IMPACTS OF AI ON THE GROWTH OF VIETNAM'S E-COMMERCE SECTOR

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ABSTRACT:

Both international and domestic e-commerce sectors have experienced a rapid growth in recent times. Artificial intelligence (AI) has been used more and more in applications to facilitate e-commerce activities. This paper analyzes the advantages of AI applications in the e-commerce sector and how AI is impacting the shopping experience of consumers on e-commerce platforms.

Keywords: AI, big data, e-commerce.

1. Introduction

AI (Artificial Intelligence) technology is artificial intelligence or artificial wisdom a branch of computer science that was first mentioned by John McCarthy - an American computer scientist in the 1950s, but today this term is widely known by the racing development of technology companies. Artificial intelligence (AI) is the capability of a machine to perceive its environment, make decisions, and take actions based on its perception. It is not only changing the face of e-commerce but also reinventing it. It helps solve some of the most complex challenges facing retailers today. AI applications in e-commerce started in the early 2000s. This was when online retailers began to embrace customer analytics and machine learning (ML) to improve the efficiency of their websites.

In eCommerce, artificial intelligence refers to a collection of techniques, tools, and software powered by machine learning and advanced analytics to create optimal online shopping experiences for customers through improved design, personalized recommendations, automation, and multi-channel customer support such as virtual assistants and intelligent chatbots. Its role in e-commerce is to provide support to businesses in the field of marketing, customer service, and sales. As a result, it helps maximize revenue from every visitor session and satisfy customer needs.

AI is increasingly being applied in the online business environment and it is forecasted that the majority of relationships between customers and an e-commerce business will be managed by AI without human interaction. It is forecasted that global GDP can grow by 14% with the support of artificial intelligence due to the support of AI in many production and business activities (5) by 2030. It is currently evaluated by experts as the "future element " of e-commerce because it is not only an advanced technological "weapon" for businesses but also an effective assistant for businesses, partner brands, small business households, sellers, and consumers. However, the privacy issue of users when applying artificial intelligence in collecting large amounts of personal

information is also a concern because only works on its data. Next, the article will review the recent situation in the e-commerce industry as well as analyze the advantages of AI. It enables online retailers to deliver an optimized customer experience on and off their e-commerce websites by using collected business and customer data to make better business decisions and more accurately predict the future. The definition of AI is broad and encompasses data mining, natural language processing, and machine learning including:

● Data mining refers to the gathering of both current and historical data to inform predictions.

● Natural language processing focuses on human-computer interaction and how computers interpret natural human language.

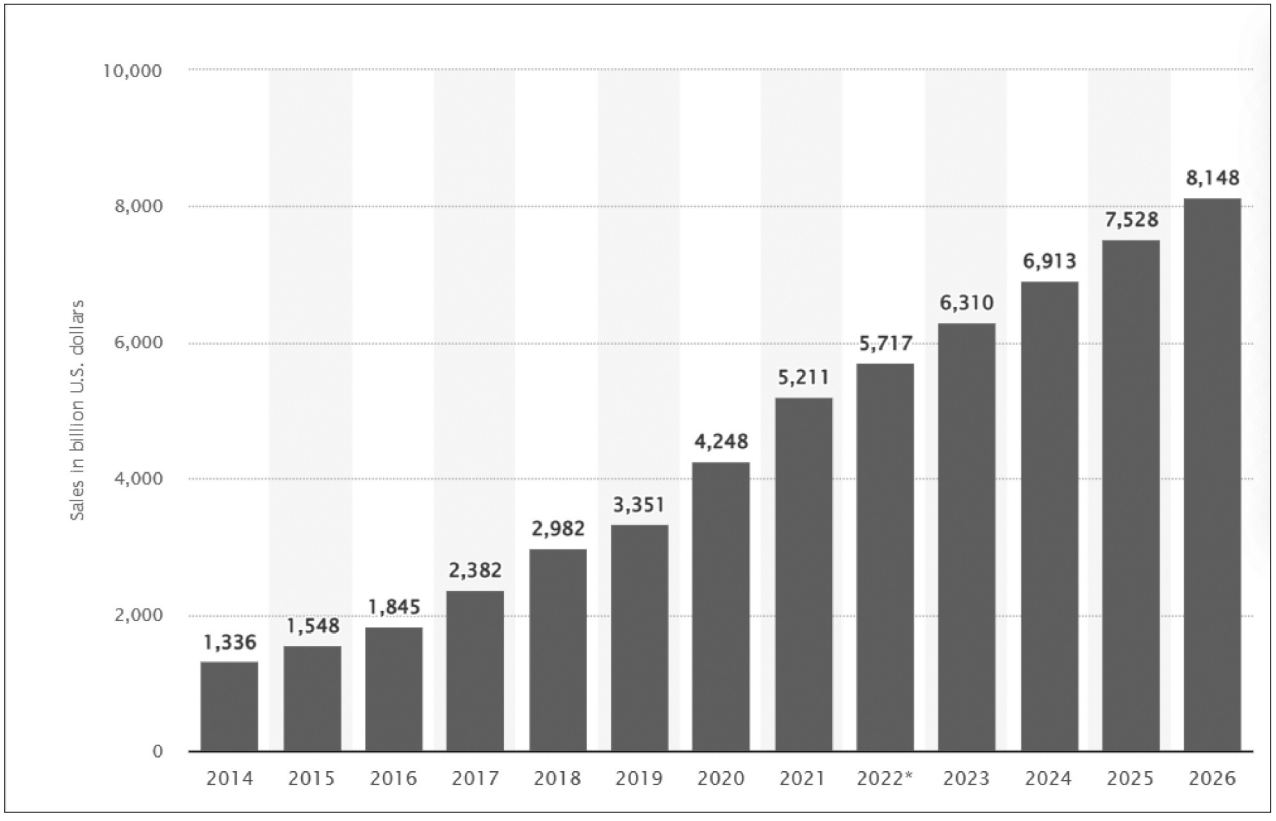
● Machine learning concerns using a collection of algorithms to apply experience or provide examples to solve a problem. Deep learning "involves layering algorithms to gain a greater understanding of the data."

In 2021, retail e-commerce sales amounted to approximately 5.2 trillion U.S. dollars worldwide. This figure is forecast to grow by 56 percent over the next years, reaching about 8.1 trillion dollars by 2026 (Stephanie Chevalier, Global retail e-commerce sales 2014-2026).

2. Vietnam e-commerce market overview

During the pandemic, many businesses have to close or even stop operating, but there are still companies that grow due to the development of online sales channels. The COVID-19 pandemic is an opportunity for businesses running digital platforms to explore features of digital technology effectively to help companies timely catch up with customers' needs with a certain amount employees. AI applications are increasingly popular, such as the new generation virtual assistant (AI BOT) applying artificial intelligence

Figure 1: Retail e-commerce sales worldwide from 2014 to 2026 (billion U.S. dollars)



Source: Statista 2022

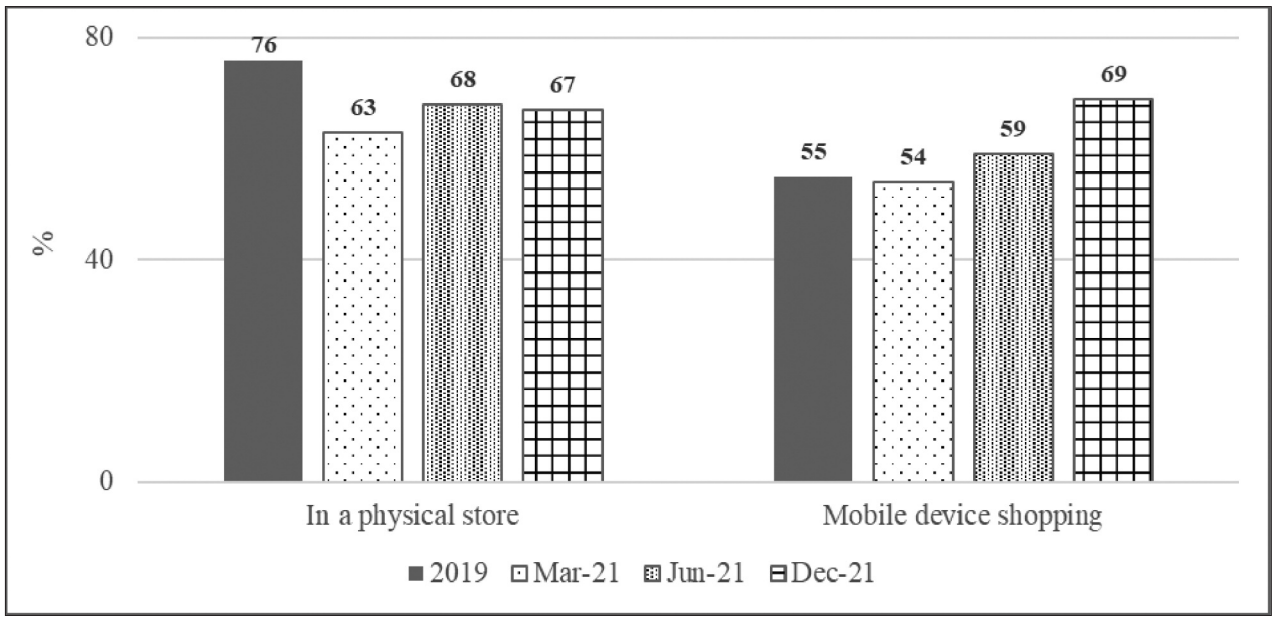
technology with intelligent interaction, and quick and accurate customer support. It enables continuously to self-learn, develop, understand, and recognize emotions, so if it is integrated into the customer care system, it will bring a better experience in the digital platform. When receiving questions from customers, it can be self-aware and analyze keywords to give answers accurately in coupons of seconds. Moreover, it can work 24/7 and continuously learn, improving its ability through customer support operations to gradually become more intelligent and human.

As the company grows, the number of customers will increase over time while the need to care for and support customers thoughtfully and timely requires many employees, but most businesses do not have enough human resources. The solution using AI will partially support and replace customer service staff because it can conduct automatic conversations (chatbots) like real people and 24/7 to help them handle numbers. The large volume of customer consultation and inquiry calls increases productivity, significantly reducing personnel and telecommunications costs.

AI can analyze data in real-time, and give indicators and forecasts that help reduce inventory, and balance supply and demand in the market leading to reduce risks and growing faster because of making a foundation for decisions instead of based on only feelings and personal experience as before. So, it significantly impacts e-commerces. In recent years, the industry has made great development. For example, in 2019, 39% of businesses sold on social networks, this number increased to 41% in 2020. The number of businesses participating in e-commerce trading in 2020 also increased to 22% compared to 17% in 2019. Data on shopping and spending online have also changed significantly in recent years.

Figure 2 shows that more than 50% of shoppers have reduced their frequency of going to supermarkets, grocery stores, and markets during the "new normal" period while 25% of consumers increase their online shopping through mobile devices. This result has been measured before the Covid-19 pandemic, so it can be said that this trend is an obvious change and is driven by the pandemic. Customers find convenience in online shopping due to time and cost savings, therefore they have

Figure 2: The shift in consumers' shopping habits from offline to online



Source: Global consumer insights pulse survey, PwC December 2021

been motivated to shop through websites as well as e-commerce platforms.

The proportion of Internet users in Vietnam had increased over time and become faster since 2018 (Table 1). This percentage is parallel raise with the amount of money spent on online shopping. By 2020, the average spending value per person for online expenses has been about $240, an increase of nearly 42% compared to 2016. This further confirms the trust of customers in online shopping.

While the percentage of consumers who spend less than 1 million VND for online shopping decreased significantly (from 26% to 16%), the percentage of consumers who bought from 1-3 million, 3-5 million, and over 5 million increased (Figure 3). These numbers show that

The truster they believe in online shopping, the more they use this channel to serve their needs.

Figure 4 shows that the majority of sellers are from Hanoi and Ho Chi Minh City while the others account for a modest around 4,4%. This reflects that online shopping has been still not popular outside the two big centers in the North and the South. Statistics also show that the majority of retailers are general shops, accounting for 79,2%. Therefore, opportunities are wide open for small retailers and business people in provinces and cities across the country in digital business.

3. Applications of AI in e-commerce

Online platforms businesses through mobile phones, and computers (including tablets, personal or desktop) are so much interested in applying artificial intelligence to sales because of their popular advantages as follows:

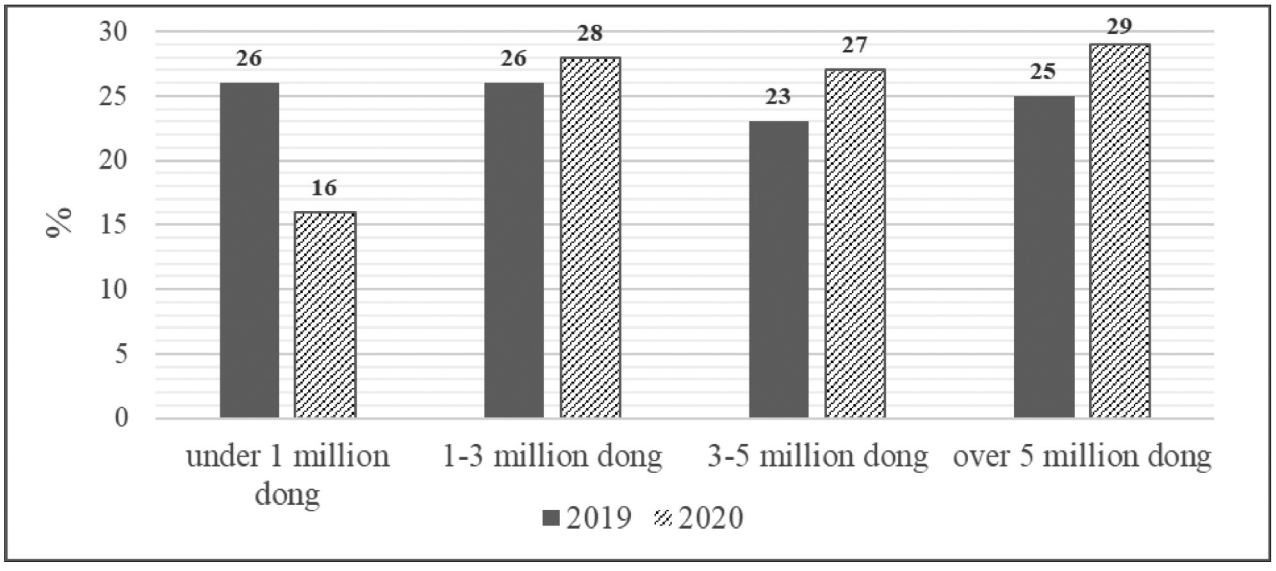
- Improve customer experience in shopping: Customer experience is the subjective feeling that

Table 1. Average spending for online shopping from 2016-2020

Index	2016	2017	2018	2019	2020
Estimated number of buyers (millions of people)	32,7	33,6	39,9	44,8	49,3
Estimated value of buying of each customer (US dollar)	170	186	202	225	240
Percentage of people using the internet (%)	54,2	58,1	60	66	70

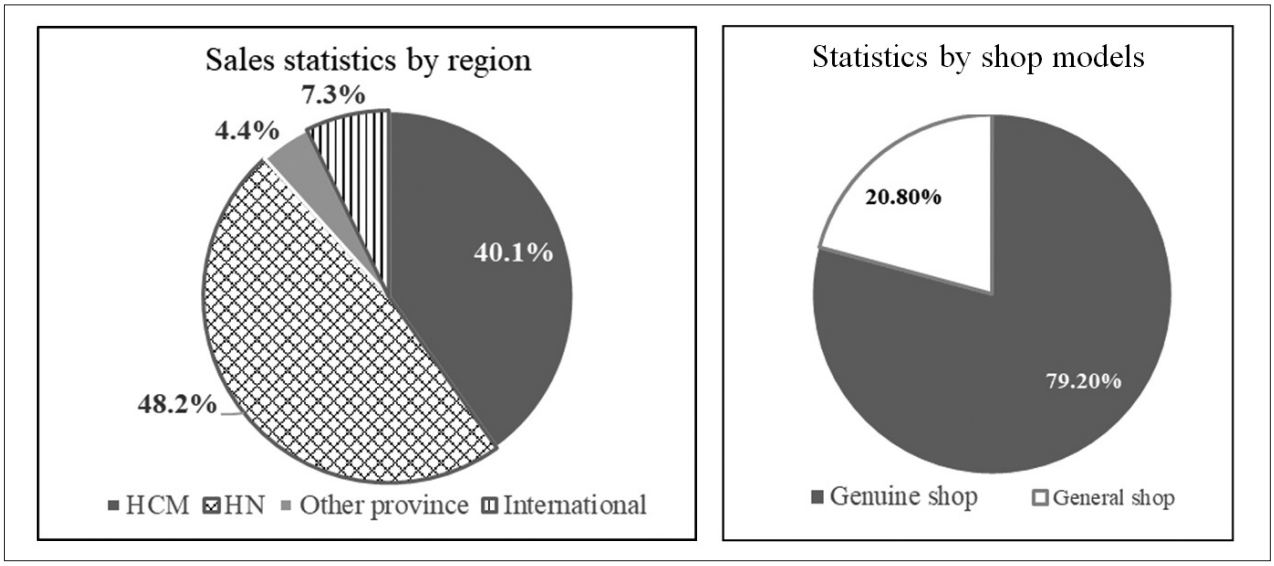
Source: Vietnam E-commerce White Paper, 2021

Figure 3: Average spending per person on online shopping during the year



Source: Vietnam E-commerce White Paper, 2021

Figure 4: Statistics of sales by region and type of shop



Source: Overview of Vietnam e-commerce market in the first half of 2022, https://metric.vn

stays after the user purchases a product or service, aiming to manage the processes of experiences as perceived by customers in their relationship with the brands. Meyer and Schwager (2007) define CE as "the internal and subjective response that customers have to any direct or indirect contact with a company". CE is conceptualized as a psychological construct, which is a holistic, subjective response resulting from customer contact with the retailer and which may involve different levels of customer involvement (21). Brands reinforce these subjective feelings to activate their customers' five senses in their efforts to enhance customer experience. Through data collecting from each online user, AI can analyze customers' data from multiple touchpoints including mobile apps, email campaigns, and websites to recognize their habits and behaviors in shopping which helps companies be aware of customers' insights. This information enables retailers to make tailored product recommendations and provide a consistent user experience across devices. For fashion products, consumers often need to try before buying, fashion brands use virtual assistants to recommend the right clothing size (based on the buyer's measurements) along with their preferences. They like their style (loose or tight) so shoppers can try on different products without having to wear them, or shoppers can experiment with their outfits using a touch-based interface. Therefore, it helps retailers reduce the number of returns of products as well as increase satisfaction in online buying. AI-powered chatbots and messaging agents can enhance the customer experience across channels. They can answer simple queries, engage customers, efficiently handle multiple interactions, and in effect, minimize response time.

On other hand, retailers can use facial recognition to capture the time a customer spends in a physical store as customers take a significant amount of time on any particular product. Then, the system will record this information. Next, throughout data analysis, the virtual assistant will help suggest main products plus accompanying items as well for each customer for sales increase. As more units adopt omnichannel, AI is creating a seamless and consistent customer experience across all online and brick-and-mortar retail stores whether that customer purchases in any form. Retailers may now provide their customers with a seamless and rich purchasing experience with its support. AI-driven programs can send automated

messages to customers regarding a pending service, a part replacement, or a regular order. Most programs also offer automated service requests, service or order status, and simplified order revisions, returns, or refunds.

- Create a customized list of goods and manage stock inventory: The tech-savvy customer expects personalization and retailers are rising to the challenge with the help of AI, machine learning, and big data. AI uses advanced machine learning algorithms to analyze browser history, page clicks, social interactions (likes, shares), past purchases, the duration for which a page was viewed, location, etc. to gauge customer interests and preferences. It can help deliver product recommendations based on frequently bought items, or related products. It can even help customize web pages and elements to suit a customer's needs. For instance, vendors do intense behavior analysis based on behavior and demographic data to determine the content that will resonate with their customers.

If sellers can catch customers' shopping habits, they will know the popular products in each region as well as recommend products that customers are interested in and promptly notify the situation of goods and policies, especially, customize for each customer. This is closely related to the supply of goods. While conventional inventory management is limited to current inventory levels, AI-powered inventory management is enabling a way to maintain inventory based on trending data. sales in previous years, expected or anticipated changes in demand for the product that can forecast demand for the product in the coming months so that sellers can maintain optimal inventory levels. This will maintain an appropriate level of inventory that can meet market demand.

- Support to increase security in payment: To protect the consumers' financial security, AI-based software benefits online payment from not only data privacy but also fraud detection. AI-powered algorithms can collect a variety of data from online payments and transactions, learning the patterns from previous fraud cases, analyzing real-time payments and transactions, and giving a "pass" or "fail" decision. Electronic wallets are used more and more popular for online payment. When users who haven't used their account for a long time need to sign in again, except by filling out the usernames and passcodes, these wallets will send a time-based one-time passcode to the users' devices and use the code as a two-factor authorization check.

Security concerns during payment are one of the top reasons why customers leave products in their shopping carts. To overcome this problem, an intelligent and AI-based data analysis system can effectively detect different types of e-commerce fraud by analyzing customer behavior because when any action is suspected of fraud, the AI can feed into the model to detect factors such as the location where the user is logged in, the speed at which the user clicks on links or types, the behavior of the user comparing to previous behaviors.

Now, evolving technology leading the new generation of AI is capable of additionally processing third-party data such as device fingerprinting, geolocation, mobile, and IP (Internet protocol) address, endpoint threat, behavioral analytics which was assimilated into digital risk management and intelligence platforms to enhance the model's performance in fraud detection. It can detect fraud by looking at past and present behavior and patterns of customers or who are logged in on the system. The ability to analyze large volumes of data and combine that data with new sources of information enables anomalous transactions to be detected, making fraud detection faster and more accurate, and at the same time, less inconvenience to customers.

For online businesses like e-commerce platforms, cybersecurity can be a matter of concern. Millions of people's personal information are handled by these sites, and security lapses can spell severe consequences for corporations. Although the subject of cybersecurity currently relies on conventional methods, AI is starting to exert its influence. Big volumes of data can be broken down into smaller, more manageable chunks using AI algorithms, making them easier to secure and keep safe from dangers and breaches.

4. In conclusion

Artificial intelligence contributes greatly to the success of production and business units if they know how to apply it appropriately. It helps people save more and more labor because of its high automation ability so that people can optimize production activities, reduce labor inline operation, and streamline work. . It also helps us anticipate many risks and can partly limit the damage that those risks bring to the business. In a globalized business environment, language is a bridge but also a big barrier that prevents people from getting closer to each other as well as learning new sources of knowledge, with artificial intelligence, barriers to language skills are gradually being removed so that people can freely interact with all cultures, languages, and countries, thereby opening up many other learning and working opportunities.

Faced with different requirements of customers, AI helps to evaluate and personalize data so that people can see what they want to see through user behavior, therefore, improving the service industry operations. In addition, it brings new and better experiences to customers. Through data collecting and analysis, this technology can capture information about customers' service usage behavior, thereby providing solutions tailored to each customer's needs. Moreover, AI can replace humans to take on many tasks such as evaluating data, communicating with customers, etc., Thereby, its facilities allow humans to focus deeply on exploiting selves-creativity. In addition to these outstanding advantages, the legal issues related to the collection of user information also need to be considered seriously to ensure the development of artificial intelligence helps people's lives as well as the development of society ■

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TÁC ĐỘNG CỦA VIỆC ỨNG DỤNG TRÍ TUỆ NHÂN TẠO ĐẾN SỰ PHÁT TRIỂN CỦA THƯƠNG MẠI ĐIỆN TỬ TẠI VIỆT NAM

● **TĂNG THỊ BÍCH HIỀN**
Trường Đại học Nguyễn Tất Thành

TÓM TẮT:

Thương mại điện tử đã phát triển với tốc độ nhanh trong thời gian gần đây trên cả phạm vi quốc tế và trong nước. Việc ứng dụng trí tuệ nhân tạo (AI) trong lĩnh vực thương mại điện tử đang ngày càng trở nên phổ biến hơn. Bài viết này nhằm phân tích các ưu điểm mà công nghệ AI đem lại đối với lĩnh vực thương mại điện tử và cách AI đang thay đổi trải nghiệm mua sắm của người dùng trên các nền tảng thương mại điện tử.

Từ khóa: trí tuệ nhân tạo (AI), dữ liệu lớn, thương mại điện tử.