IoT), and Big Data analytics in order to deliver a shopping experience that is devoid of humans.
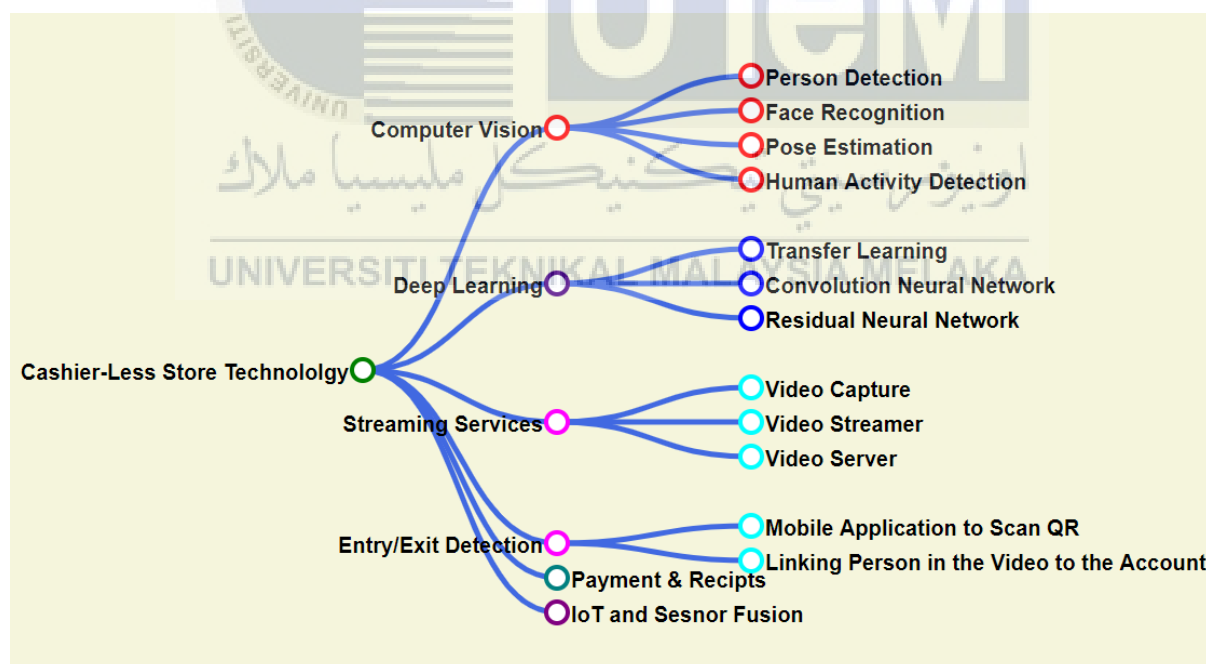

Figure 1.1: Cashierless Technology

Source: Google Image, 2022

1.1.2 UNMANNED STORE

The unmanned store as a service and cost-cutting solution could not be more contradictory. Personnel ready to answer clients' inquiries, show them the route, open an extra cash register, or retrieve things for them is one of the most significant spearheads for service. However, existing workers may not be able to meet all service needs, and in some circumstances, an unmanned store may be the best option. The unmanned retail container is an important tool in an unstaffed retail business; yet, the classic unmanned container has a high rate of commodity loss and is inconvenient for goods administration (Licheng, 2018). The use of RFID technology in an intelligent container is a smart option, but the late operation expenses are too expensive. Some intelligent containers that use gravity sensing can detect the commodity being transported, but they can't tell what the client is taking. In 2016, Amazon demonstrated its automated Go grocery store concept, which uses machine vision to track the things that customers pick up.

Unmanned retail services utilise technologies such as artificial intelligence, big data, and the internet to provide customers with an experience that is specific to their needs. As a result of dynamic recognition, certain unmanned enterprises are now able to capture the movements of customers in real time and match them to specific products, which represents a significant step forward in terms of technology (Yining, 2022). The camera is able to collect and track all of the activities that customers are engaged in while in the store thanks to the self-service detection and tracking system. This enables the store to generate a set of analysis systems based on user behaviour and provide more personalised services and experiences.

These "smart stores" can be found in both the United States and China and are a successful combination of technological advancement and market potential. Despite this, the number of successful instances is far fewer than anticipated (Yining, 2022). The problem is that the industry of unmanned shops is still in its infancy in terms of technological investigation and understanding of user experience. This presents a challenge. The unmanned retailing technology is distinct from standard self-service technologies in the sense that the entirety of the shopping experience is reliant on the first stage of development of more advanced technologies like geofencing and biometric authentication. The issues of stock replenishment, the prevention of theft, and the protection of personal information are examples of technical obstacles that need to be solved. Customers are dissatisfied because there are not enough support services, and there is not enough synergy between interactive and personalised services.

As a result, customers are reluctant to use technology, which slows the expansion of unstaffed commerce (Park,2022)

Instead than concentrating on the shopping habits of consumers, smart technology is more concerned with how people utilise technology (Chang and Chen, 2020). Few studies have focused on the role of consumers as active participants in the market. Although studies have been done on how customers react to self-service technologies, not nearly enough research has been done on how users experience new technological advances in stores (Bulmer et al., 2018).

In their study on the acceptance and resistance of smart technologies in the retail business, Roy et al. (2018) found that perceived innovative attributes such as utility and complexity indirectly influenced attitude. Chang and Chen (2020) investigated the moderating role of technology readiness in identifying utilitarian and hedonistic incentives that influence consumers' desire to shop in an unmanned grocery store. Specifically, the researchers were interested in determining which incentives are more influential on consumers' desire to shop in an unmanned grocery store.

Figure 1.2: Amazon Go

Source: Google Image, 2022

1.1.3 NATIONAL 4TH INDUSTRIAL REVOULUTION.

4IR refers to the disruptive revolution of industries brought about by the deployment of emerging technologies (Economic Planning Unit, 2021). It is characterised by emerging technologies that are combining the physical, digital, and biological worlds, thereby influencing all disciplines, industries, and the economy. For example, bioprinting uses a digital file (digital) to print an object, such as an organ, with cells and biomaterials (physical) (biological).

The Fourth Industrial Revolution (4IR) and the digital economy are interwoven and reinforce one another. Digitalization makes it possible to produce technology applications and inventions that are more complicated than ever before, as well as to introduce new business models across all sectors of the economy. The quickening of the growth of the digital economy will be a direct result of the widespread implementation of 4IR technology. The National 4IR Policy is a comprehensive national policy that encourages coherence in modifying the socioeconomic development of the nation through the ethical use of 4IR technologies. This policy was established to fulfil the goals outlined in the National 4IR Strategy. This is made possible by the application of technologies known as 4IR. It contributes to the implementation of national development plans such as the Twelfth Malaysia Plan (RMKe-12) and the Wawasan Kemakmuran Bersama 2030. (WKB 2030).

In addition to this, it acts as a supplement to the Malaysia Digital Economy Blueprint in the process of propelling the expansion of the digital economy. The policy lays out the primary areas of concentration that will have an effect on the rakyat, businesses, and the government in order to capitalise on potential growth possibilities and to manage potential dangers that may be caused by 4IR.

In order to keep up with the rapid advancement of technology and to create the groundwork for the Fourth Industrial Revolution (4IR), Malaysia has made significant financial investments. When it comes to embracing 4IR, Malaysia runs across a few problems and obstacles, such as a shortage of talent that is prepared for it, an innovation-led attitude that isn't strong enough, and a deficiency in quality fundamental infrastructure. Moving forward, the country requires a clear governance structure and implementation framework to roll out a whole-of-nation approach to push the 4IR goal. This can only be accomplished if they have these two things in place.