Artificial Intelligence in Electronic Commerce

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Abstract

Compared to past years the way how the world functions today is very different. This is achieved as a result of several important improvements in the field of technology and internet. These improvements have influenced every aspect of our lives starting from the way we learn, the way we work, the way we travel, the way we shop and a lot of other activities. One of the fields that were drastically changed is the field of business and commerce. The purpose of this paper is to give information about the role and impact of artificial intelligence in electronic business. The readers of the paper will get familiar and gain solid information about the field of artificial intelligence and its implementation in electronic commerce.

Keywords: electronic commerce; electronic business; artificial intelligence; chatbots; speech and image recognition.

1. Introduction

Information technology along with globalization has changed the way how businesses work. Today, online marketing is the target and goal of every business, not only because customers can reach goods and products in an easier way, but also because it is a great opportunity for business growth. Online marketing is a great opportunity because development in this field is faster than in other fields. Information technology and internet provides the easiest way to access several products such as books, clothes, food, tickets, electronic devices, furnitures, and even services such as online banking, online reservations, stock investing and much more. In fact, today a business that does not have a website and does not offer online shopping is considered as incomplete. The success of an electronic business is determined by technologies, and the correct use of those technologies. An important technology that is implemented in electronic businesses is Artificial Intelligence. In fact, considering the sophistications in economy, science, technology and innovations, the usage rate of artificial intelligence has increased.

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There is hardly any field where AI is not being implemented, and it is around us whether we are aware that we are using it or not; starting from the television, electronic gadgets, electric cars and more. This is an improvement which affects positively our work and life. Innovations on the field of AI have been applied on web-based businesses by achieving positive outcome which makes AI the main factor for the improvement of online businesses. Artificial intelligence in the industry of electronic commerce is used for several purposes such as searching patterns, administration, calculations and more.

2. Definition of electronic commerce

Electronic commerce is a business in which information technology is used to increase business efficiency, sales and provide a basis for new services and products [1]. Electronic commerce is defined as the process of buying and selling goods and services, or transmitting funds or data over an electronic network, primarily the internet. They can be business-to-business (B2B), consumer-to-consumer (C2C), business-to-consumer (B2C) or consumer-to-business (C2B), business-to-administration (B2A) or consumer-to-administration (C2A). E-commerce operates and can be conducted over smart devices such as: computers, laptops, tablets, smart phones etc. The beginning of e-commerce can be traced to the 1960s. During that time many businesses started using Electronic Data Interchange – EDI to share documents with other businesses and companies. In 1979 the American National Standards Institute developed ASC X12 as a universal standard for businesses to share documents through electronic networks. After the number of individual users sharing electronic documents with each other grew in the 1980s, the rise of eBay and Amazon in the 1990s revolutionized the e-commerce industry [2]. E-commerce is the process of buying and selling tangible products and services online. It involves more than one party along with the exchange of data or currency to process a transaction. It is part of the greater industry that is known as electronic business (e-business), which involves all of the processes required to run a company online [3].
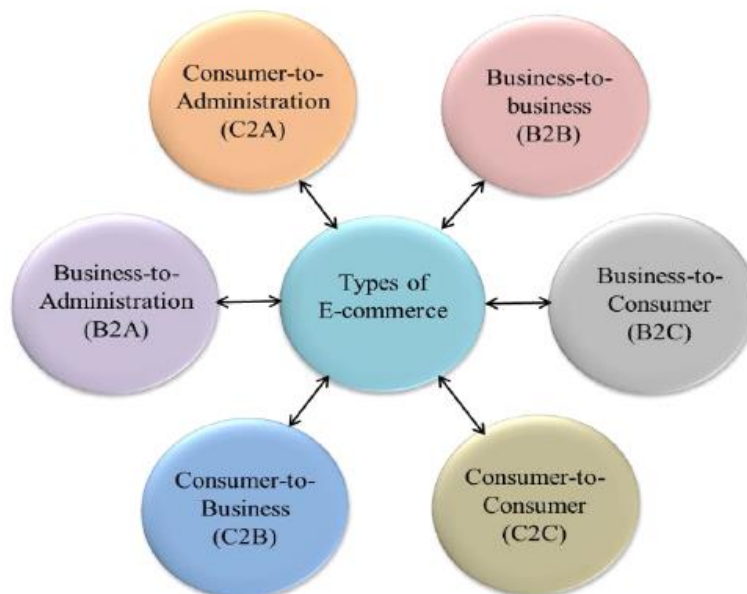

Figure 1: Categories of electronic commerce.

E-commerce can include every step of buying a product: product order, product payment, and delivery. It may also include only one part of the process. For example, a customer might order a product online to be picked up at the store. Payment might be conducted online or at the store when the item is picked up. Either way, the transaction still involved an element of e-commerce. Many businesses also sell through virtual marketplaces in addition to their own websites. For example, a popular brand like Nike will sell shoes from its website, as well as through an online retailer like Amazon. Whether you buy it from Nike's website or Amazon's, the transaction is still an example of e-commerce. In this type of online commercial transaction, the seller can communicate with the buyer without having a face to face interaction.

Although most electronic commerce involves the transportation of physical items in one way or another, a large percentage of e-commerce is conducted entirely electronically for virtual items, such as access to certain information on a website, purchasing software or other online services. While the average consumer might not realize it, much of the e-commerce that takes place around the world involves B2B relationships. This type of e-commerce often involves transactions like restocking necessary supplies, and very often it will be automated. For example, a landscaping company could have a contract with an e-commerce company to remain stocked on items like gardening tools and plants. To maintain efficiency, the landscaping company might have an automated process in place to track supply levels. As crews use tools on the customers' yards and the inventory drops below a set level, an automated system will place an order for more.
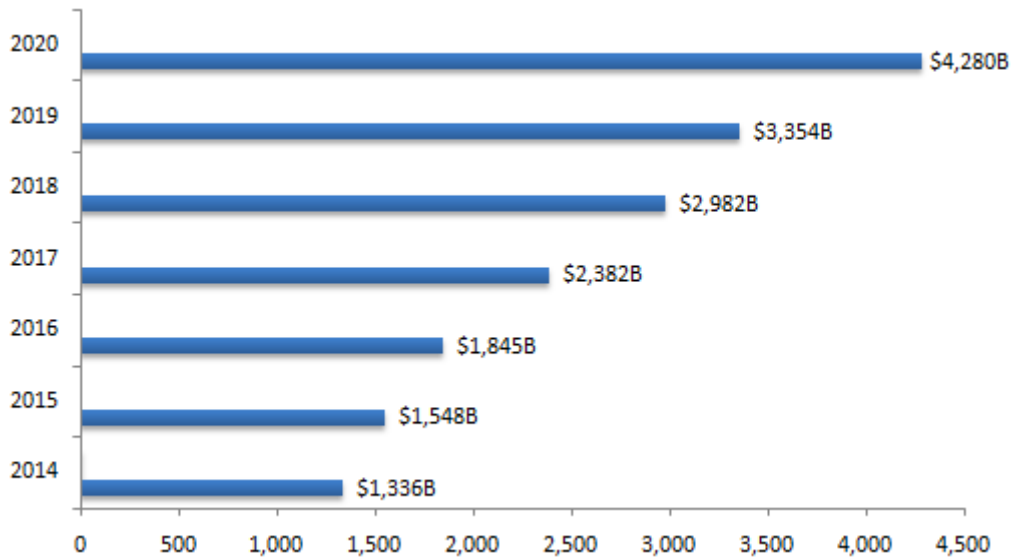
Figure 2: Global retail electronic commerce market growth from 2014 to 2020.

3. AI technologies and tools

Before giving a formal definition of AI we will make three acceptable assumptions. First assumption is the thesis of Church, stating that every calculating device can be modeled by a program. This means that we are going to look for AI in the set of programs. Second assumption is that AI is a step device and on every step it inputs from outside a portion of information (a letter from a finite alphabet $\sum$) and outputs a portion of

information (a letter from a finite alphabet Ω). The third assumption is that AI is in some environments which gives it a portion of information on every step and which receives the output of AI. Also we assume that the environment will be influenced of the information which AI outputs. This environment can be natural or artificial and we refer to it as "world" [4].

Artificial intelligence is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable. Intelligence is the computational part of the ability to achieve goals in the world. Varying kinds and degrees of intelligence occur in people, many animals and machines [5].

The aim of AI is to create computer programs that can achieve goals and solve problems as well as humans.

Artificial Intelligence in e-commerce is not only used during the process of selling the service or the item, but also it is used on different fields such as supply chain management (SCM), enterprise resource planning (ERP), management of information systems (MIS), custom-relationship management (CRM) and human resource management (HRM). Artificial intelligence helps online business organizations improve results, and with the help of AI machines are figuring out how to help us and how to perform manual errands and is entrancing that they are tackling their work amazingly great, permitting us to zero in additional on an essential degree of business. However, AI on e-commerce is far away from being perfect and business owners continue to improve their AI tools to adapt to the changes of market. Sometimes they even cooperate with other companies to merge their AI tools and create better solutions for their clients.

Key technologies of AI are:

Expert systems – expert systems are a major application of AI. They act like a human "expert" in analyzing unstructured situations. Expert systems are also called knowledge-based systems since they are built on a framework of known facts and responses to situation [6]. The main logic of expert systems is based on Bayesian Theory. Bayesian method is a famous algorithm that can be used in the expert recommendation and prediction field. When it comes to the prediction field, naïve Bayesian method is able to directly calculate the probability of products in which users can be interested in, by using the previous queries. It is always fairly difficult to measure whether the definition is suitable or whether the parameter is optional. On the other side, Bayesian network has good performance although it has a big computational complexity [7]. These systems are very helpful on the management of electronic businesses since they are able to response to procedures, tasks and decisions that are repeated often. They also help on analyzing why a result was reached, and why clients choose one option to another. These systems are faster, cheaper, more reliable and more accessible compared to a human's intelligence; also they support specialized tasks as parts of much larger software systems.

Natural Language Processing – is a theoretically motivated range of computational techniques for analyzing and representing naturally occurring texts at one or more levels of linguistic analysis for the purpose of achieving human-like language processing for a range of tasks and applications [8]. It began developing in the
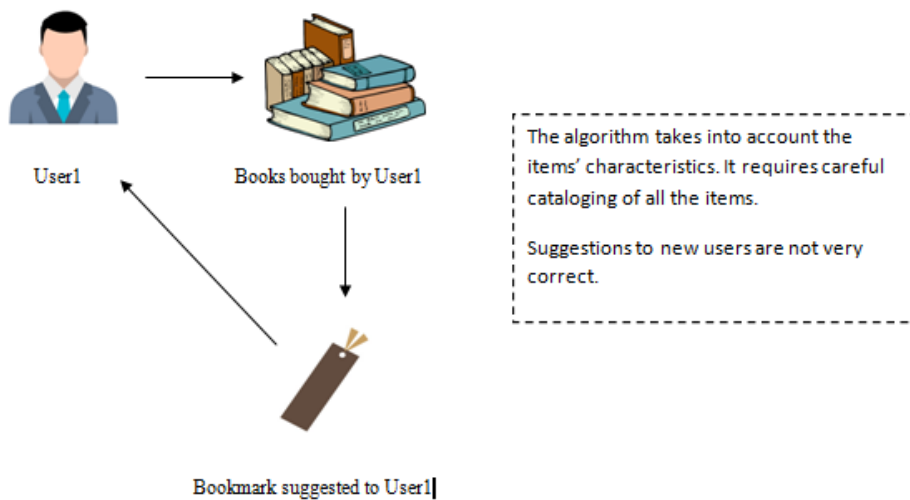
1950s as the intersection of artificial intelligence and linguistics. NLP was originally distinct from text information retrieval (IR), which employs highly scalable statistics-based techniques to index and search large volumes of text efficiently [9]. Natural language processing helps on organizing enormous volumes of text and voice data, and responding to that data; also they are able to detect and analyze the words and phrases used by the shoppers while searching for an item. NLP is able to discover what the client is looking for by understanding the language and the structure of the sentence. Electronic businesses also use natural language processing to sort products into specific groups and develop intelligent search bars that will help the clients to find the exact or similar product that they are looking for.

Neural Networks – The conventional approach to computing is based on an explicit set of programmed instructions, and dates from the work of Babbage, Turing, and von Neumann. Neural networks represent an alternative computational paradigm in which the solution to a problem is learned from a set of examples. The inspiration for neural networks comes originally from studies of the mechanisms for information processing in biological nervous systems, particularly the human brain [10]. Briefly, we can define neural networks as a set of algorithms, modeled after the human brain, that are designed to recognize patters. These networks include several layers such as: the input layer, the hidden layers, and the output layer. The input layer includes information, the hidden layers process that information and determine what should be learned, the output layer reports what is learned. Neural networks can be applied in every field, including electronic-commerce. The usage of AI subfield will ensure a more personalized experience which resembles the help that a client would get from an employee of the business. This is achieved by the ability of neural networks to perform unsupervised learning with procedures and outputs that are not limited by the provided input. Apart from not being limited by the input, these networks are also able to learn even when the data is insufficient or not correct; this happens because the output is not affected by the corruption of one or more than one neuron.

Machine learning – it is frequently utilized interchangeably with AI nowadays; however, there is a significant difference. While AI applies to the whole idea of "thinking" machines from science fiction robots to self-learning PC code being created by business and scholarly community today. ML is the viable execution that is producing the greatest forward leaps in reality [11]. Machine learning uses statistical models to get actionable insight, find dependencies, and make predictions. Data scientists train machine learning models and then apply those well-trained models to real-life cases. One of major values of machine learning solutions is that they learn from experience and can be retrained as many times as needed, also the ML algorithms can be trained by processing huge datasets, spotting recurring patterns, relationships, and spotting anomalies among all this data, and building mathematical models representing such correlations. Machine learning solutions for e-commerce help on different steps of the process, starting from inventory management to customer services. Big companies invest a lot of money on AI and machine learning in order to improve customer experience, automate manual processes, personalize offers for each customer and overall ensure that the client's needs are completed. This guarantees profit and increases the company's market share with better customer acquisition. Today, except communicating on a personal way with their favorite brands, consumers also expect personalization. The reason for this is that customers do not want to be offered irrelevant content or services that they are not interested in. With the help of machine learning, the retailers are able to personalize every interaction with their customers. Besides personalized shopping, ML helps on improving the interactivity by implementing highly interactive
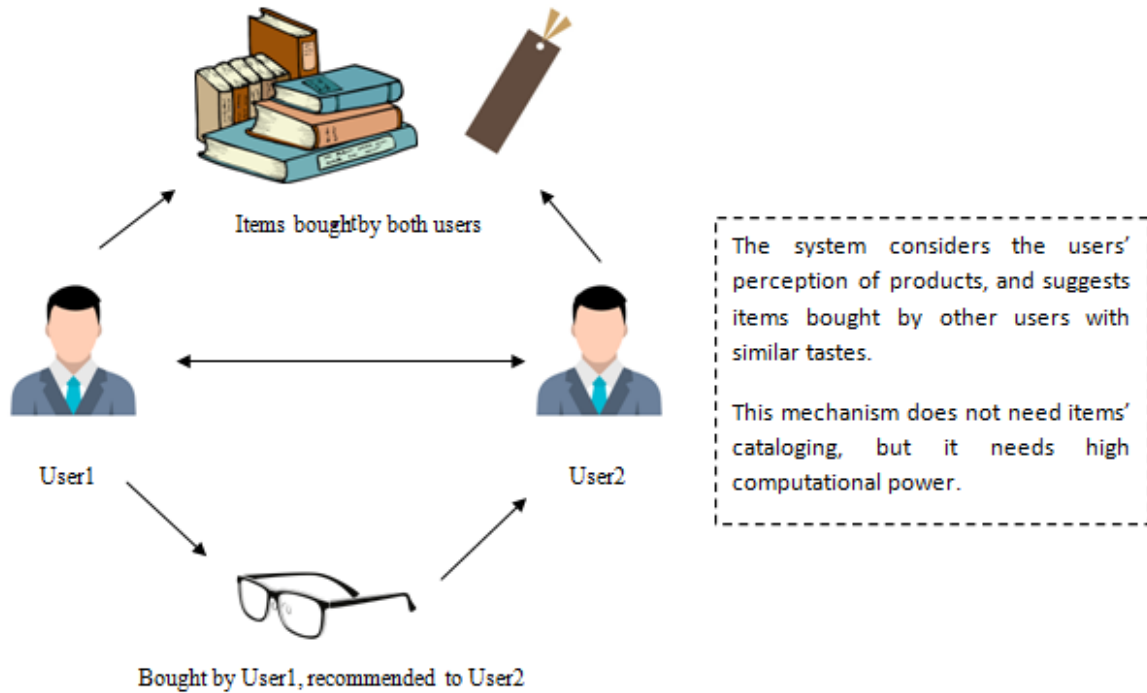
solutions to provide 24/7 customer support and increase sales. Machine learning can improve e-commerce search results by generating a search ranking based on relevance for that particular user. This is especially important for giants such as eBay. With over 800 million items listed, the most relevant search results are taken by the retailer for full advantage of AI and data to predict and display [12]. With the use of machine learning algorithms for e-commerce and the processing of huge amounts of data, you can thoroughly analyze the online activity of hundreds of millions of users. On its basis you are able to create product recommendations, tailored to a specific customer or group (auto-segmentation) [13]. These machine-learning based recommend systems process past sales data, recognize recurring purchase patterns among typical buyer archetypes, and predict the items that might grab the attention of specific users to provide them with personalized suggestions, a mechanism typically used on a larger scale for predictive analytics in marketing. These systems are based on two approaches: *content-based filtering* and *collaborative filtering;* these approaches can be combined on one hybrid system [14].

Content-based filtering systems gives recommendations to clients based on two factors: **the features of the items** – which are described using keywords such as price and category; and **the customer's characteristics** – which include the reviews of previously purchased items and preferences.

User1   Books bought by User1

The algorithm takes into account the items' characteristics. It requires careful cataloging of all the items.

Suggestions to new users are not very correct.

Bookmark suggested to User1

Figure 3: Content-based filtering recommendation systems.

Collaborative filtering systems recommend using the approach that people with similar preferences in the past will still agree in the future. So, based on this strategy the algorithm will suggest some new products which have been ordered and positively reviewed by other clients with the similar buying patterns. These systems are used on Amazon.

The system considers the users' perception of products, and suggests items bought by other users with similar tastes.

This mechanism does not need items' cataloging, but it needs high computational power.

Figure 4: Collaborative filtering recommendation systems.

Besides recommendation, ML is used by retailers for dynamic pricing. Since ML algorithms learn from new information and new data, they are able to detect new trends and demands. This is very useful for pricing since it allows the business owners to determine the best price for each item. Besides dynamic pricing, these algorithms are able to set real-time discounts and offers.

Computer vision – is a field of artificial intelligence that enables computers and systems to derive meaningful information from digital images, videos and other visual inputs – and take actions or make recommendations based on that information. If AI enables computers to think, computer vision enables them to see, observe and understand [15]. Computer vision needs a lot of data. It runs analyses of data over and over until it discerns distinctions and ultimately recognizes images. Considering that product's images are very important for a good shopping experience, correct descriptions and reviews, we can conclude that computer vision is an important element on the success on an online business.

With the help of these technologies, developers are able to develop different tools such as:

Smart Search Engines – are systems which are based on Artificial Intelligence, Machine Learning and Natural Language Processing. They include cognitive search, intelligent search and semantic vector search. Natural language processing allows smart search to create meaning out of the search terms even if they are not exact point and click queries. AI and machine learning combine forces to determine the context around which a user is searching for something using signals – taking into account history and how it may inform their future goals [16]. By combining these technologies, these tools can predict what a client is searching for by considering their history, goals, and theme of the search. The main goal of smart search engines is: fast representation of results,

customized searching results, and assertiveness in the search return. These search engines ensure better capabilities to the search field which boosts the user's experience, they also operate by analyzing the client's previous behavior on the web. This allows the engines to have information about the products that the clients might like, and offer these products to them. Smart search engines perform by understanding the purpose of the user's search query and showing the most appropriate result for that specific query, to rephrase it, if a client types the phrase "I want to start living healthy", the engine can show all the products that are included in the database of the business and are related to this phrase. The products that will be shows are: healthy foods, books with cooking recipes, sport equipment, sport clothes, online workout sessions and so on. Engines also help on prioritizing items based on popular searches, which allows the business to upgrade the product line. Smart search engines also permit the business to autosuggest items which decreases the client's effort while searching for a product. Autosuggest will establish a loyal customer base because they will feel that the business is aligned with their preferences and choices.

The data taken from smart search engines will allow businesses to create several analyses which will determine their success. The analyses give information about the worst seller and the best seller, the devices that the clients use while shopping, the locations where most of the clients buy, which products are best sellers on specific locations, and which products the clients are not interested in.

Voice Powered Search – Speech Recognition – speech recognition can be defined as the process of converting speech signal to a sequence of words. Its goal is to be able to hear, understand, and act upon spoken information. The earliest speech recognition systems were first attempted in the early 1950s at Bell Laboratories. Davis, Biddulph and Balashek developed an isolated digital recognition system for a single speaker. The goal of automatic speaker recognition is to analyze, extract, characterize and recognize information about the speaker identity [17]. It allows the clients to search and buy a product from the online store without any input from a manual keyboard, by only using their voices. It is a tool which the electronic business owners cannot afford to lose out on because it is very important, it makes shopping easier, and it is used extensively.

This tool matches a word to a known word with the help of these techniques:

- **Sub-word matching** – the engine searches for sub-words which usually are phonemes and then accomplished further pattern recognition on those. This technique is slower compared to the other, but it uses less storage.
- **Whole-word matching** – the engine compares the new audio signal with a prerecorded template of the word. It is a faster technique, but all the words that will be recognized should be prerecorded. This requires a large storage and it is useful only if the recognition vocabulary is known when the application is developed.

Voice recognition operates with these steps:
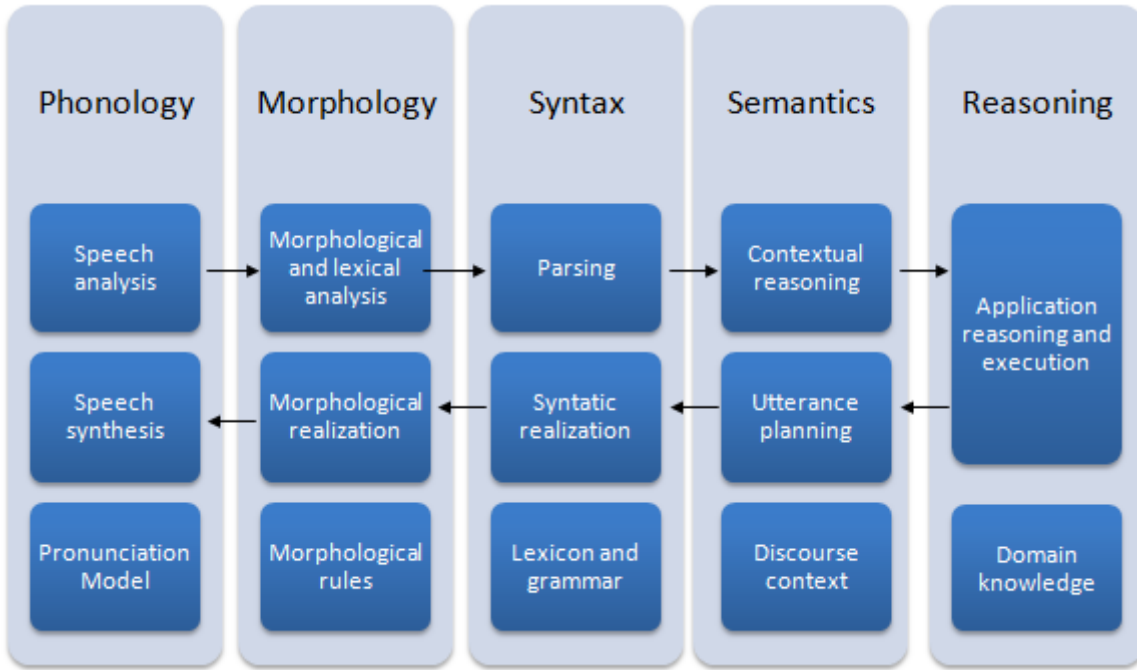
Figure 5: Speech recognition steps.

On the first step the user commands the speech recognition tool with a question. This question is processed and transcribed from a speech into text with the help of the engine. The engine then analyzes the text and tries to detect the question. The engine then connects to data sources such as databases or search engines to find the suitable information. This data is translated into a digestible format which fulfills the user's purpose.

Speech recognition is incorporated in virtual assistants such as Siri, Alexa, Cortana, Google Assistant and so on.

Intelligent Visual Search – Image Recognition – is a tool which is used to recognize places, logos, people, objects, items and more. Image recognition is done using pattern and pixel analyzing in an image. It is a very useful tool because it is able to identify products quickly and accurately which makes the product searches easier. The effectiveness of image recognition depends on the classification of images. Classification involves pattern matching with data. Images are data in the form of 2D matrices. Image recognition is all about classifying data into one category out of many. Optical character recognition (OCR) is an important example, which works to convert images of typed or handwritten text into machine-encoded text. In the image recognition process, the main steps include gathering and organizing data, building a predictive model, and using the model to recognize images [18].
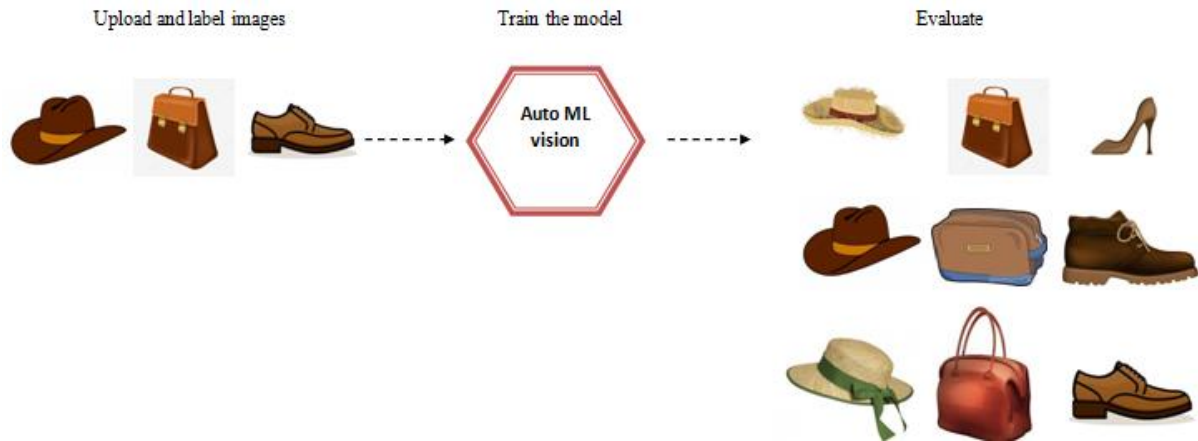
Figure 6: Image recognition.

Chatbots and Virtual Assistants - chatbots are website bots that act as customer service representative Chatbots are helpful because they offer help to customers 24/7. Built using AI technologies, chatbots are getting more intuitive and are enabling a better customer experience. New chatbots make the chatting experience more intelligent and personalized, since they can learn from the previous conversations. Since they are built with AI and driven by a predefined set of rules, they learn and adapt themselves to complex business problems and offer quick solutions to user inquiries – just as humans would. Some benefits that chatbots bring are: personalization – is achieved by collecting data about visitors and using that data to make better product recommendations and suggestions. Personalization enables a business to build consumer loyalty. Reduced costs – having a chatbot will help the business to save a lot of money on the customer service team. This happens because chatbots require less human support (chatbots connect a client with a real person only if they ask a complex question), which allows your team to focus on more important aspects of the business. The business also reduces human error and enables efficient customer service with minimal costs. Chatbots offer improved engagement which is important because clients tend to choose businesses that value communication, for this reason you should make sure to respond to client's questions as soon as possible. If answering takes a few minutes, it is most likely that the client will be bored and stop shopping; chatbots offer instant responses which improve the customer engagement. They also offer guidance by helping the customers to find the exact product that they are looking for and give information. This increases the sale possibilities.

Augmented Reality – it is a live, direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data. As a result, the technology functions by enhancing one's current perception of reality. Augmentation is conventionally in real-time and in semantic context, with environmental elements around the user. With the help of advanced AR technology (e.g. adding computer vision and object recognition) the information about the surrounding real world of the user becomes interactive and digitally manipulable. Artificial information about the environment and its objects can be overlaid on the real world. Research explores the application of computer generated imagery in live-video streams as a way to enhance the perception of the real world [19]. AR is helpful on e-commerce because there are still some products for which the clients need more contextual information, for example, often buyers are skeptical on buying a product because of the "it looked great on the mannequin"

mindset. With the help of AR, the potential clients will be able to see how the product (including clothes, accessories, eyeglasses, makeup, hairstyles or furniture) will look on them, or their houses. This advantage will reduce returns of the products and will increase the engagement of the customers.

Assortment Intelligent Tools – Despite providing a good shopping experience for their clients, business administrators also have to worry about their stock and assortment. These tools refer to a set of software and tools used to track the supply and inventory. The correct collection of items ensures that the business is up to date. The right management of assortment is important because it holds the attention of clients; it controls the costs of logistic, and the costs of inventory. Assortment intelligent tools help the seller to determine, compare and analyze the differences using image recognition, artificial intelligence and data mining. With data-driven AI-enabled assortment optimization, e-commerce firms can weigh in on a multi-faceted product view for everything from inventory stocks to competitor analysis. It helps better assess product bundling and audience segmentation, and enables an understanding of customer preferences and alternate product viability. With it, category managers can identify under or over-represented categories, profitable categories, and the best way to calibrate each category portfolio for maximum sales. In the digital economy, we live in this is a definite edge players invested in assortment intelligence solutions have overt their rivals [20]. These tools also help on identifying the best seller products so they can always be available for purchase, and minimizing waste from overstocking products that are not sold; also, they help on creating a diverse assortment which will increase the interest of different customer segments by attracting new customers. By using the right tools, the retailer will be able to follow the trends and sell the right products to buyers at the right time, the retailers can determine the accurate amount of inventory to satisfy the customer's demands and not fall short on stock maintenance.

4. Challenges of implementation

Implementing AI in the field of e-commerce is very helpful, but not easy. Some of the challenges that retailers face while implementing AI on their businesses are:

Finding the right choice – In AI there does not exist a "one size fits all" approach, meaning that whatever works for a business might not be the right choice for another business. For this reason, to avoid the trouble that might appear it is advised to create an AI team or work with an AI development company. While finding the right choice the business should define its strategy, build the data architecture, develop learning models and find the alternate technology for AI data management and governance.

Using the right data set – AI implementation and success depends on using the right set of data, for this reason it is very important to determine and use the right data set. It is advised to consult with experts of AI field to find the correct path on achieving the desired result.

Availability of data – Since AI uses the ability to draw insights from big data, poor quality and inconsistent data are a challenge for retailers who want to create value from their AI tools. In order to solve this, the business should have a strategy and a plan for the data that the AI will require.

Lack of trust in technology – customers that shop with traditional tools often tend to think that the AI cannot

complete the activities correctly – especially the more demanding ones. In order to keep the existing customers and attract new ones it is important to educate and inform them about the capabilities of AI used in the business.

Cyber-attacks and fear of invasion of privacy – the main target of malicious programs are e-commerce stores that use AI tools and technologies. For this reason, retailers should develop and apply cyber-security programs that react to AI threats. Also, people are often used in using the internet in the traditional way. Retailers should create guides which will inform the customers about the used AI, and make them feel comfortable on using it.

Errors in comprehending speech – this challenge is present on businesses that have implemented speech recognition. These errors mostly happen because the clients use irony, slangs, specific languages, different accents or wrong pronunciation.

Maintenance – after creating and implementing AI, maintenance is also a challenge. Several steps might be applied to overcome this challenge. For example, it is very useful to create dynamic models which will ensure elasticity and enable optimal use of limited resources. Creating a solution that has flexible storage will ensure that the changes business demands will be met despite the data requirements.

Legal and ethical issues – this is a challenge that the retailers should be concerned about since the data and information that is collected through AI might be sensitive. Violating the laws will result in legal challenges and loss of profit.

Finding the right staff – AI requires a qualified team of engineers, analysts and data scientists to create and control the AI project or implemented tools. It is not only expensive to hire these people, but it is also very difficult to find them.

5. Impact of AI in e-commerce

Personalization – the main objective is to train tools on understanding the clients and the content, the next objective is to be able to match them with the help of an algorithm that will guarantee successful outcome (which ranges from buying a product or consuming the content). Modern businesses should be able to predict the requirements of their customers, and offer products that will fulfill these requirements. This can be achieved by personalizing experiences which will affect the revenue of any business. Personalization can be accomplished by using AI technologies to personalize a brand's services, products, offers, messages and content. The business revenue will increase more because the buying process is easier when clients are provided with offers that match what they are looking for and these offers are more likely to reach to people who are most interested in that specific offer. The offers will be based on the client's previous search history, past purchased items/services, browsing preferences, behavior, location, interests and so on. Personalization also helps on providing a good customer experience which is accomplished by responding to the question/request of the client within seconds by imitating humans as much as possible. This makes the customer feel important and increases the chances of them coming again. Since marketing plays a big role on the success of a business, personalization can be a good tool for brand marketing. Brand marketing includes evaluating current marketing strategy, segmenting the audience and making sure that the ads reach to every potential client. AI-based personalization

solutions are the most economically successful use case of artificial intelligence in commercial markets today. As an example we can consider giants such as Amazon and Netflix which were able to generate revenue of billions of dollars thanks to AI personalization platforms. Considering the changing habits of customers, it is important to update and maintain the personalization solutions.

Pricing optimization – optimal prices are the prices that do not increase the business' marginality, do not irritate the customers and do not cut sales of other items in the portfolio. The main goal of price optimization is to understand how clients will react to different pricing strategies and finding the best prices. If we take as an example a big business with thousands of items/services it would be impossible to make fast decisions on prices without the help of AI. Usually, retailers that are important for AI-led price optimization go through several stages. They learn to set optimal prices by stock keeping unit (SKU), then by product portfolio, channel, point of sale and by customer. Optimal pricing at every level subsequently improves profitability. Price optimization can help boost revenue and sales up to 9% and 24.7% respectively [21]. Considering the unpredictable market conditions and the rapid changes on customer behavior, optimal pricing is a factor that affects the revenue of a business. With the help of AI solutions for optimal pricing, the business can answer to ongoing changes and offer trustworthy prices. Using AI in pricing brings several advantages since AI considers different factors such as the customer's behavior, the consumer's preferences and competitors. By using this information, the AI is able to foresee the changes and demands with high precision, and suggests prices for every product based on that information. Pricing optimization will enable retailers to adapt to new changes, and prepare for any future difficulty.

Smart logistic and warehousing – AI is used in supply chain in order to facilitate the process by increasing the efficiency and maximizing the outcome. In recent years, the retailers have started using self-driving vehicles and robotics on logistic. Self-driving vehicles have the capability to deliver more efficiently by shortening the delivery time and reducing costs. Meanwhile, robots can complete more effortless tasks such as storage, picking, packing, routing and delivering the goods. The implementation of AI in logistic can guarantee that the products enter and exit the warehouses in the proper sequence by avoiding insufficient stock or overstocking which allows the business to increase the income. Also, while delivering a product to a client, the AI can help on finding the best and more cost saving route.

Fake review detection – reviews are a vital part of the success of an electronic business since positive reviews attract and stimulate people on purchasing the product/service. Fake review detection is a subfield of natural language processing that aims to analyze deceptive products review on e-business platforms. Deceptive products reviews are fabricated opinions, intentionally written by fraudulent people to seem trustworthy. Customers and e-companies often use online product reviews for procurement and organizational decisions because they include a wealth of knowledge. This knowledge is also a valuable resource for public opinion; it can affect resolutions over a wide spectrum of everyday and professional pursuits. Positive reviews can lead to significant financial gains and improve a company's reputation, while negative reviews can cause financial loss, and defame an e-business. As a result, fraudsters have significant incentives to manipulate an opinion mining system by writing bogus reviews to support or disparage certain products or businesses [22]. AI uses methods that are able to determine unusual text, language and format. The best part is that these methods grow smarter with more

fake reviews. The methods are able to grow smarter because they do not depend on pre-defined words, but instead compare the reviews of the products to the standards of the industry and the competitors.

Automation – automation is defined as the platform that is able to complete tasks independently of a human's instructions. Automation requires an individual to set the parameters, rules and conditions which are run in the background for as long as it is needed. Automation is an important element for both retailers and buyers. It helps retailers by improving sales, marketing and internal processes; and it helps the buyers by offering personalization and a better experience overall.

Real-time product targeting – it is a form of personalization where different segments of customers are targeted with products or services that they might be interested in. This is achieved by analyzing the buyer's actions in real-time and offering personalized products. The difference between personalization and real-time product targeting is that the second one focuses in showing products in multiple places throughout the shopping process, instead of just personalizing the content.

Marketing – in order to make marketing more effective, businesses use technologies that are based on data analysis, data collection and other statements to make automated decisions that will influence marketing efforts. Artificial intelligence based marketing is achieved by considering different elements such as: the data analysis, the natural language processing, automated decision, content and personalization. These elements work together on this way: first there are collected large data from different sources such as programs and campaigns, then there is created a human-like language for customer service bots or content creation. The next step is to predict the best media in order to reach the targeted audience. After targeting the audience, the tools help on deciding which marketing strategy will be used and start creating content based on the strategy. The content might be e-mail subject lines, blogs, videos and more.

6. Conclusion

Electronic business is an important field which facilitates our lives, saves our time, allows us to have access to almost everything from anywhere at any time, and sometimes it even helps us to save money. In fact, electronic business has been present for several years, but most of the people understood its importance during the pandemic.

The necessity to stay inside the houses made people to lean towards electronic business in order to complete their daily tasks, needs and hobbies. Electronic business is enabled by several technologies, where each of them has its own importance and responsibilities.

As explained above, the artificial intelligent is a technology that brings several benefits to any electronic business. Also, the implementation of artificial intelligence has made a drastic change in the field of electronic business by making it more modern, more helpful and easier to use. For this reason, we can conclude that there are no limits in the field of information technology and thanks to different resources and platform we can create several advantages to attract customers, fulfill their needs and ease their daily tasks.

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