ARTIFICIAL INTELLIGENCE: AI IN FASHION AND BEAUTY E-COMMERCE

Zara, Sephora
Abstract

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<th>Author(s)</th>
<th>Publication type</th>
<th>Completion year</th>
</tr>
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<tbody>
<tr>
<td>Duong Dang</td>
<td>Thesis, UAS</td>
<td>2022</td>
</tr>
<tr>
<td>Number of pages</td>
<td>48</td>
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Title of the thesis

**Artificial Intelligence: AI in fashion and beauty e-commerce**

**Zara, Sephora**

Degree, Field of Study
Business Administration, International Business

Organisation of the client

Abstract

Online social networks and global communication are flourishing, and this has a significant impact on the prospective growth of e-commerce. Due to the pandemic's strong e-commerce expansion as well as the constantly changing client demands, businesses now use artificial intelligence to assist in boosting productivity and cutting costs. The goal of the thesis is to expand knowledge of artificial intelligence and investigate how AI has contributed to the evolution of fashion and beauty e-commerce. The purpose of the study is to prove that AI is one of the world's greatest potential for the future.

The theoretical segment presented the basis for artificial intelligence and e-commerce. Additionally, the author discusses categorization and evaluation AI. AI was also investigated from an economic standpoint, with a greater emphasis on fashion and beauty e-commerce and current and future customer behaviour with AI based e-commerce.

The empirical part of the research employs both qualitative and quantitative approaches. Case company analysis and a survey were employed as data collection techniques.

The outcome suggests that using artificial intelligence technologies into e-commerce for fashion and beauty is effective. AI improves the company's operations significantly and attracts clients, whose prospects are also enhanced. In addition, AI has a big potential for other industries as well.

Keywords

Artificial Intelligence, AI, Fashion, Beauty, E-commerce, Zara, Sephora
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1 Introduction

1.1 Thesis Background

Artificial intelligence (AI) can be found just about wherever in today’s world; in fact, a significant portion of the activities we engage in on a daily basis, from dawn to night, are enabled by various forms of AI technology. As soon as we open our eyes in the morning, many of us immediately begin our day by reaching for our laptops or mobile phones. Our decision-making, planning, and information-seeking processes now all automatically involve doing this. As is obvious, the phenomena based on AI include driverless vehicles, facial recognition, recommendation systems, and tailored shopping. In fact, people imagine plenty of scenarios about “the world being taken over by evil mastermind robots” However, no one can argue against AI’s advancements, which enable individuals to focus on their true goals and provide difficulties in terms of time, money, and energy savings. (IQ Motion, 2021.)

Especially since the pandemic, e-commerce has been rapidly developing. During COVID-19, businesses noticed that normal shopping was becoming riskier and more difficult. Additionally, it was determined that e-commerce is more efficient than traditional brick-and-mortar stores; firms can reduce expenses, and customers can make purchases anytime, whenever, and with multiple possibilities. (Davies, 2022.)

Businesses use AI to try to save operating costs, boost productivity, raise revenue, and enhance customer experience. AI has the potential to revolutionize design, retail, manufacturing, and styling. For the beauty and cosmetics market, AI has the potential to enhance skin diagnostics, shopping experience, and personalization. (Fabien 2020.)

The thesis seeks to determine whether AI has been used in business, particularly in the field of e-commerce for fashion and beauty. The goal of the thesis is to determine whether Zara and Sephora, two major online retailers, have benefited from AI. The study also discusses how crucial AI is to provide excellent customer support. It is a crucial instrument for assisting us in comprehending and responding to the demands and actions of the consumer.

1.2 Thesis Objective

The thesis aims to learn more about AI and how to use it in fashion and beauty e-commerce, and to show that AI is one of the world’s biggest opportunities in the future. Using Zara and Sephora as case studies, the study shows the great potential of this technology and the current state of AI in the world. The author provides information to readers about AI, making
it clear how to properly view them instead of us being too idolized or having misunderstandings about it. In addition, the author will demonstrate how AI has contributed to the evolution of fashion and beauty e-commerce.

Following these steps, I arrive at study’s ultimate goal:

- Describing the theoretical foundations of e-commerce and AI and outlining applications of AI in the fashion and beauty industries.
- Conducting surveys of people’s knowledge of AI and its use in e-commerce, then analyzing the results.
- Analyzing real-world AI marketing applications using Zara and Sephora as examples from the perspectives of usefulness and universality for businesses and their consumers.
- Setting a best scenario in the future of AI applications in fashion and beauty e-commerce.

1.3 Research Questions

The main research question is: How can AI and e-commerce overlap as fields of study and application? It includes two sub-questions, as seen in Figure 1, below:

| How can AI and e-commerce overlap as fields of study and application? |
| How might a business and its clients benefit from using AI in fashion and beauty e-commerce? |
| What are the implementations of artificial intelligence in fashion and beauty e-commerce? |

Figure 1. Research questions

1.4 Limitations

Limitations - the researcher may not have been able to control the systematic bias, which is a restriction of the research methodology. This may cause the results to be impacted in an improper manner. (Price & Murnan 2004.) The thesis contains two limitations on the thesis about the industry and customer segmentation. The main focus of the study is on AI applications and e-commerce; hence, the thesis excludes other businesses. Secondly, the study
has a geographical focus on fashion and beauty customers are from teenager to above 45 year olds have experiences on online purchase. Therefore, the study, particularly the survey, may not be applicable to distinct client segments.

1.5 Research Methods

Quantitative and qualitative methods are the two primary methods. The objective is to gain insights about AI and fashion and beauty e-commerce, as well as suggestions for how business cases might utilize AI application.

Qualitative methods are selected and qualitative data is obtained through firm case analysis, qualitative literature and web-based research, and the web survey questionnaire.

Quantitative approaches are based on a survey that seeks to ascertain the degree to which individuals are aware of AI and its capabilities in general, as well as its applications in fashion and beauty e-commerce. The web survey questionnaire is used to collect quantitative data.

1.6 Thesis Structure

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Figure 2. Thesis structure

Based on Figure 2, there are eight chapters in the thesis
Chapter 1 includes thesis background, thesis objective, research question, limitations, theoretical framework, research methodology, data collection and thesis structure.

The theoretical component of the thesis is comprised of Chapters 2 and 3. The listener is provided with a fundamental understanding of what AI, e-commerce and fashion, and beauty e-commerce mean. Chapter 2 focuses on Artificial Intelligence in general. AI is frequently skewed and misinterpreted, the author aims to provide definition, classifications, and the impacts of AI on the globe. Chapter 3 mainly concentrates on e-commerce, especially fashion and beauty section. The reader will have an overview of why businesses promote their e-commerce exceptionally after Covid-19.

Chapter 4 answers the research question: How can e-commerce in the fashion and beauty industries benefit from applications of artificial intelligence? Additionally, introducing company cases: Zara and Sephora, understanding the company setting and their applications is crucial because the thesis is case company-focused; this way, the author may learn how to enhance and improve it.

Chapter 5 Research results: quantitative results based on a survey about AI in general and satisfaction with AI features.

Chapter 6 brings out the future of AI in fashion and beauty e-commerce.

The sub-questions and the thesis's central query are addressed in Chapter 7. The chapter also includes recommendations for additional research as well as an assessment of the research's reliability and validity.

The entire thesis is summed up in the last chapter, Chapter 8.
2 Artificial Intelligence

2.1 Definition

The term "intelligence" was defined in various but reliable ways by dictionaries:

According Cambridge dictionary, intelligence is the study of creating machines that can learn and think like humans, with skills like language comprehension, visual recognition, puzzle solving, and information retention. According to the Oxford dictionary: intelligence is the study of development of computer systems that can mimic intelligent human behavior.

Other authors offered the definitions below to simplify this difficult concept:

Based on “Artificial Intelligence A Modern Approach,” the authors defined as AI is "the study of agents that receive information from their surroundings and take action." (Stuart & Norvig 2010, 1.)

Frankenfield, Jake is defined “Artificial intelligence (AI) refers to the simulation or approximation of human intelligence in machines." Artificial intelligence aims to use computers to enhance learning, thinking, and perception. (Frankenfield 2022.)

In Deloitte Insights, the term "artificial intelligence" refers to technologies that can perform tasks that in the past required human intelligence. Some examples of these activities include spotting patterns and anomalies; providing suggestions, predictions, or decisions; and extracting meaning from images, text, or spoken language. Several examples of these technologies are machine learning, deep learning, natural language processing and generation, and machine generation. (Watson et al. 2020, 4.)

In conclusion, Artificial Intelligence is advanced technology based on the human mind can skill to absorb knowledge, to reason, to feel, to abstract, to produce, to fix problems, to adapt, to form opinions, etc.

2.2 Evaluation of AI

The birth of AI

The first artificially intelligent robot was the "heartless" Tin Man from The Wizard of Oz. In the early 20th century, when the concept of artificial intelligence robots became popular owing to science fiction, it was followed by the humanoid robot that purported to be Maria in the film Metropolis.
During the 1950s, one of these individuals was Alan Turing, a young polymath from the United Kingdom who investigated the mathematics that underpinned artificial intelligence. Turing hypothesized that if humans solve problems and make choices by combining reason and information, then there should be no reason robots could not do the same. This was the conceptual structure of his article that he released in 1950 titled "Computing Machinery and Intelligence," and it was named "Computing Machinery and Intelligence." In this paper, he examined how to build intelligent machines as well as how to evaluate the level of intelligence possessed by such robots. Turing was forced to give up his work for several reasons, the primary ones being:

- Before 1949, computers lacked a fundamental capability that is essential to their intelligence: they were unable to store orders and could only carry them out. In other words, computers were able to carry out the commands that were given to them, but they were unable to recall the commands.
- It is possible that renting a computer may cost you up to $200,000 every single month. It comes at a very high financial expense. (Anyoha 2017.)

1974 was a period of expansion for computers. Enhanced in terms of speed, price, and storage capacity. Early demonstrations such as "Allen Newell and Herbert Simon's General Problem Solver and Joseph Weizenbaum's RAND-funded ELIZA" showed promise for problem-solving and spoken language interpretation in machines, but there was still a long way to go before machines could think abstractly, recognize themselves, and process natural language. "General Problem Solver" and "ELIZA" are examples of such earliest demonstrations. (Anyoha 2017.)

The initial stages of artificial intelligence During the 1980s, the development of AI received a boost from both financial resources and tools for the creation of algorithms. Deep learning first gained widespread attention because of the efforts of John Hopfield and David Rumelhart. Edward Feigenbaum developed expert systems that could make judgments in the same way that individuals do. The decade of the 2000s was successful for AI, even though neither the public nor the government paid any attention to it. (Aquis 2019.)

The current situation of AI

In this day and age of "big data," we have the ability to collect enormous volumes of data, the processing of which would be extremely difficult for a single person. The application of artificial intelligence has already met with great success in a multitude of fields, including technology, banking, marketing, and entertainment, amongst others. (Anyoha 2017.)

AI implementation examples:
When immunizations were first being researched, developed, and brought to market, the process often took several years, and in some cases even several decades. All of it is changed by artificial intelligence, even if most people don't notice the difference right away. Vaccines against the COVID-19 pandemic, which impacted people all over the world, were developed with the help of AI in just a few short months in the previous year at medical research institutes and health organizations. In point of fact, the first tests using humans to test these vaccines didn't begin until just three months after the first instances were reported. The next step was to locate treatments that were effective. Additionally, in the year 2021, researchers and scientists working for the "MIT Department of Electrical Engineering and Computer Science" started making use of AI in an effort to repurpose currently accessible drugs in order to fight COVID-19. Even before the pandemic struck the world with full force, many professionals working in the healthcare industry believed that AI would be the solution to many of the challenges they face. Artificial intelligence has already proved its effectiveness in the fight against COVID-19, over two years after it was first employed in the fight against the virus. (Pechardscheck 2021.)

Language processing: Amazon and Apple's digital voice assistants, Alexa and Siri, are more than just a handy tool; they are concrete examples of artificial intelligence's growing role in our daily lives. Machine learning and the creation and processing of natural language are two branches of AI that both rely on for efficient operation and improved performance over time. (Pechardscheck 2021.)

Image 1. Learning Machine: Siri (Apple)

AI is used by Google Maps to recommend more efficient routes and modes of transportation.
Amazon's recommendation system selects products for each customer based on their prior purchases, interactions, and ratings of other things in stock. These factors are taken into account by the algorithm. After that, these products are merged with related items that have been viewed by other users that share tastes and interests similar to the user's own. (Krysik 2021.)
The future of AI

Long-term, the goal is to build general intelligence, which would consist of a computer that is superior to the cognitive abilities of humans in all areas. This would be accomplished by creating a general intelligence. (Anyoha 2017.)

Artificial intelligence (AI) is revolutionizing how businesses run and interact with their processes, products, and workers on both the client and employee sides of corporate operations. AI is also having an impact on how businesses interact with their customers. This digitization is a meaningful change for businesses across all industries since it supports better, more efficient, and cost-effective business management. Additionally, it enables more agile operations in today's disruptive climate, which is a momentous change for businesses.

2.3 Classification

According to the current system for classifying AI, there are four primary categories of technology, as seen in Table 1, below:
<table>
<thead>
<tr>
<th>Classification of AI</th>
<th>Description</th>
<th>Example</th>
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<tr>
<td>“Reactive AI”</td>
<td>They make an effort to replicate the way the human mind can react to a variety of stimuli. These machines do not have any capabilities that are dependent on memory in any way. Because of this, the machines in question are unable to apply the knowledge they've gained in the past to direct their actions in the present. (Joshi 2019.)</td>
<td>Deep Blue, the IBM computer that played chess and beat world champion Garry Kasparov in 1997</td>
</tr>
<tr>
<td>“Limited Memory AI”</td>
<td>Artificial intelligence can build up its experiential knowledge through the observation of behavior or data. This form of artificial intelligence combines information that has been pre-programmed with data that has been gathered through history and observation to make predictions and complete challenging classification tasks. It is currently the most widely used type of artificial intelligence (AI). (Marr 2021.)</td>
<td>Chatbot, Virtual Assistant, Self-driving vehicles</td>
</tr>
<tr>
<td>“Theory of mind AI”</td>
<td>An artificial intelligence that has reached the theory of mind level will have a greater capacity to grasp the beings it is interacting with if it can determine the desires, emotions, beliefs, and mental processes of those beings. (Joshi 2019.)</td>
<td>Theorizing about the mind, the most common use of artificial intelligence is in psychology; AI systems of the future will need to learn to comprehend the fact that everyone, including themselves, can have thoughts and emotions.</td>
</tr>
<tr>
<td>“Self-aware AI”</td>
<td>In the future, when machines can comprehend not only their own feelings but also those of the people in their immediate environment, they will have achieved a de-</td>
<td>We have not made this kind of advanced AI yet, and we do not have the hardware or algorithms to back it up</td>
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gree of intellect and consciousness comparable to that of humans. This artificial intelligence will have wants, needs, and emotions like those of other people. (Marr 2021.)

2.4 The impacts of AI

The impacts of AI is reasoning, knowledge, planning, communication, learning, sensing, displacement, and object manipulation are just a few of the diverse uses for AI that exist today.

- **IT organization:** following to “Harvard Business Review,” reports that, of the global organizations they examined, between 34 and 44% are utilizing AI to help with staff technical support difficulties, automated improvements to internal systems, and make sure that only authorized vendors’ technology is used by staff. (Ramaswamy 2017.)
- **Finance:** The ubiquitous terminals that financial staff use to access market information are provided by the data specialist Bloomberg, which utilizes techniques such as computer vision and natural language processing to increase the depth and breadth of the information that is available through those terminals. Users can conduct queries with plain language as opposed to specialist technical commands, which are then assessed and carried out by AI. (Rauch 2022.)
- **Healthcare:** AI makes it easier for doctors and other medical professionals to diagnose patients’ conditions, find solutions to a wide range of problems, carry out treatment operations, and grasp health sciences. (Lee 2018.)
- **Transportation:** Autonomous vehicles, often known as self-driving cars, are currently being researched, designed, and prototyped by a variety of manufacturers all over the world. These manufacturers include Waymo, Tesla, and BMW. The technology will be able to transport passengers between locations without the need for a human driver by utilizing a combination of sensors, cameras, and artificial intelligence. (Gray 2022.)
- **Education:** AI contributes to the online answering of individual student inquiries. In addition, it makes personalized learning feasible, which is the process of adapting educational material to meet the requirements of each specific learner. Data analytics are helpful in the implementation of adaptive learning programs because they
enable educators to collect and analyze data about the performance and learning style of each student and continuously adjust the learning material according to the student's progress. This allows adaptive learning programs to be more effectively implemented.

**The impact of AI on business**

There are many different applications of artificial intelligence in the business world. Most of us really interact with AI on a consistent basis, although in a variety of diverse ways. Artificial intelligence is already upending virtually all business activities across all industries, from the mundane to the astonishing. This trend is expected to continue. As AI technologies become more widely used, it is necessary to have them to maintain a competitive advantage. (Uzialeko 2022.)

How do businesses use AI?

According to SEM Rush's findings, artificial intelligence is anticipated to generate significant company value and improve worker capacities. Increased use of artificial intelligence in enterprises will result in the creation of $2.9 trillion in corporate value and 6.2 billion hours of worker productivity in the year 2021. (Watters 2021.)

Personalization: Enhance the overall experience of the customer. Artificial intelligence can be used to select the content that users of social media platforms wish to approach. Customers' shopping histories and products they've previously liked are taken into account by e-commerce platforms when making product recommendations to customers.

Automation of processes: Robotic process automation, often known as artificial intelligence, is an extremely helpful tool for automating a number of organizational processes (RPA). RPA is commonly used to automate the performance of repetitive tasks at industry-leading companies such as Deloitte, IBM, Microsoft, and LinkedIn.

Data analysis is currently one of the most common uses of artificial intelligence in business and one of its applications. With the use of predictive analytics and data collected from a wide variety of sources, Google is now able to use AI to carry out operations that are based on the study of information. For example, Google can now recommend a departure time for your journey based on information such as your home address, calendar entries, maps, and flight data. This feature was previously only available on the desktop version of Google Maps.

Customer service: People now conduct much of their shopping research online and make use of contactless payment options. Other consumer trends in e-commerce, such as hyper-
personalization, comparison shopping, and making it easy to buy, have driven many businesses to adopt AI technology in order to improve the effectiveness of their customer service departments. Whether it's through chatbots or multi-channel experiences, AI is frequently employed to make the customer service experience better. Amazon is one of the organizations that is working to improve its customer service by employing artificial intelligence.

Increase output: By leveraging AI and robotics, many leading companies are speeding up the manufacturing process to provide more output in less time. (Watters 2021.)

2.5 Benefits and drawbacks of using Artificial Intelligence

2.5.1 The benefits obtained from utilizing AI

- Reduced occurrences of human error: The judgments that AI makes at each stage are determined by the knowledge it has gathered in previous steps as well as a specific set of algorithms. These errors can be minimized to zero when the programming is done correctly. (Duggal 2022.)
- “Zero Risks”: It is possible for humans to avoid numerous dangers by delegating some tasks to AI robots.
- Increasing productivity: The AI can work continuously without taking pauses. They can think far more quickly than humans and carry out several tasks at once while producing correct results.
- AI technology enables organizations to save a considerable amount of money on wages while simultaneously increasing revenue by automating labor-intensive tasks such as data processing, which would otherwise take human resources a significant amount of time to complete (Watters 2021.)
- Whether we like it or not, our behaviors as humans are governed by our emotions. In contrast, artificial intelligence is emotionless and has a very pragmatic and analytical approach to solving problems. (Duggal 2022.)

2.5.2 Contemplating the Downsides of AI

Unemployment: according to “the McKinsey Global Institute (MGI),” between three and fourteen percent of the world's workforce, or between seventy-five and three hundred fifty million employees, will have to find new employment and acquire new skills. In countries with a higher level of technical development, such as Japan, it is widespread practice for industrial companies to make extensive use of robots as a substitute for human labor. This is not
always the case, however, given that it simultaneously generates extra employment possibilities for people and replaces people to achieve greater levels of productivity. (Duggal 2022.)

Lack of transparency: because AI might be flawed in a variety of ways, maintaining openness is of the utmost significance. There may be several inaccuracies in the supplied data, or the data may not have been thoroughly cleaned. Or it is possible that the data scientists and engineers who were responsible for training the model picked biased data sets mistakenly in the first place. (Schmelzer 2020.)

Induce Sloth in Humans: The bulk of laborious and repetitive work may now be automated thanks to applications powered by AI. Because we do not need to commit information to memory or figure out complex riddles to complete the task at hand, we tend to engage our brains less and less. This addiction to artificial intelligence may pose challenges for future generations.

IN CONCLUSION, in fact, people's imaginations go wild with a variety of different interpretations of “the world being taken over by wicked mastermind robots.” However, nobody can argue against the progress that AI has made, which enables people to concentrate on what is tremendously important to them and creates challenges in terms of the amount of time, money, and energy that is saved.
3 Fashion And Beauty E-Commerce

3.1 Definition of E-commerce

The explosive growth of online buying over the past two decades may be attributed in large part to the proliferation of e-commerce websites like Amazon and eBay, which have become increasingly popular. According to the data provided by the United States Census Bureau, e-commerce accounted for five percent of total retail sales in 2011. The year 2020 saw the beginning of the COVID-19 pandemic, which resulted in an increase of retail sales to more than 16%. (Lutkevich 2022.)

3.1.1 What is E-commerce?

E-commerce, also known as electric commerce, is a phenomenon that is based on the Internet that has the potential to grow during the pandemic. E-commerce, which also goes by the name electronic commerce, has the potential to bring plenty of revenue to businesses while also providing convenience to customers.

*Cambridge dictionary, it defined as “the business of buying and selling goods and services on the internet.”*

*The Collins Dictionary described e-commerce as “business transactions conducted on the internet.”*

According to the two definitions that came before this one, e-commerce may be understood as a business selling their products and services on the Internet.

Additionally, Andrew Bloomenthal, described e-commerce academically as “is used to describe businesses and private transactions that take place through the Internet and involve the exchange of products and services. E-commerce may be carried out across a variety of various smart devices, including personal computers, tablets, smartphones, and others. It works in a variety of market niches. E-commerce transactions allow for the purchase of any anything or service conceivable, including but not limited to books, music, airline tickets, and other forms of financial services including stock investing and online banking.” (Bloomenthal 2022.)

Following Kiran M, Founder - CEO of Writers Champions, Pages Could Talk, Tax on Tracks & AK Research Consultancy, he defined

“E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet.”
These business transactions occur either as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer, or consumer-to-business." (M 2020.)

E-commerce is expanding at a breakneck speed all over the world because of the proliferation of smartphones and internet access across all strata of society in every region of the globe. E-commerce is increasing at a breakneck speed all over the world because of the spread of smartphones and internet connectivity across all strata of society in every corner of the globe. This may be attributed to the fact that smartphones are becoming more affordable and more widely available. (M 2020.)

Donna Fuscaldo, Senior Financing Writer, she assumes that since the early 1990s, when Amazon was still only selling books, the concept of electronic commerce has been around. E-commerce expenditure reached $347.26 billion in the first half of 2020, representing a year-over-year increase of 30%, as determined by an analysis conducted by Digital Commerce 360 on data provided by the United States Department of Commerce. In comparison, there was only a 12.7% rise in sales made through online retailers during the first half of 2019. (Fuscaldo 2019.)

An example of how e-commerce works? From ordering a book from Amazon to giving a general action of e-commerce of customers:

- A customer visits Amazon and browses a book “Coraline.” She puts it in the shopping cart at this point.
- The availability of the product may be verified by either an order manager or order management software.
- The consumer will enter her credit card and shipping details on your checkout form or page if the product is available. Consumers receive error messages if the product is unavailable.
- The payment processor, which is most often a bank, verifies that the consumer has sufficient funds in her bank account or sufficient credit remaining on her card to successfully execute the purchase.
- The website will indicate to the consumer that the purchase was successful when it has been completed. This takes place in a matter of seconds.
- The order is packed up and sent out from the warehouse where it was placed. The email informing the client that the goods are ready for delivery will be sent to them.
- The transaction is considered finished now that the order has been delivered.

According to Catalyst Kantar, only 47% of online shoppers cite price or value as the primary factor in their decision, while 66% cite convenience as the primary factor. Consumers place
selection (52%) and shoppability (57%) above price, which is a crucial call to action for companies thinking about new online product assortment strategies and making sure that their items can be purchased from the expanding long tail of online merchants. (Dalton et al 2021. 9.)

Another definition is m-commerce, shopping done using a mobile device, most often a smartphone, is referred to as m-commerce, whereas shopping done online through your personal computer. (Insider Intelligence 2022.)

M-commerce has the potential to develop into a significant retail channel and to alter the buying behaviors of individual consumers. The level of dependence that customers have on their digital gadgets is at an all-time high right now, and Insider Intelligence forecasts that during the next five years, mobile will inch closer to being the primary channel that people use for online shopping, especially considering the immense purchasing power possessed by members of the Millennial and Gen Z generations. According to projections made by Insider Intelligence, the amount of m-commerce will reach $620.97 billion in 2024, representing 42.9% of total online sales. (Insider Intelligence 2022.)

3.1.2 The impacts of E-commerce in business and society

There are a great many benefits to conducting business online. The most important thing is reducing costs. Compared with traditional stores, the business needs more capacity for expenses such as rent, furnishing, lighting, warehousing and storage, electricity and utilities, staff salaries and benefits, and so on. However, with online stores, the only need is to set up a website and host it. It is appropriate for entrepreneurs; some examples include eBay, Netflix, Booking.com, and so on. Secondly, the potential to reach diverse types of customers is huge because online shopping is around the globe. If you merely have a regular store, this cannot happen. Customers can be helped at all hours of the night and day, including holidays, weekends, and other special occasions. No time constraints exist. Moreover, data collection is also the biggest impact of e-commerce, consumer data such as product choices, page views, and payment methods used, as well as product and design trends, advertising and marketing success, and failure rates, and other business-related data are available that help to understand and deliver the exact what customers want, personal customer experience.

However, there are some disadvantages to business that need to be considered. Firstly, delivery and tracking are the biggest concerns. It is possible that customers do not want to hang around and risk being annoyed by the lack of action. In addition, lengthy wait periods for goods delivery are a huge turnoff for customers. To solve this problem, there are more
details in Chapter 4 and examples of case companies in Chapter 5. Secondly, Concerns about safety and potential breaches of privacy—The most significant drawback of conducting business online is the increased risk to one’s personal information. For instance, companies are becoming increasingly concerned about the growing threat posed by cybercrime daily. Cybercriminals have a wide arsenal of techniques at their disposal to entice victims who are not paying attention. The creation of a phony website that has been made to seem exactly like a genuine article is one of their methods. They will entice users to click on it by offering a free trial or some other type of gimmick, and once they do, they will either take over your account or steal your personal information. (Prasanna 2022.)

The convenience of having numerous payment choices available to customers, including cash on delivery, debit cards, and credit cards, is one of the many advantages of conducting business with customers over the Internet. Additionally, customers do not have to wait in lines to check out their items, which is a major convenience. Customers, on the other hand, are going to run across a lot of disadvantages if they want to do their shopping online. They do not have any opportunity to personally view and experience the product, and the waiting period for shipment might be lengthy depending on several different circumstances.

The effects of online shopping will be seen eventually, and the trend is not going away any time soon. It should come as no surprise that people are increasingly turning to the convenience of online shopping as technology continues to permeate increased aspects of our life. We can only anticipate that the volume of e-commerce will increase across all sectors since it is quick, adaptable, and has a tremendous amount of promise.

3.2 Fashion and Beauty E-commerce

In recent years, we have witnessed the beauty and fashion business successfully cross the e-commerce gauntlet of technical breakthroughs, updates to social media, trends in digital marketing, and changes in the behavior of consumers.

Fashion and beauty especially, e-commerce and social media belong together, the most effective and lucrative methods of integrating seamless purchase are currently being researched and developed by social platforms. Because of the further development of this capability, social media will become an even more important sales tool in the ecommerce industry. The practice of selling goods and services directly through social media platforms is referred to as "social commerce." With social commerce, the full purchasing experience, from locating and researching products to completing a purchase, may take place directly within social media platforms. (McLachlan & Gurr 2022.)
However, social commerce is not the same thing as social selling. The process of building your sales prospect list via the cultivation of relationships on social media platforms is referred to as "social selling." (McLachlan & Gurr 2022.) Utilizing social media influencers and posting multimedia content on social media platforms, such as images and videos, has become normal practice for fashion companies.

Based on Ben Kazinik, described

“When a company works together with an internet influencer to promote their goods or services, this practice is known as influencer marketing. The company has access to an engaged audience and the ability to establish another touchpoint throughout the buyer's journey when they use it as part of their marketing strategy. Typically, this is carried out over various social media sites, including Facebook, Instagram, YouTube, Twitter, and TikTok.”

Most influencers disseminate advice about skincare, cosmetics, and the proper way to design garments by means of lengthy videos uploaded to YouTube, short reels uploaded to
Instagram, and short videos uploaded to Facebook and TikTok. Influencers are familiar with the essence of the brand and can accurately reflect the value of the product. According to Business Insider, as of May 2020, customers in the United States and the United Kingdom who followed influencers were particularly interested in material created by those influencers that either amused them or assisted them with their day-to-day lives despite the epidemic. (Kazinik 2022.)

![Social commerce as share of total online retail sales in the United States from 2020 to 2025 (Adapted from Statista 2020)](image)

**Figure 3.** Social commerce as share of total online retail sales in the United States from 2020 to 2025 (Adapted from Statista 2020)

Social commerce accounted for 3.4% of total ecommerce sales in 2020 and is projected to increase in the coming years.

In conclusion, the most effective marketing combination for fashion and beauty e-commerce is the mix of social media and influencers. Customers may utilize social commerce to learn about new businesses, conduct product research, communicate with customer service representatives, and receive feedback from influencers.

The idea of simplifying things to the point where the product is once again at the center of the user experience and there are no bells and whistles to deter customers from discovering what they are looking for is one increasing trend in e-commerce. Create fresh consumer experiences by giving some thought to the appearance and general atmosphere of an online retail site. Both Zara and Sephora adopt a style that might be described as brutalist on their websites.
During COVID 19, both technological advancements and consumer behavior saw significant upheaval. The retail industry will continue to be dominated by omnichannel and online buying, especially for worried customers with a reduced-contact attitude. (Fryer 2021.) Positive changes are more likely to stick around for a while, especially ones that are motivated by convenience and wellbeing, including the adoption of digital technology, value-based shopping, and improved health consciousness. As a result, insurers now have the chance to develop innovative, modular, granular, value-based, and integrated solutions to satisfy consumer expectations. (Puttaiah et al 2021.) Because of the pandemic, e-commerce has experienced rapid expansion. To meet the expectations of customers, technical advances are essential, and it will be detailed more in Chapter 4.
4 Artificial Intelligence in Fashion and Beauty E-commerce

4.1 Personalization

AI is considered as a sort of technology that may be used to replace human labor and automate end-to-end processes, whereas Robotic Process Automation (RPA) is meant to operate in collaboration with people in order to automate repetitive operations. The difference between RPA and AI is that RPA employs structured inputs and logic, whereas AI uses unstructured data and creates its own reasoning. It is possible to generate a completely autonomous process by combining RPA with artificial intelligence. (Nice.)

Forbes research claims that 80% of customers are eager to acquire products from merchants that personalized their shopping experience. According to Smart Insights, 63% of customers will discontinue doing business with firms that employ subpar personalization strategies. (Panicker 2020.) Many e-commerce companies are optimistic about the future of their industry because of the widespread use of AI-powered personalization. AI-driven personalization customizes a brand's marketing messages, content, goods, and services using machine learning, deep learning, natural language processing, etc. With the help of this technology, organizations may engage with customers in new ways that lead to more lucrative customer journeys. (Jindal 2022.)

According to Adomas, when given the option to choose between targeted or random commercials, more than 40% choose the latter and 27.6% favor either, that means to facilitate the purchasing process, 40% of consumers want tailored advertisements that are relevant to their needs. AI enables marketers to execute more precise brand campaigns, resulting in lower marketing costs and higher revenue. (Jindal 2022.) Personalization is glued to the right location with the use of powerful data. Customers can provide an activity stream from their actions on Amazon Personalize, including information about their purchases, page views, and the goods they wish to recommend to others, such as books, music, cosmetics, or films. Additionally, purchasers can offer other details like age, gender, location, etc. The system will save, go through, and recognize consumer data before choosing the appropriate algorithms. It will then improve a customization template that has been tailored to the data of the clients. (2019 AWS Amazon Personalize.)

The website presents relevant and one-of-a-kind suggestions to the visitor based on collecting purchasing behavior, previous transactions, demographic information, interests, and other similar data from an AI application. This increases the visitor's likelihood of purchasing additional items in addition to the ones they came for. (Jindal 2022.)
Zara, which is one of the largest fast fashion companies in the world, has recently come out with size recommendations based on information provided by customers to give customers the exact size they need. This has alleviated a significant source of anxiety for customers who shop for clothing online regarding sizing issues. Zara's data collects information from consumers who have previously purchased the same product and are of a comparable size. This information is then used to suggest. The customer's body data will be gathered once "What's my size?" has been provided with the appropriate information and submitted. This consumer will then receive tailored apparel choices as well as long-term size advice based on the information obtained from this customer's purchase history. In addition to this, those data contribute to Zara's data footprint and assist the company in providing more precise suggestions to clients who utilize the "What's my size?" feature in the future. The efforts made by Zara could certainly make some of their consumers about the size of the item they are purchasing. (Dai 2017.)

Image 9. Size recommendation (Zara)

Otherwise, augmented reality (AR) is another way that Zara wants to attract customers. April 2018, Zara declared that they are revolutionizing the way we shop. The fast fashion
company is bringing their garments to life both in their physical stores and online thanks to the usage of augmented reality on their new app. In the concise step-by-step instructions, simply downloading the app, you may aim the camera towards a mannequin, an empty Zara shop window, or your e-commerce buy and see the apparel on a model for several seconds. Click to shop for the style and associated goods. (Matera 2018.)

Moreover, Sephora has teams that are responsible for driving forward their consumer innovation plans with fresh insights and recommendations, many of which are based on what their data-driven artificial intelligence shows. In addition, they provide all their client’s lectures, workshops, and tutorials to assist them in addressing any problems they may have with their appearance.

Sephora's makeup app employs facial recognition to enable virtual product trials anywhere. The software scans the customer’s face, assesses the eyes, lips, and cheeks for product placement, and lets the customer test cosmetics. They can test out products from all their favorite brands, see how full looks might appear on them, get virtual step-by-step tutorials
customized to the face, and color match the makeup to your outfit. Create their own instructional to master contouring, lip lining, and smoky eyes. See how the hottest trends work on faces and learn to duplicate them with directions on where to place the product, how to mix it, and which products you need. A virtual arm lets them compare brand-specific color samples. (Sephora.)

Image 11. Virtual Artist (Sephora)

The online version of Color IQ will perform a scan of your face and provide helpful suggestions on foundation and concealer to use. In addition to this, the Sephora lip IQ will analyze your lips and make a tailored recommendation for a suitable color IQ lipstick. (USM 2020.)

Another benefit of AI-based personalization is customer touch, “75% of people who purchase online anticipate having their needs met within the first five minutes of their visit.” (Engati Team 2020.)

Chatbot functions in e-commerce play an essential role for business and customers, when consumers are confronted with problems or have questions, they want answers right away.
Chatbots powered by modern AI make use of natural language processing (NLP), sentiment analysis, and other AI techniques to grasp not just the meaning of each inquiry, but also its context, emotion, and subtlety. By doing so, they can carry on a discussion with the client that is more resonant and contextually correct and solve the difficulties that the customer is having. (Jindal 2022.)

There are some functions by chatbot to support e-commerce:

- Items may be upsold with the help of chatbots for e-commerce, which can determine which products and services a buyer is interested in purchasing. When these factors are considered, the bots can provide recommendations for things of a higher quality that would be of more use to the consumer.
- “People have said that if the procedure of purchasing a product was made more difficult, 74% of them would switch brands. Customers are likely to be more likely to make purchases if the checkout procedure involves fewer stages.” (Engati Team 2020.) Instead, then directing consumers to a different page and slowing down the payment process, chatbots may manage online transactions and collect payments directly from within the bot itself.
- Chatbot also provides purchase, item, transaction, and shipping information for customers in just a few seconds.
- Customer service: instead of waiting for human customer service, it takes so long, customers refer to use AI chatbot. They make it possible for clients to obtain help whenever it may be needed. The task for which bots have been used the most is customer service.
- Depending on the customer’s preferences, a bot might send push alerts about new product launches and deals. Advertising with AI chatbots is more cost-effective and effective than using more conventional channels to contact consumers.

Three chatbots from Sephora: Virtual Assistant at Sephora, Assistant Reservationist at Sephora, Chatbot for Kik by Sephora. Together, the three of them allow users to book appointments for makeovers at Sephora’s real locations, post how-to videos, and provide makeup advice. Due to their frequent chatbot interactions, the company has its fans completely enthralled.

With the new “chat” option, Zara once again prioritizes the customer. Using the app, customers can communicate with Zara in real-time to address problems as they arise. Although live chat is a valuable resource, not all concerns can always be handled, and image sharing is prohibited. This live chat is neither a personal shopper nor a styling service; it is merely a tool for customer assistance. Eventually, Zara’s live chat function will be replaced by a
chatbot. With the help of AI-powered chatbots, businesses are better equipped to perform specialized customer service activities. (Retail Innovation 2018.)

**In conclusion**, personalization is used for:

- Provide customers with the appropriate tools.
- Predicting client preferences to determine what they desire.
- Client loyalty initiatives.
- Individualized product suggestions based on consumer behavior.
- Addressing the most recent and frequent issues raised by customers.

Personalization is a powerful tool that can be used to bring in new clients, encourage repeat business, and boost the conversion rate of the website. And because more consumers have turned to online purchasing as a result of COVID-19 in the past two years, producing an exceptional experience has become even more crucial than it always was.

4.2 Trend Forecasting

According to Heutitech, trend forecasting is the process of predicting fashion trends for upcoming seasons' apparel collections, including colors, materials, forms, and patterns. Beginning in the 1960s, fashion shows became true spectacles for photographers and industry insiders; by this time, market standards had been established. For the purpose of compiling trend reports for the mass market, buyers and forecasters went shows to study the designs picked by designers for the upcoming fashion year. Larger businesses, notably department stores, would use this information from the most prominent runway shows in Paris, London, Milan, and New York to create their collections, and newspapers would then communicate the must-have trends to the general public. Today, trend forecasting is faster and easier than ever before thanks to artificial intelligence, which leverages social media to identify trends and evaluate user engagement. Based on this, fast fashion retailers like Zara will create trendy collections with fair quality and reduced pricing (Heutitech 2021.) It also applies to the beauty industry.

Some brands may find it challenging to create unique designs, especially in fast fashion brands, designers can better keep up with the ever-changing fashion business and obtain insightful knowledge about the trends that do and do not do well in the market thanks to AI. Both large and small brands will have access to a wealth of information that helps them understand customer buying habits as well as cutting-edge technology and marketing techniques that may help them boost their sales, brand recognition, and other marketing efforts. (Fabien 2020.)
4.3 Automation

RPA is the standardization and automation of repetitive business processes via the use of software "robots". RPA robots consistently perform in the same way. They do not improve via repetition, and they will not improvise or find a more effective approach to carry out their assigned duty. (Nice.) For example, in the five years after Amazon purchased Kiva for $775 million to become Amazon Robotics, the corporation has made significant investments in artificial intelligence (AI) approaches, such as supporting an annual tournament called RoboCup. As a result, the growing acceptance of artificial intelligence is one of the primary forces propelling the expansion of the robotic process automation market. In addition, the operations that are offered by RPA, such as convenience in business processes, enhanced efficiency, and cost-effective and highly lucrative operations, are also contributing to the expansion of the robotic process automation market. This is helping to drive the growth of the market. (PR Newswire 2021.)

In the retail industry, RPA is utilized to help teams in a variety of various aspects of the business. Management of contracts, human resources, orders, returns, and returns processing; supply chain; inventory management; store planning; delivery logistics; and delivery management. (Future WorkForce 2021.)

AI can increase the efficiency of manufacturing processes that use a lot of energy and improve the accuracy and precision of routine jobs. With the correct training data set, fabric quality control, color matching, defect identification, and pattern inspection may all be automated. Brands will also have the necessary tools to advance a more sustainable supply chain that promotes a circular economy thanks to automated logistics and operations. (Fabien 2020.)

To provide its customers with a more satisfying shopping experience, Zara has implemented the "Buy Online, Pick Up in Store" (BOPIS) or "Click and Collect" idea. BOPIS was applied by intelligence automation where customers can place their orders via Zara's website and then pick up their purchases in-store, either at the customer service counter or in the checkout line, depending on which option is most convenient for them. The personnel of the automated store use their Smartphones to help customers with their purchases. (USM 2020.) The customers will receive automated emails or messages about updated packages and their condition time by time.
The functioning of your programs, themes, plugins, and site as a whole may be confirmed by end-to-end (E2E) testing. To ensure that your business operates as planned, you may utilize it to imitate the actual visitor experience. (John 2021.) E-commerce websites require additional care to guarantee that they function faultlessly from the perspective of the consumer. It is extremely difficult to verify the performance of these online stores and websites by just testing the front-end or functional elements because they are updated so frequently, sometimes several times a day. For example, when a new product is added or when some promotions are introduced, it is necessary for the website to be updated. In order to do this, it is required to conduct end-to-end testing, which includes evaluating not just the user interface (UI) but also the back-end processes and functional flows of the application. (E 2017.)

As John Greys, E2E testing could be performed to confirm that:

“The shopping cart is working properly”

“Product pages load correctly”

“Payment processes complete safely and securely”

“Products can be added to the cart”

“Confirming visitors can complete the checkout process.” (Grey 2021.)
A firm that engages in e-commerce may successfully manage and finish all activities, as well as simplify both internal and external operations. E-commerce businesses can automate everything with the assistance of AI, including the introduction of new products across multiple channels, the sharing of sales information, the identification of high traffic areas, the provision of discounts to loyal customers, and improved attention to more complex questions. (Riet.)

4.4 Searching

Voice shopping is a method of purchasing items using only your voice. The adoption of voice assistants has made it more prevalent nowadays. It was discovered by Bret Kinsella that at least 22% of smart speaker owners in the United States have made a transaction using their devices. If mobile commerce continues to grow, voice shopping will too. There is no question that the processing time for customers will be shortened by e-commerce, and it will specifically be accessible to people of all ages thanks to the involvement of voice. (Kinsella 2018.)

Discovering photographs on social media platforms with the use of artificial intelligence (AI) and comparing those images to a variety of data sets to determine which would be most useful for picture searches is another application of AI. An object or characteristic may be recognized using a video or digital photograph, and AI is becoming increasingly proficient in the use of this technology. The image recognition software may be utilized to do a variety of tasks, including the evaluation of consumers and their thinking, the verification of users based on their faces, the diagnosis of ailments, and the identification of license plates. (Ingle 2022.)

Voice and picture searching are examples of artificial intelligence solutions that can improve customers’ ability to find products that are not supported by traditional search. It expands the search options available to them and identifies the way in which they think. Based on Zara, the extend more four options in customer’ searching.
Image 12. Zara’s searching engines (Zara)
5 Statistics: Survey on Satisfaction with AI Features

5.1 Overview of the Survey

October 1, 2022, an invitation to take part in the survey was emailed to participants whose ages ranged from less than 18 to more than 45 years old. After the initial level of the questionnaire, it contains a total of four distinct sections. Only a series of multiple-choice questions about the respondent's information and artificial intelligence in general are included in either Part 1 or Part 2 of this survey. The third and fourth installments of this series will delve even further into the subject matter, collect data on people's grasp of AI in e-commerce, and evaluate consumers’ ability to recognize AI in e-commerce when they encounter it in their everyday lives. They will indicate whether they agree with the following statements or whether they disagree with them. In Part 4, which focuses more on the application of AI in e-commerce for fashion and beauty products, the participants will evaluate the opinion based on how well it meets their needs and how well they comprehend it. Part 4 also focuses more on the application of AI in e-commerce for fashion and beauty products.

5.2 Analysis

- Part 1: Respondent's information

The total reply is 155 people, the majority of the people who took part in the study were female (53.9%), while the remaining 9% chose not to disclose their gender. With 31.1% of respondents aged 18 to 25 and 24.5% between 26 and 35, Gen Z and Millennials make up most survey respondents. In addition, much smaller groups of those over 45 (11.3%) and under 18 (10.6%) were next.

The results of this survey are provided in the form of a total of 22 graphs and diagrams, each of which is broken down into further depth in appendix.

- Part 2, AI in general

Are you familiar with Artificial Intelligence?

The poll was designed to evaluate respondents' perceptions on AI and general understanding of the subject. A quarter of individuals (26%) have never heard of artificial intelligence. The combined percentage of "yes" responses (26.6%) and "maybe" responses (46.8%) is 73.4%. The findings demonstrate that participants are aware of AI without a doubt, and that the issue has not recently made any prominent appearances in the media landscape as a whole or in other relevant forums.
What are the AI implementations that help you the most in your daily life?

The following inquiry, which was intended to learn more about participants’ regular routines that AI is a part of, asks what implementations they use frequently. Figure 14 shows that among those over 100, the most popular functionalities are facial recognition (85.7%), transportation suggestions (81.2%), recommendation engines (74%) and social e-commerce (74%). It makes sense because those features support many aspects of people’s daily lives, including security, support, commerce, and entertainment. People just require that. Additionally, it demonstrates how frequently smart phones are used throughout the day, allowing us to conclude that m-commerce has the most potential. Compared with Insider Intelligence, it says that the amount of m-commerce will reach $620.97 billion in 2024. This is equivalent to 42.9% of all online sales (Insider Intelligence 2022). And because of its accessibility from a distance and its speed, mobile commerce is expected to experience significant growth in the near future. In fact, many companies focus on building their app and website simultaneously in order to meet the expanding requirements of their customers.

Figure 15. AI implementations

Do you believe that life will continue as usual for you in the absence of AI implementations?

The next question is about living without artificial intelligence, and its purpose is to highlight the significance of AI in everyday life while also revealing the participants’ level of interest in this type of technology. The response that "I cannot live without AI" was given the most frequently by respondents (52.6%), followed by "maybe" (38% of responses). The progress that has been made in AI cannot be refuted, and the absence of it has made our lives more challenging. It is quite comparable to going back in time to a time when there was no technology.

Is AI dangerous or destructive to humanity?
The last question is about Chapter 2, which is called "The Fear of AI." People sometimes wonder if robots are dangerous because they can replace humans and kill us because they are smarter and faster than us. This question is meant to answer that question. The author was interested in how the user felt when using AI's application. Based on the chart, 100 people (64/9) think AI can be dangerous for humanity or it is possible that people still see technology as their consideration when using. In addition, the fact that 27.9% of users believe there is "no danger at all" demonstrates the positive pleasure of users when they are able to perceive the benefits and regulate them.

In conclusion, our poll indicates that many individuals, even young adults between the ages of 18 and 35, have limited knowledge about AI. They believe that their information is unreliable and haphazard. Due to this, many people believe that AI can be hazardous. However, people continue to recognize how modern technology improves their life. It would make AI appear incredible in the media, which might attract clients. In this instance, customers would be interested in utilizing AI technology and learning more about them, given the survey's findings.

- Part 3: Satisfaction with AI features

This section highlights the utility and familiarity of AI application examples daily. The outcome demonstrated the effectiveness of AI support for them and their involvement with this technology. In the survey, respondents will answer questions based on their own individual experiences with specific instances, selecting from options such as strongly agree, agree, neutral, disagree, and strongly disagree.

After completing the daily support portion, the author was provided with replies that were satisfactory in general. To provide further context, 81 percent of individuals agree wholeheartedly and feel that face recognition is superior to passwords. They get a sense of safety and security whenever they use Face ID for things like unlocking their phones or completing payments. People are satisfied with Google Maps and voice assistants to the same extent, displaying a satisfaction rate of 80.3% and 78.3% respectively. This is likewise the case with face recognition. People living in modern times require the assistance of technology in order to cut down on the amount of time required for processing and to attain the best possible outcomes overall. Without a shadow of a doubt, it is true that individuals living in the present day simply cannot survive without the assistance of modern technology. Moreover, the author also received small amounts of people are unpleasant with these functions.
The inquiry concerns AI language tools, and the responses that have been obtained are most likely to concur with the assertion. In addition, 11 of the 154 people had no opinion regarding the remark, while 9 have a negative opinion regarding it. So let investigate the reasons why respondents are not satisfied. In relation to the earlier question about age, 88.7% of people are between the ages of 18 and 45. This indicates that people in this age range are more likely to be reaching innovative technology than people in other age groups. Additionally, the respondents' lifestyles are suitable for business, and they require additional support from technology to make things run more smoothly. The solutions make sense when seen in context with actual life.

These questions, which were found in the shopping area, were developed to correspond to the subject of this research. The purpose of this part is to ascertain the extent to which consumers are pleased with the e-commerce services they have utilized. The four questions cover the topics of recommendations, providing excellent customer service, and utilizing AI-powered virtual assistants. The findings were far better than expected: eighty percent of respondents agreed or strongly agreed with the claims. In line with the earlier finding, businesses that use AI are better able to make decisions and, in the process, increase the quality of service they provide to their customers, using artificial intelligence (AI) as a weapon of competition in the fashion and cosmetics industry.

Overall, Part 3 of the survey confirmed that the importance of artificial intelligence should not be underestimated because there is an increasing number of businesses that are processing and dealing with it. Users also believe and have a good impression. In business, there are many different ways to use artificial intelligence. Most of us actually do interact with AI on a regular basis, but in many different ways. Artificial intelligence is already changing almost every business activity, from the most boring to the most amazing. This is likely to keep happening. As AI technologies become more widely used, it is necessary to have them to maintain a competitive advantage.

- Part 4: artificial intelligence in fashion and beauty e-commerce

This section was intended to provide a deeper dive into AI and relate it to e-commerce for fashion and cosmetics. Participants were asked for instances of AI in e-commerce, how effective they believed AI applications to be, and if they believed AI could be employed in the real world. Several of the questions were business-related and aimed to determine whether respondents believed AI deployment was the same across e-commerce sector and whether it was worthwhile for a firm to invest in AI. Eight questions pertaining to each function of fashion and beauty e-commerce that overlaps with AI applications, including personalization, supply chain, operation, and consumer interaction.
Over 80 percent of individuals believe AI significantly helps to the improvement of e-commerce, particularly the fashion and beauty industries. Comparing Part 3 of the survey to this section, the author found similarities. Additionally, between 17 and 9 percent of individuals feel indifferent to the assertions. It is reassuring to hear that AI is guiding fashion and beauty e-commerce in the right direction, given both industries have historically favored shopping in physical stores.

To sum up, businesses could gain an advantage by sharing the results of their AI initiatives with end users. Buyers generally have a positive impression of AI and think it’s a good idea to put money into it. The company’s image as a helpful, customer-centric corporation would also benefit from this. More than that, being open and honest about AI projects might reassure customers who are nervous about the technology yet know nothing about it. Customers that are skeptical of AI can be won over by demonstrating its usefulness and explaining its applications to them. Many buyers are convinced by the claims of advantage and admit that they would struggle without it. To better innovate on a global scale with the next generation of technology, more work needs to be put into artificial intelligence, and consumers have expressed interest in using and learning more about AI technologies.
6 In Future

According to a 2017 report by PWC, the adoption of AI would increase the global GDP by 14 percent by 2030, contributing an additional $15.7 trillion to the global economy. (Judah 2018.) According to Statista, the compound annual growth rate (CAGR) of the online fashion business is projected to reach 14.2% between the years 2017 and 2025, and the market is expected to achieve a worth of $672.71 billion by the year 2023. (Orendorff & Dopson 2022.) In the beauty industry, it is anticipated that by 2025, it would be greater than $716 billion, having increased from $483 billion in 2020 to $511 billion in 2021 and growing at an annual compounded growth rate of 4.75% globally. And $784 billion by the year 2027. (Roberts 2022.)

In the realm of artificial intelligence, we may anticipate more rapid growth. A variety of solutions, including chatbots, assistants, NLP tools, robotics, and sensors for analysis and prediction, have already entered the mainstream, and this trend will continue and intensify.

Following to the data, AI plays a significant part in the expansion of the fashion and beauty sectors as well as the economy. According to the AI classification that the author mentioned earlier, the final title of AI is "Self-aware AI." More specifically, when machines can comprehend not only their own emotions but also those of the people in their immediate environment, they will have attained a level of intelligence and consciousness comparable to that of humans. This artificial intelligence will have the same desires, needs, and emotions as humans. (Marr 2021.) It is anticipated that this application will see rapid expansion and development in the not-too-distant future. With the same capabilities, the sophisticated AI of the future will bring about success in e-commerce for fashion and beauty, which is one of the industries in which consumer behavior must be prioritized the most.

In addition to this, several emerging trends in the e-commerce world of fashion and beauty are presented:

- Pay attention to AR: The Launchmetrics Content Team identified Zara, Sephora, and Gap as fashion and beauty companies utilizing AR technology to enhance the client experience. However, AR technology remains rather costly and complicated. However, as 3D scanning and photogrammetry techniques advance, object modeling will become faster and less expensive. In addition, 3D mapping of soft items such as textiles will become more refined, resulting in more realistic virtual apparel. (The Launchmetrics Content Team, 2018.)
Localization: “is the process of removing those barriers to reach local markets.” The localization technique occurs on several levels: language, visual, SEO, culture, payment, and legal, with AI modifying the matching levels to provide each region’s internet shoppers with comfort and comprehension. (Blend.) The main purpose of this trend is to reach as many customers as possible and it is an easy step to becoming a global brand in the future. There are not many firms that use this feature for their e-commerce, particularly Korean fashion and beauty enterprises, which have a growing fashion and beauty industry and a large global expansion potential.

In conclusion, In the future, AI will become increasingly prevalent in e-commerce, and we will never be able to predict enough. However, companies who do not employ it will be at a disadvantage.
7 Conclusion

7.1 Answer Research Questions

To bring the thesis to a close, this subchapter will offer the responses to the thesis's questions. First, the responses are given for the sub-research questions, and then the solutions are given for the primary question posed by the thesis.

*Sub-research question 1: How might a business and its clients benefit from using AI in fashion and beauty e-commerce?*

E-commerce sites specializing in fashion and beauty have evolved into an extension of the overall experience provided to customers, therefore improving the company's efficiency, and cutting expenses. Providing evidence that investments in artificial intelligence are a good use of investment, Zara and Sephora are becoming and maintaining their positions as leaders in the fashion and beauty industries thanks to AI, which is related to company cases. These companies are achieving this by increasing their profitability, concentrating more on the most important tasks, and having an advantage over other businesses.

*Sub-research question 2: What are the implementations of artificial intelligence in fashion and beauty e-commerce?*

I broke the many applications of AI in e-commerce for fashion and beauty down into four key categories. To begin, personalized tools are advanced tools that enable businesses to use customer information, habitats, and behaviors based on AI function to drive personalization. This personalization customizes a brand's marketing messages, content, goods, and services by utilizing machine learning, deep learning, natural language processing, and other such techniques. It is possible for businesses to connect with consumers in novel ways with the assistance of this technology, which may then lead to more profitable customer journeys. E-commerce stands to gain from personalization in a variety of significant ways, including virtual assistants, recommendation engines, and chatbots. Second, businesses encounter difficulties in anticipating the effects of fashion and beauty trends. By evaluating how users engage and keeping up with the newest trend when social media platforms are used to target clients, artificial intelligence makes this task appear much simpler than it was previously. Thirdly, machine automation and artificial intelligence produce new external and internal consequences for e-commerce. RPA is applied to assist teams in a range of business operations. Contract, human resource, order, return, and return processing management; supply chain; inventory management; store planning; delivery logistics and delivery management. End-to-end testing is used to check that your business is operating as intended, and it may also be used to simulate the actual visitor experience.
Last but not least, AI recognition enables users to do sophisticated searches by voice or image. Recognition software may be used for a number of purposes, such as the evaluation of customers and their thought processes, the authentication of users based on their faces, the diagnosis of diseases, and the identification of license plates.

*Research question: How can AI and e-commerce overlap as fields of study and application?*

Particularly after the epidemic, an ideal mix exists. After performing two sub-research inquiries, we observe all the benefits of AI in fashion and beauty e-commerce and conclude that it is an investment worth making. With the customer as its primary focus, AI is moving in the right path. Consequently, if you desire the finest possible purchasing experience on your e-commerce website, you should investigate the advantages of artificial intelligence and machine learning. This can help you utilize your consumer and corporate data more effectively to establish a feasible future strategy.

7.2 Validity and Reliability

The study’s major objective is to address the research question and sub-questions linked to the thesis. On the basis of the theoretical framework, all solutions are uncovered and rationally explained in order to meet the purpose of the thesis. In the thesis, web-based data is collected from literatures. Simultaneously, data is collected from the survey. In a survey session, 155 individuals were provided AI-related questionnaire to examine their perspectives on AI and fashion and beauty e-commerce. After receiving hundreds of responses, I have sufficient evidence to draw a conclusion.

7.3 Suggestions for Further Research

The study focused only on the application of artificial intelligence to e-commerce platforms for the fashion and beauty industries. Because of this, it is recommended that further research be conducted on artificial intelligence as well as e-commerce in general. In addition, since the thesis is only concerned with the application of artificial intelligence in e-commerce, whose target customers are people aged 18 to 45, it would be interesting to see further research on the application of AI in other types of industries, each of which has a different customer segmentation.
8 Summary

The purpose of the thesis was to provide a better understanding of what artificial intelligence is, what fashion and beauty e-commerce mean, and how AI and e-commerce can overlap as fields of study and applications. Fashion and beauty e-commerce refers to the online buying and selling of fashion and beauty products. The ultimate objective was to provide a solution to the primary issue posed in the thesis, as well as the sub-research topic that was presented earlier. The utilization of a wide variety of literature sources allowed for the successful completion of both theoretical and empirical research.

The books and papers of AI specialists such as Stuart, Norvig, Haenlein, Kaplan, Ertel, and others provided as the basis for the theoretical chapter's introduction to AI in general. In addition, the classification, current state, and benefits of AI are discussed.

The author also gave information on the e-commerce and fashion and cosmetics industries. Following the pandemic scenario, the positives are also discussed. In addition, for the primary study issue, AI in fashion and beauty e-commerce, the author provided implementations and corporate instances to illustrate how AI impacts e-commerce.

A online survey was conducted to determine customers' criteria for artificial intelligence and their perspectives on AI applications in their daily lives and fashion and beauty e-commerce. The study results revealed that respondents felt their information is untrustworthy and random. Due of this, many individuals view AI to be dangerous. Nevertheless, people continue to acknowledge how contemporary technology enhances their lives. It would make AI look extraordinary in the media, which might attract customers. Numerous clients trust in the product's benefits and agree that they will face challenges without it. Customers would be interested in adopting AI technologies and knowing more about them in order to develop internationally using the next generation of technology.

The final part of the thesis is identifying the future of AI, with the same skills, the cutting-edge AI of the future will succeed in e-commerce for the fashion and beauty sectors, one of the sectors where consideration of customer behavior must take precedence.

The thesis's findings demonstrated the significance of artificial intelligence in fashion and beauty e-commerce for improving brand recognition and reaching out to potential clients who are interested in artificial intelligence. It's critical to educate the audience sufficiently about technology and engage them via a variety of methods. Clients like to purchase from technologically savvy organizations, thus establishing a good reputation and educating customers about the brand are also crucial.
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APPENDIX

Appendix 1 Satisfaction to AI features

What is your gender?
154 total responses

- Male: 53.9%
- Female: 40.3%
- Prefer not to say: 5.8%

What is your age?
151 total responses

- Under 18: 24.5%
- 18-25: 22.5%
- 26-35: 31.1%
- 36-45: 11.3%
- Above 45: 10.6%

Are you familiar with Artificial Intelligence?
154 total responses

- Yes: 46.8%
- Maybe: 26.6%
- Not much: 26.6%
What are the AI implementations that help you the most in your daily life? You can choose more than one

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial recognition (Face ID)</td>
<td>132 (85.7%)</td>
</tr>
<tr>
<td>Recommendations (Netflix, online...)</td>
<td>83 (53.9%)</td>
</tr>
<tr>
<td>Digital voice assistant ( Siri, Google...)</td>
<td>67 (43.5%)</td>
</tr>
<tr>
<td>Smart home devices</td>
<td>66 (44.2%)</td>
</tr>
<tr>
<td>Virtual product trial on beauty app</td>
<td>55 (35.7%)</td>
</tr>
<tr>
<td>Self-driving car</td>
<td>65 (42.2%)</td>
</tr>
<tr>
<td>Chatbots</td>
<td>78 (50.6%)</td>
</tr>
<tr>
<td>Plagiarism</td>
<td>114 (74%)</td>
</tr>
<tr>
<td>Social e-commerce (Instagram,...)</td>
<td>125 (81.2%)</td>
</tr>
</tbody>
</table>

Do you believe that life will continue as usual for you in the absence of AI implementations?

- Yes: 52.6%
- No: 22.7%
- Maybe: 24.7%

Is AI dangerous or destructive to humanity?

- Yes: 64.9%
- Can be dangerous: 27.9%
- Not dangerous at all: 7.1%

Online shopping offers many good recommendations

- Yes: 72 (48.8%)
- Can be dangerous: 67 (43.5%)
- Not dangerous at all: 10 (6.5%)
- Somewhat dangerous: 2 (1.3%)
- Very dangerous: 3 (1.9%)
Face ID instead of password on my phone.

- 68 (44.4%) choose option 1
- 57 (37.3%) choose option 2
- 21 (13.7%) choose option 3
- 2 (1.3%) choose option 4
- 5 (3.3%) choose option 5

I think I’ll utilize Google Map to locate the exact location.

- 68 (44.4%) choose option 1
- 55 (35.9%) choose option 2
- 22 (14.4%) choose option 3
- 4 (2.6%) choose option 4
- 4 (2.6%) choose option 5

Voice Assistant makes my life easier.

- 71 (46.7%) choose option 1
- 48 (31.6%) choose option 2
- 25 (16.4%) choose option 3
- 4 (2.6%) choose option 4
- 4 (2.6%) choose option 5
I used AI language tools like Grammarly and Quillbot to do my coursework.

When I make an online purchase, the chatbot is a huge assistance.

I test cosmetic in real time by using a virtual mirror on my camera.
When I purchase online, I have the ability to select the exact size from the size recommendation.

One of the most promising uses of AI in e-commerce is personalized.

AI is helpful for managing the supply chain well.
The process through which we buy things on the internet is being revolutionized by AI.

Retail uses AI and robots to expedite online pickup orders

AI will have an influence on how customers and online businesses interact.
AI-powered analytics help businesses in the beauty industry respond to changes in demand.

Helping its e-customers pick the right clothing size is one of the biggest successes thanks to AI.

Chatbots driven by artificial intelligence make it easier for organizations to handle the individualized customer support tasks that they need to perform.