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THE IMPLICATIONS OF AI IN E-COMMERCE

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Abstract

This research discusses the implications of Artificial Intelligence “AI” on E-Commerce, the integration of AI in E-commerce has revolutionized the digital marketplace, by improving consumer engagement, efficiency, and personalization through the integration of AI with E-commerce (Andy Pandharikar, Frederik Bussler, 2022, p.42). However, this dynamic collaboration additionally brings with it a host of legal hazards and risks that demand careful consideration (Dave Chaffey, Tanya Hemphill, and David Edmundson-Bird 2019, P.29).

This study explores the core ideas of E-Commerce, clarifying its meaning, importance, legal structure, and regulatory agencies to create a thorough grasp of the E-commerce environment. Similarly, an in-depth analysis of AI is presented, encompassing its definition, diverse applications across fields, and an exploration of the risks inherent in AI operations. By scrutinizing the benefits and risks associated with the application of AI in E-commerce, including emerging technologies like blockchain, smart agent utilization, and other pertinent risks, this study aims to provide a nuanced perspective on the legal implications facing businesses operating at the intersection of AI and E-Commerce.

This research aims to provide light on the intricate legal challenges and prospects for compliance in the ever-changing field of AI-driven E-commerce by using a thorough and academic approach.

Key words: *E-commerce, Artificial Intelligence, Blockchain, Smart Agent, & Emerging technologies.*

INTRODUCTION

The main advantage of globalization is that it promotes the dissemination of technology and information, including investments in human resources, education, and local R&D projects that are crucial to developing the ability to learn and use knowledge effectively (*Steger 2024, P.38*). This necessitates a suitable level of privacy protection as well as respect for intellectual property rights both domestically and globally (*Radi Romansky, Irina Noninska, 2015*).

The emergence of modern digital technology, such as big data, AI and the Internet of Things, has imposed new realities through a set of opportunities and risks that have destabilized existing economies, introduced the concept of the information society to the knowledge and digital economy, and contributed to a qualitative and accelerated shift in shaping a new global political and economic landscape (*Vogelsang 2024, P.52*).

I. THE ESSENCE OF E-COMMERCE

E-commerce has become progressively more popular in recent years. According to recent statistics, 2.71 billion individuals worldwide, or around 33% of the world's population, purchase via E-commerce platforms. Experts predict that the E-commerce sector will increase its valuation from its current \$6 trillion to \$8 trillion by 2027 (*CommerceSellers 2024*).

This chapter elaborates the Definition, the Importance of E-commerce, and Legislations and Authorities regulating E-Commerce on the following.

A) The definition of e-commerce

The World Trade Organization defines E-commerce as the activities of producing, distributing, marketing, selling, or delivering goods and services to the buyer through electronic media (*Buster 2017*).

The OCED defined E-commerce as It encompasses all types of economic transactions, whether written, visual, or audio, that involve businesses or individuals and rely on the electronic exchange of commercial data. It also covers the effects of the method and how much it affects the systems and procedures that regulate and support various business operations (*OECD 2009, P.94*).

Thus, it becomes clear that it is a digital, technical development of traditional trade through a set of economic operations related to the sale or purchase of products, services, and information, concluding contracts, and paying the purchasing value remotely, via various networks, such as the Internet or any local or global network.

B) The importance of e-commerce

Extrapolating the definition of E-commerce, it becomes clear that there are benefits achieved from using E-commerce methods in the field of international trade.

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1. Expansion of the trading area

Traditional commerce needs a tangible market where the customer can go to buy, while electronic commerce transcends the borders of countries and is free from access restrictions¹. It exists everywhere and at all times, where anyone can view the product and buy it.

2. Global standards

These are the standards, through which E-commerce transactions are carried out uniformly among countries of the world, while traditional trade is subject to local standards and standards that differ from one country to another (*Svatosova 2020, P.145*).

In all cases, the application of E-commerce requires the availability of electronic infrastructure, such as the information and communications technology sector, which includes wired and wireless communication networks, communications devices, technical support services, and human capital used in business and E-commerce, in addition to the availability of sectors producing information technology (*Kumar, M Thinesh; Kumar, N.; Sha, S Nazim; Kennedy, E Noble; M Ilankadhir 2024*).

C) LEGISLATIONS AND AUTHORITIES REGULATING E-COMMERCE

This Part sheds light on the role of the WTO, UNCITRAL, OECD, Federal Trade Commission, and the League of Arab States' Economic Unity Council on the following:

1. World trade organization

The World Trade Organization is considered one of the most important international economic organizations due to the number of countries joining it and the areas it covers, as well as the results that result from it. In furtherance of achieving the role assigned to the organization in terms of digital transformation or applying competitiveness, there are two types of World Trade Organization agreements:

First, the Agreement on Liberalization of Trade in Services (GATS): This agreement subjected service activities to an international agreement for the first time in history. The signatory countries committed to the agreement on April 15, 1994 in Marrakesh to achieve complete liberalization of the aforementioned services (*GATS 1995*).

Second: TRIPS agreement: TRIPS agreement sets out the minimal requirements for WTO member countries' commerce in terms of protecting intellectual property. It addresses topics such as industrial designs, patents, trademarks, and copyright. In order to promote trade and investment, it seeks to

¹ Mustafa Seref Akin, Enhancing E-commerce competitiveness: A comprehensive analysis of customer experiences and strategies in the Turkish market, *Journal of Open Innovation: Technology, Market, and Complexity*, 2024.

guarantee that intellectual property rights are upheld and safeguarded internationally (*TRIPS 1994*).

2. Uncitral rules

The objective of UNCITRAL, a legal organization housed inside the UN system, is to further the unification and harmonization of international trade law. In order to handle several facets of international trade, including commercial arbitration, electronic commerce, and cross-border transactions, UNCITRAL creates model laws and legal instruments (*UNCITRAL 1996-2001-2017-2019*).

In 1996, the rules guaranteed equal treatment between electronic and paper information and legal recognition of electronic transactions and operations, based on the basic principles of non-discrimination against the use of electronic means, functional parity, and technological neutrality. In 2001, additional rules were stipulated regarding the use of electronic signatures. In 2005, the United Nations Convention on the Use of Electronic Communications in International Contracts was based on UNCITRAL texts to constitute the first treaty guaranteeing legal certainty for electronic contracting in international trade.

In 2005, the United Nations Convention on the Use of Electronic Communications in International Contracts was based on UNCITRAL texts to constitute the first treaty guaranteeing legal certainty for electronic contracting in international trade. It adopted electronic transferable records in 2017, which apply the same principles to enable and facilitate the use of electronic forms of transferable documents and instruments, such as bills of lading, checks, promissory notes, and warehouse receipts. In 2019, the UNCITRAL Rules agreed to publish notes on key issues related to cloud computing contracts while continuing its work on developing a new instrument on the cross-border use, trust, and recognition of identity management services.

3. The organization for economic co-operation and development guidelines:

The objective of the OECD is to support countries to develop laws that encourage confidence and trust in online transactions. On a variety of E-commerce-related topics, such as consumer protection, digital security, cross-border data flows, and regulatory frameworks, the OECD publishes reports, research, and policy recommendations. It has created standards and principles for data protection and privacy in the digital economy, highlighting the significance of fair dispute resolution procedures, effective enforcement of consumer rights in digital transactions, and clear and transparent information for online consumers.

4. The federal trade commission

(FTC) is a prominent regulatory body in the United States, which oversees E-commerce practices. Its mission is to protect consumers from deceptive and unfair business practices, and the Commission actively investigates allegations of false advertising, privacy violations, and anticompetitive behavior (*FTC 1914*).

5. The league of Arab states' economic unity council

Arab countries are no less interested in E-commerce than other countries, and this is clearly evident through the Economic Unity Council of the League of Arab States, as well as the draft Arab laws that attempted to give definitions, as well as the role of the E-Commerce.

In general, E-commerce laws vary greatly from one country to another, between consumer protection laws, data privacy security, and intellectual property protection. For example, the Children's Online Privacy Protection Act protects children's online privacy in the United States of America (*COPPA 2018*), and the General Data Protection Regulation (GDPR) governs data protection and privacy in the European Union (*GDPR 2018*).

II. AI EVOLUTION: ECOMMERCE INNOVATION BY SMART AGENTS AND BLOCKCHAIN

As a consequence of the Internet of Things, the digital revolution, and technical advancements, AI has become a part of everyday life. This part provides an explanation of AI's definition, characteristics, and areas of its application. Following that, heading into great depth, the role of the smart agent and blockchain supported by AI in E-commerce operations

A) The Essence Of AI

1. Definition of AI

There are various definitions of AI, The World Intellectual Property Organization defines it as a field within computer science that aims to create machines and systems that can perform tasks that require human intelligence, either with minimal or no human intervention (*WIPO 2022*).

AI can be described as a collection of gadgets, programs, and algorithms that replicate human behavior and reactions (*Chowdhary 2020, P.52*). Based on automated self-learning in analyzing data, allowing such to learn from experience, generate conclusions, identify patterns, comprehend language, and use visual perception to make predictions or suggestions, or make choices to solve issues with a high degree of precision and a low mistake rate, much like human intelligence.

2. Main Characteristics of AI

From the Definition, it is clear that AI contains of two main characteristics:

2.1. The Machine's ability to simulate the cognitive function of humans

The primary goal of deploying AI is to perform human cognitive functions by carrying out tasks that people typically complete accurately and proficiently, regardless of whether humans have mastered or learned these tasks beforehand.

While the initial focus of AI research was on simulating human intelligence, efforts have since evolved to create autonomous systems that can

rival human intelligence and consciousness. These systems allow machines to use their inherent abilities, which are programmed into them, along with library skills, to solve some complex problems, which is challenging for humans to solve easily (*Daudet 2024, P.71*).

2.2. The Ability of Prediction, Forecasting, Automatic Thinking, and Machine Learning:

Without the need for human intervention, it can learn from and adapt to its environment by gathering, analyzing, and linking data and information. This helps to disseminate a greater amount of infinite data that is unavailable to humans and, in doing so, contributes to the quick solution of problems and provision of alternatives.

3. Areas of AI Application

Artificial intelligence is being utilized in many different sectors. The most significant of these fields are presented the following:

3.1. Biometric Identity Verification

AI systems can analyze and compare user biometric data, such as fingerprints, iris, and voice, with high accuracy and speed to ensure the authenticity of identity. It can also be used to prevent unauthorized access to systems and data, such as recognizing faces when entering the door of a house.

3.2. Detecting targeted Cyberattacks

AI technologies can monitor data traffic patterns and analyze unusual behavior in the network. Artificial intelligence systems are also trained to identify common features between known attacks and infer from this the presence of potential attacks earlier in a more intelligent and effective way and take measures to address them before they occur. Investing in developing and adopting these technologies is a crucial step towards building a regulatory environment on the Internet (*Huseyin Ahmetoglu and Resul Das 2022*).

3.3. Behavior and Predictive Analysis

The ability of AI to analyze the behavior of users and systems using machine learning and intelligent data analysis is an essential part of security strategies that aim to enhance cyber protection and prevent cyberattacks before they occur. An AI system, for instance, can keep an eye on users inside a particular system, recording any efforts by users to get illegal access or transmit unusual amounts of data, and gather information about possible attacks. The same objective is also assisted by predictive analytics, which monitors and analyzes large data to support decision-making and the application of security measures based on successful prevention and prediction (*Mohamed Chawki and Mohamed Saeed 2024, P.151*).

3.4. Smart Encryption

Astute AI encryption methods aid in preventing unwanted access to sensitive personal data. These tools should get more sophisticated and effective as

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technology advances, improving security services' capacity to stop these crimes and uphold digital security.

B) The Role of the Smart Agent and Blockchain supported by AI in E-commerce operations

The effects of AI technologies have extended to more than one sector, the most important of which is the e-commerce sector, because it represents the mainstay of the success of their companies and businesses, starting from predicting customer behavior all the way to reducing the data entry process, following consumer patterns, and raising product efficiency, which makes AI became indispensable in business life in an unprecedented way.

The unprecedented scientific and technological development has led to the introduction of modern means of contracting, which have contributed greatly to the development of traditional contracting methods, replacing them with modern technologies. This part discusses two of the most important types of modern contracting methods, namely smart agent technology and blockchain technology.

1. The Role of the Smart Agent supported by AI in E-commerce operations

This part explains the definition of a smart agent, its characteristics, and the role in concluding smart contracts.

1.1. Definition of Smart Agent

In the general rules of law, agency means a contract according to which the agent is obligated to perform legal work on behalf of the principal, and the agent is obligated to implement the agency without exceeding its stated limits. However, the agent may deviate from the limits of the agency if it is impossible for him to notify the principal in advance and the circumstances make it likely that the principal would only have agreed to this behavior. The agent shall then inform him of that action, and therefore it becomes clear that agency in its traditional sense depends on the client's trust in the agent and his well-known knowledge of the agent.

Nevertheless, as technology has advanced, civil and business transactions have moved from the real world to the virtual one. This is due to the vast information network found in the Internet of Things and the electronic cloud, as well as the enormous and never-ending supply of electronic goods and services. The rise of the smart agent can be attributed to the practice of many computer program designers developing a software mechanism that makes goods and services more accessible by allowing network users to authorize transactions and other commercial actions in a simple and convenient manner.

The Smart Agent can be defined as a combination of information technology and artificial intelligence programs that operate automatically, independently, without human control, and are used to take an action or respond, in whole or in part, to data messages, tasks, or actions on behalf of their user. In doing so, it shows a great degree of flexibility, learning, adaptation, communication, and interaction with its user and the environment in which he is

present. The smart agent assigned to a specific task by its user, such as purchasing a commodity or obtaining a specific service, navigates the Internet to find the required commodity or service after negotiating its price, researching its conditions, and comparing it to similar goods and services offered digitally (Algabri 2023, P.42-47).

1.2. Main Characteristics of Smart Agent

It is clear from the previous definitions that a Smart agent has several characteristics that make it very close to the role of a natural agent (Salama 2024, P. 2517.).

1.2.1 The Independence of the Smart agent in making decisions from its user and from other agents

The normal situation for any technology or computer program is that its outputs are determined according to its inputs. This is in contrast to the situation with the smart agent, where it is provided by its user with some data related to the tasks he wants to carry out, but it does not remain constant. The smart agent changes it and builds on it. He renews it every time he deals with a consumer or another agent, so that he can benefit from his expertise and practical experience. It is clear from this that the smart agent has control over its inputs, actions, and outputs, according to the data it obtained from its user, or collected about the requested good or service, or from those dealing with it, and this is what distinguishes it from other software and traditional search engines.

1.2.2. The Ability to take initiative and react

The agent is able to modify his behavior and interact with his environment the smart agent does not limit his work to the user's supervision and guidance, but rather takes the initiative and changes his reactions to achieve his goal whenever the environmental conditions in which he works are appropriate.

1.3. Smart Agent's role in concluding smart contracts

A smart agent can enter into contracts and acts on behalf of the buyer or the seller (Brahim Bouhental and Fahima Guessouri 2024, P.412-417).

1.3.1. The ability of the smart agent to conclude contracts and actions on behalf of the buyer

First, the smart agent plays an important role in identifying and searching for the buyer's needs through the data he enters on websites. Then the smart agent collects information and data about the requested good or service and classifies them into lists, comparing all the goods and services offered in terms of price and quality, while recommending to the buyer to buy a specific type, stating the reason for him, and negotiating their prices and contracting terms through previous experiences and acquired expertise. The smart agent can also pay the agreed-upon price using the consumer's credit card, the data of which he previously provided to the smart agent he uses.

1.3.2. The ability of the smart agent to conclude contracts and actions on behalf of the seller

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On the other hand, thanks to blockchain technologies, sellers can know all the information and data about the consumer or other merchants, as the technology helps the seller by collecting consumer data, their consumer and purchasing tendencies, and their preferred services. So that the seller can easily target these people with new goods and services that are consistent with his inclinations, to entice him to buy, conclude contracts, deliver the products, collect the price, provide after-sales service information, and evaluate the selling experience conducted by the buyer. This technology is considered better for the seller and easier than using it for any other marketing method, which provides the required goods or services very quickly and with high accuracy, better than traditional search engines.

2. The Role of Blockchains supported by AI in E-commerce operations

This part discusses the essence of Blockchain and its most important characteristics.

2.1. The Essence of Blockchain

The tremendous development in the field of the Internet has led to the emergence of blockchain technology, through which information can be exchanged and contracts can be concluded with a system of higher security and privacy. It is also characterized by autonomy from its users, especially in sales, supply, and insurance operations.

It is defined as an open-source, decentralized database that relies on mathematical equations and cryptography to record any transaction, deal, or information, such as cash transactions, the transportation of goods, or general information (*Ssumita Ruj, SALIL Kanhere, and Mario Conti 2024, P.33*). It is clear from this definition that blockchain technology is a platform that embodies the largest distributed digital record, open to everyone, through which the largest amount of transactions can be stored in a decentralized ledger or database. It is characterized by being an impenetrable platform and not subject to modification, change, or distortion in any way. Once the transaction is completed, it cannot be changed or reversed, which achieves the highest degree of security.

Commercial contractual relationships are easily documented through this technology. For example, the first person's possession of the item sold is documented and verified by reviewing the book of contracts previously registered in the blockchain. It is also verified that the second party owns the required monetary value of the item sold, in the event of a contractual agreement. In the transaction, ownership is transferred from the first party to the second party and is documented in a constantly updated contract book. Therefore, this technology replaces traditional intermediaries, such as banks in the framework of money transfer operations, or the Real Estate Registry Department in registering properties, and the brokerage shop in sales and rental operations (*Horiachko 2023*).

2.2. Main Characteristics of Blockchain

Contracts and legal transactions concluded via blockchain technology are characterized by several characteristics, the most important of which are:

2.2.1 Technology that cannot be changed, modified or distorted

One of the most important characteristics of blockchain technology is that the data recorded in it cannot be deleted, modified, or distorted, which brings many benefits during the registration processes, transfer of ownership, and concluding smart contracts. In fact, despite the benefits provided, this feature can be criticized as this stagnation in modifying data has a negative impact, especially in the case of an error in transmission or documentation, as it is not possible to modify what was done regarding it.

2.2.2 The Decentralized nature of the technology

Blockchain technology does not depend on a centralized system in the process of storing, auditing, and processing data. This means that the data that is stored in it will not be with the state agencies, but rather will be present in a data book, a copy of which is available to all citizens, which makes tampering with the data in this platform almost impossible, which makes it difficult to lose, hack, or modify this data, which has a high degree of transparency and privacy (*Javad Zarrin, Hao Wen Phang, Lakshmi Babu Saheer & Bahram Zarrin 2021, P. 2851-2853*).

This feature can be criticized because, in light of the tremendous technological development, governments' fears of losing control over it increase.

2.2.3 An Efficient Technology

Blockchain technology has a high speed in transferring data compared to other current systems. It is also low in cost and works to reduce the movement of consumers to complete their tasks, which helps reduce the costs required to complete transactions using traditional methods.

2.3.4. An Independent Technology

Blockchain consists of a group of centers. Each center is considered independent from the other, unaffected by it, and even equal to it, which achieves parity. This feature can be criticized because this independence would make it difficult to control this technology from one party if necessary (*Basher 2021, P. 28*).

III. BEYOND AUTOMATION: UNPACKING AI'S IMPACT AND RISKS ON E-COMMERCE

AI plays a significant role in how e-commerce businesses draw in and keep customers by offering unique online shopping experiences that offer a number of benefits, such as voice and visual search capabilities and the ability to use chatbots to facilitate customer interaction and determine his requirements; however, there are further dangers for it.

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This part discusses How AI is used in e-commerce, then elaborates and analyzes the basic risks and challenges caused by the use of artificial intelligence in e-commerce in detail as follows:

A) How AI is used in E-commerce

This section delves into detail on each of the various uses of AI in e-commerce, including marketing, content creation, customer behavior analysis and prediction, and dynamic pricing.

1. Analyzing and Predicting User behavior:

For e-commerce businesses, analyzing users purchasing behavior is essential. By utilizing AI, more information about potential customers can be obtained, as the technology analyzes customers' browsing patterns and learns about the kinds of products they are interested in, what they have previously purchased, and how long they spend on those pages, enabling the prediction of their future preferences (*Andik Riwayat 2024, P.151-155*).

2. Marketing and Advertising purposes:

E-commerce companies employ AI to market their products. The ideal time to advertise as well as the best digital channel such as an email, social media post, or message on a mobile device for every prospective client are decided by the AI algorithms (*Grzegorz Chodak 2024, P.217-224*).

Additionally, chatbots can respond to inquiries about the product at any time and outside of designated working hours, which lessens the workload for businesses in terms of easily communicating with clients by offering a digital experience and unique content accompanied by photographs of the most appealing marketing materials, making recommendations, and lessening dependency on employees.

3. Dynamic Pricing:

The automation of price modifications is known as dynamic pricing. It entails periodically optimizing product prices using data-driven algorithms based on competition, supply and demand patterns, real-time customer behavior, and merchant feedback. With the help of artificial intelligence, dynamic pricing forecasts the best times to discount goods and calculates the appropriate price drop required to boost sales (*Yaşar 2024, P.42*).

This eliminates the need for human input and guarantees competitive pricing for businesses.

B) The Challenges of implementing AI in E-commerce

AI systems involve various risks, and this part clarifies both the general risks of using AI systems in e-commerce and elaborates the AI risk management in accordance with the AI Law regarding the use of AI systems in e-commerce in detail as follows:

1) General Risks

The effects of AI on e-commerce are felt in a number of legal domains, thus it is important to examine critically at the implications:

1.1. The Manipulation

AI systems aim to influence the user's decision-making. As algorithms advance, it is simpler to trick users by withholding particular information from them or giving it to them at a certain moment. As a result, manipulation might promote impulsive purchasing, sell more things, or offer certain products. Customers' weaknesses are targeted through manipulation, which has a number of negative effects, including financial harm from forcing them to purchase products they weren't really drawn to. Additionally, it may undermine people's autonomy by interfering with their freedom to make choices about themselves (*Jon Pinney and Kyle Stroup 2020*).

1.2. Discriminations

There is no doubt that AI is not absolutely perfect, but it also has many flaws, and an error in the algorithms may easily lead to discrimination.

The use of AI in e-commerce raises concerns about potential errors that might expose users to prejudice due to inferences and analyses drawn from big data and their metadata, which includes information on their age, gender, complexion, and other characteristics. E-commerce is a sector where discrimination can occur and customers can receive distinct search outcomes on websites depending on which ethnic group is present in a certain location with a given zip code. Naturally, in this example, due to the zip code, there was discrimination or algorithmic prejudice in this case. Not based on race (*Yaşar 2024, P.44*).

Companies may use AI algorithms to deliberately differentiate the prices of certain goods in e-commerce. The huger data companies have about user, including IP addresses and user cookies, and the amount of money they recently paid to purchase products, the easier it will be to determine the highest price for certain users. However, it could have negative economic consequences for some customers.

1.3. Impact on Legal Concepts

Since AI automates operations that people have completed before, it raises concerns about how current legal frameworks, such as those pertaining to contract law, intellectual property rights, and consumer protection, apply to AI-driven e-commerce practices. AI-powered technologies, such as chatbots and recommendation engines, must comply with consumer protection laws to prevent misleading advertising and ensure fair practices and uphold consumer rights. E-commerce companies shall adhere to competition laws to prevent price fixing, market manipulation, or gaining an unfair advantage through AI technologies.

1.4. Privacy Concerns

AI algorithms depend on collecting and analyzing huge amounts of sensitive personal data about users, in order to make predictions and make decisions, so e-commerce companies must ensure transparency in collecting,

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using and storing data, and implement security measures to protect them from any information leakage or data breach.

To ensure transparency, e-commerce companies must also be able to explain how artificial intelligence algorithms reach the recommendations or decisions they issue, especially in cases where they affect consumer choices or prices.

Compliance with personal data protection laws must also be ensured, as privacy laws provide many rights to users such as the right to rectification, the right to erasure, and the right to restrict processing. For e-commerce, there will be concerns about the reality of exercising those rights, for example whether the correction Effective or not, and whether the data has actually been deleted or not (*Moschovitis 2021, P.237*).

1.5. Cybersecurity Concerns

The Cyber space has many risks, and therefore applications of AI in e-commerce may witness many cyber threats, in addition to the possibility of algorithm bias leading to various discriminatory results. Therefore, cyber security measures shall be maintained in compliance with agreements that guarantee the protection of sensitive information, reduce the risk of algorithmic bias, and provide fair treatment to all users.

1.6. Cross-Border and Accountability Challenges

E-commerce operations often cross-national borders, requiring compliance with diverse legal frameworks across different jurisdictions. As AI systems make their decisions independently, assigning liability for errors or misconduct becomes difficult, so e-commerce companies shall be prepared to address legal challenges through dispute resolution mechanisms, compliance audits, and cooperation with regulatory authorities to mitigate risks. Legal effectively.

2) AI Act Risk Management:

Regarding the employment of AI systems in E-commerce

The dangers associated with "AI systems" are categorized by the AI Act, thus it's critical to understand the functions of e-commerce businesses in order to determine how the Act may impact them. Because companies will be considered service providers if they create their own AI systems. But They will be regarded as publishers if they only employ AI systems created by other entities.

2.1 Unacceptable AI System Risks

The law stipulates the necessity of prohibiting any AI systems that would carry out any form of discrimination, or any illegal activities that would assist in committing any cybercrime, or any systems that would help achieve illegal surveillance or violate the users' personal rights in any way.

The prohibited practices that are likely to occur in e-commerce are risks related to manipulation and discrimination, which are represented by the use of subliminal techniques, or the exploitation of the weaknesses of vulnerable groups, which we will explain in detail in the following:

2.1.1. Subliminal Techniques

It refers to technologies that cannot be perceived or controlled, which affect independence and decision-making ability (*Cohen 2023*).

The AI Act stipulates the prohibition of any artificial intelligence system that deploys subliminal techniques in a digital service, enabling it to intentionally manipulate or deceive the user, weakening his ability to make an informed decision and causing significant harm (*AI-Act 2024*).

It is clear now that AI algorithms have the ability to mislead users in e-commerce through a variety of means. For example, they may conceal information regarding a particular product, create a false countdown to a discount, or use deceptive language.

The researcher believes that the act has excluded other cases that represent a high risk because it requires that the technologies be subliminal, as some subliminal technologies that customers can perceive may also cause significant harm, such as sending timed advertisements to customers when they are most likely to buy a particular product. It is also clear that the act stipulates that the technology causes significant harm, and this may cause difficulty in knowing or measuring the extent of the significant harm, as it is important that the harm be evaluated according to a case-by-case scenario.

2.1.2. Exploitation of the weaknesses of Vulnerable groups

The Act prohibits the use of an AI system that intentionally or unintentionally distorts or exploits the vulnerabilities of certain vulnerable groups, such as children, persons with disabilities, or in a specific social or economic situation. E-commerce companies may seek to exploit these groups. If they are able to develop technologies that claim not to sell products to children, it may be easy, through big data analysis, to exploit the weaknesses of customers who suffer from certain addictions.

2.2. High AI System Risk

The Act stipulates that any high-risk system that could endanger human safety or fundamental liberties, like self-driving cars, shall be implemented and adhere to a number of standards pertaining to cybersecurity, transparency, record-keeping, risk, and data management systems, among other stringent protocols. According to the act, the risks of e-commerce activities do not fall into this category because the act defines high-risk activities exclusively.

However, the researcher believes there might be significant hazards associated with e-commerce as well. Since the main goal of AI is to make people's lives easier, then the main goal for e-commerce companies ought to be to maximize profits. Therefore, even if it violates a user's fundamental rights, it is only natural for companies to ensure that the AI algorithms which gather and analyze massive amounts of data achieve the objective of profit over any other goal.

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Furthermore, not every e-commerce platform may offer a human control tool for decisions made by AI or when interacting with particular groups (*Takyar 2024*).

2.3. Limited AI System Risk

It is a type of AI system as it may be subject to a very limited risk, and the law may set some requirements for it, but they are not proportionate to the risk as risks. The most prominent examples are virtual assistants such as Siri from Apple, Google Assistant, Alexa from Amazon, and others.

Section 50 of the Artificial Intelligence Act sets out transparency obligations. The obligations that e-commerce companies must adhere to vary depending on whether they develop their own AI systems or use AI systems developed by third parties.

Since the AI system "is intended to interact directly with natural persons," as the e-commerce company is a service provider, then the service provider must disclose that the product is an AI system, unless it is obvious.

E-commerce companies need to make sure that consumers are aware that they are dealing with AI when they employ chatbots that they have designed themselves. Although the publishers, e-commerce enterprises are not required to notify natural people if they utilize a system created by third parties.

2.4. Minimal / No-Risk AI Systems

E-commerce companies need to make sure that consumers are aware that they are dealing with AI when they employ chatbots that they have designed themselves. As the publishers, e-commerce enterprises are not required to notify natural people if they utilize a system created by third parties. Although it may be expected that e-commerce businesses won't adhere to non-mandatory regulations since doing so would put a significant financial or resource strain on them, however, there is no denying that following these regulations gives them a greater reputation than other businesses.

CONCLUSION

The integration of AI applications with machines and modern technology has led to a qualitative shift in the field of electronic commerce, from smart search, voice and visual search, through chatbots and automated description of products, all the way to targeted advertisements, warehouse mechanisms, and fast shipping, which have made the online purchasing experience easy. Which helped e-commerce companies analyze customer behavior and predict their decisions, but it had a set of risks that included easy manipulation of customers, discrimination, and risks related to privacy and cybersecurity, transparency, human control, and accountability.

The AI act guarantees some of the prohibited practices, including subliminal techniques, or if the techniques result in significant harm, or if the weaknesses of Vulnerable groups are exploited. However, the researcher believes

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that some subliminal techniques may cause significant harm as well, which enables artificial intelligence algorithms to exploit points of the weakness of Vulnerable groups that are addicted to a certain thing is that it is difficult to measure the major damage, and it is first that the damage be evaluated according to each case and the extent of the seriousness of the damage in each case.

The researcher believes that attention must be paid to the infrastructure that supports digital transformation, eradicating digital literacy, encouraging export activity, standardizing measurement and quality, and supporting the role of trade and professional unions. Many partnerships need to be established with international organizations, engaging in international electronic markets, and supporting international cooperation in this regard. Many binding international agreements must be made to ensure the protection of users' privacy and protect against contemporary cyber threats.

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