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Legal Liability Arising from Artificial Intelligence Activities

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Abstract

Criminal liability concept has become widespread in light of the increasing use of artificial intelligence technologies all life aspects and it is within a wide scope that requires urgent legislative intervention. With this use of artificial intelligence, many artificial intelligence crimes have emerged in all areas of artificial intelligence in addition to problems in determining criminal liability. This study aimed to investigate artificial intelligence characteristics, clarify the legal responsibility resulting from the actions of artificial intelligence and to determine the penalty resulting from artificial intelligence actions. Results indicated that the legal responsibility resulting from the artificial intelligence actions, which has emerged at the present time after the expansion of the use of these technologies in all sectors of life is inseparable from the responsibility of the innovator, part of the factory, or all of the responsibility of each individual. Intervention in all areas of work through artificial intelligence. The study recommended with the necessity of establishing mechanisms to monitor the work that falls within artificial intelligence techniques by specialists for the purpose of avoiding technical errors that affect the safety of users of artificial intelligence technique.

Keywords: *Artificial Intelligence, Criminal Liability, Civil Liability, Robot.*

Introduction

Artificial intelligence activities involve multiple parties including manufacturers, programmers, owners, and users, and may also connect with other external parties. Any of these entities could commit crimes resulting from or caused by artificial intelligence activities. These crimes could be intentional, due to an action or failure to act, or could stem from negligence. This situation thus assigns criminal responsibility for any resultant crimes to any party according to their fault in the matter. We conclude that crimes arising from artificial intelligence activities can either be due to actions by the user, which may be either intentional or accidental, actions by the manufacturer or programmer, which could be intentional or due to defects or negligence in ensuring safety and caution in manufacturing and programming the entity, or actions by an external party. Moreover, the use of artificial intelligence software in various fields of life raises numerous challenges, especially concerning legal responsibility for these programs and the adequacy of current legislation to accommodate the unique characteristics of these technologies.

Liability is the legal basis upon which criminal responsibility is assigned to a particular person; therefore, specific elements must be present. These include the existence of a legal statute (defining the crime), the commission of one or several material acts, and the mental state by a person liable, along with the moral element necessary for committing a crime through artificial intelligence and its punishment in most criminal systems, as well as the mental element that motivates the person to commit the crime.

Problem of the Study

The main issue of the study lies in the absence of legislative regulation on the topic within many legal systems, even among countries that have enacted specific regulations for smart robots. These regulations often only encompass a code of ethics for robots, neglecting broader legislative organizations covering the legal liability for artificial intelligence activities.

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Questions of the Study

- What are the characteristics of artificial intelligence?
- What are the advantages of artificial intelligence technologies?
- What legal responsibilities arise from the activities of artificial intelligence?
- What are the penalties associated with the activities of artificial intelligence?

Study Objectives

- To outline the characteristics of artificial intelligence.
- To highlight the advantages of artificial intelligence technologies.
- To discuss the legal responsibilities associated with the activities of artificial intelligence.
- To elucidate the penalties arising from the activities of artificial intelligence.

Study Methodology

In this study, we relied on the following methodologies: the descriptive approach through selecting legal texts related to the study topic, the analytical approach based on analyzing the legal texts that regulate the subject of the study, and the comparative approach when the study necessitates examining the laws regulating the study topic. This involves identifying similarities and differences among them to ensure the best possible results and experiences are achieved.

Section One: The Legal Nature of Artificial Intelligence

Artificial intelligence has become a tangible reality, especially with the advent of AI technologies such as self-driving cars that roam many streets in European and Arab countries without a human element, smart robots that mimic human behavior combining the strength of machines and human intelligence, drones that fly unmanned, among others. As a result, AI has penetrated all sectors and fields, including industry, commerce, medicine, education, transportation, and justice. Despite its significant benefits, no matter how accurate or advanced it becomes, it is conceivable that errors resulting from AI activities could occur, potentially leading to crimes stemming from these activities. In the future, AI could potentially reach a high level of capabilities, enabling it to autonomously make decisions to perform retaliatory or aggressive actions. Furthermore, programmers, manufacturers, owners, or users may commit crimes through AI entities. This necessitates exploring the appropriate legal framework to address these circumstances.

The criminal responsibility arising from AI activities, which has a legal effect recognized by law, requires the perpetrator to bear the consequences as determined by criminal rules[1].

Based on the above, we will explain in the first section, divided into two parts, the essence of artificial intelligence in the first part, and in the second part: the legal basis for the application of artificial intelligence.

First Part: The Nature of Artificial Intelligence

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Artificial intelligence is a field within computer science dedicated to solving cognitive problems typically associated with human intelligence, such as learning, creativity, and image recognition. Modern institutions gather large amounts of data from various sources such as smart sensors, content created by humans, monitoring tools, and system logs. Artificial intelligence aims to create self-learning systems that derive meanings from this data[2]. Furthermore, artificial intelligence can apply knowledge to solve new problems in ways that resemble human problem-solving. AI technology can also respond meaningfully to human conversations, generate original images and texts, and make decisions based on real-time data inputs. Organizations can integrate AI capabilities into their applications to enhance business operations, customer experiences, and the speed of innovation[3].

The First Subsection: The Concept of Artificial Intelligence

Artificial intelligence (AI) is considered one of the most significant technological advancements of our time and holds a prominent position in the modern era. Despite its numerous benefits, reliance on AI for all activities by management, which leads to legal consequences, can be risky due to potential errors that may arise from AI operations. Such errors can harm stakeholders, necessitating the search for a legal framework that aligns with these new data and considering the legal liability resulting from AI errors from a new perspective that matches the astonishing technological development across all fields. Ultimately, someone may be responsible for operating these systems, whether in organizations, factories, or various other fields, and errors in operating these systems may lead to crimes that necessitate criminal and civil liability.

The use of AI software across various fields introduces numerous challenges, particularly.

concerning legal responsibility for the actions of these programs. The current and traditional laws, such as criminal law, are often inadequate in accommodating the unique characteristics of AI programs. Civil law, which establishes contractual, tortious, and presumptive liability, faces challenges with AI, or future issues may arise, especially as AI technology develops and is used more widely. Thus, the objective is to codify the circumstances of AI-related crimes to determine who is responsible for such crimes and to enforce the appropriate sanctions.

Artificial intelligence is defined as a branch of computer science aimed at creating systems capable of performing tasks that typically require human intelligence, such as perception, reasoning, learning, and decision-making. AI includes the development of algorithms and computer programs capable of analyzing data, learning from it, and making predictions or decisions based on this analysis. AI can be classified into several subfields such as machine learning, natural language processing, robotics, and computing. Therefore, the concept of artificial intelligence will gain significant importance globally.

We have concluded that the concept of artificial intelligence refers to the simulation of human intelligence processes by specialized systems like computer systems. AI is characterized by the ability to think and learn through analyzing large amounts of data. AI can be used to automate tasks, make predictions, or identify patterns that humans may not be able to detect. AI is utilized in a wide range of applications from virtual personal assistants and chatbots to autonomous vehicles and medical diagnostic systems; hence, the future of AI is promising and opens new horizons. Therefore, this article presents a study on artificial intelligence.

The Second Subsection: The Importance of Artificial Intelligence

Artificial intelligence is one of the most significant modern technologies that notably contributes to rapid technological advancement, enhancing opportunities for innovation and growth across various fields. AI plays a crucial role in improving quality, increasing capabilities, and enhancing the efficiency of business operations and productivity. Despite the widespread dissemination of AI technologies and much discussion about their capabilities, they are still shrouded in mystery or exaggeration, which may raise expectations to an unrealistic level.

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This situation makes understanding AI, its technologies, and the reality of its capabilities unclear for many decision-makers and executives in both the public and private sectors.

The Importance of Artificial Intelligence in the Medical Field: The healthcare sector is rapidly evolving, accompanied by a significant increase in data volume and challenges related to costs and patient outcomes. Thus, artificial intelligence applications have been utilized to mitigate these challenges. Below are key examples of AI's role in this field:

Predicting Intensive Care Unit Transfers: Unplanned transfers to intensive care units can lead to poor outcomes, and sometimes patient deaths. AI has been employed to reduce the frequency of these cases by identifying patients at severe risk. AI systems use patient medical records, laboratory results, and vital signs to anticipate the deterioration of a patient's condition before it necessitates an urgent transfer to intensive care. AI can also guide physicians on when to start treatment.

Medical Screening: Conducting unnecessary routine laboratory tests can lead to unnecessary financial costs. Therefore, AI applications have been used to narrow down the range of laboratory tests a patient might need.

The Importance of Artificial Intelligence in Business: AI enhances business capabilities across various fields, giving companies the ability to unlock all their potential and elevate to the highest levels. It increases the efficiency of business operations and the speed of their execution, enhances their value, and contributes to continuous business development. AI also increases the number of stakeholders engaging with businesses, due to the continuous improvement of the related tools and software[6].

The Importance of Artificial Intelligence in Daily Life: The use of artificial intelligence applications represents a significant revolution in the automotive industry. For example, Google's self-driving car program utilizes AI technologies. Similarly, AI is used by logistics and transportation companies like Uber,

This is to reduce the rate of accidents and alleviate traffic congestion. Additionally, artificial intelligence applications are used in e-commerce platforms[7].

Second Part: The Legal Basis for Artificial Intelligence Applications

With the growing interest in utilizing artificial intelligence technologies in the legal sector, attention must be given to the legal issues related to the consequences of its use in general. AI activities can benefit the legal profession, but care must be taken in how they are implemented. Modern technology should have a positive impact on the legal sector as it provides information quickly and efficiently, but it will not completely replace judges and lawyers since some sensitive and important decisions can only be made by humans. New technologies will create a range of unusual legal issues in industries and commerce, particularly in critical sectors like transportation and medicine, due to the absence of legal texts that regulate the use of these technologies. Among the most crucial issues is establishing legal liability for damages caused by artificial intelligence and the difficulty in determining the appropriate legal basis.

Legislators are warned of the necessity to prepare a detailed legislative infrastructure and the need to equip legal experts in this field, as we need individuals capable of understanding a rapidly evolving society. There is also a pressing need to study the enactment of a law regulating artificial intelligence in Jordan, which would specify the provisions of legal liability arising from conducting business (of all types) through artificial intelligence means.

Section Two: Forms of Legal Liability for Artificial Intelligence Acts

Civil liability takes two forms: contractual liability, which arises from a breach of a contractual obligation, and tort liability, which arises from a breach of duties imposed by law[8]. Therefore, we will clarify the nature

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of civil liability arising from artificial intelligence technologies by dividing this section into two parts as follows:

First Part: Civil Liability Resulting from Artificial Intelligence Activities

First Subsection: Contractual Liability Arising from Artificial Intelligence Technologies

In Jordanian legislation, contractual liability is the consequence of failing to fulfill obligations arising from a contract, either by non-performance or delay in performance. This liability only arises when specific performance becomes impossible, and it is not feasible to compel the debtor to fulfill their contractual obligations specifically. In such cases, the debtor is responsible for any damages caused to the creditor because of not meeting the contractual obligations.

Additionally, the foundation of civil liability in Jordanian law is based on damage, not fault, which is contrary to other Arab laws such as Egyptian, Algerian, and Moroccan law. For instance, Egyptian law assumes fault to establish civil liability for harmful acts. However, influenced by Hanafi jurisprudence, Jordanian legislation establishes damage, not fault, as the basis for civil liability. Article 256 of the Jordanian Civil Law states, "Any harm to others obligates the perpetrator to compensate, even if they are not competent." If damage occurs to a user of an artificial intelligence system, which was used based on a valid contractual relationship due to a contractual fault on the part of the other party, then contractual liability is established against the responsible party.

The Jordanian legislator has not enacted a specific law related to artificial intelligence activities nor has it designated special provisions to regulate the liability arising from AI-related damages. The legal regulation of contractual liability can be determined through the contractual relationship between the manufacturer or programmer and the user. For example, the correct formation of a sales contract imposes a set of obligations on both the buyer and the seller. The seller is obligated to ensure that the sold item is free from defects and to guarantee against hidden defects that reduce the buyer's ability to benefit from and properly use the sold item. If a dispute or a flaw in the contract terms arises from one of the parties, this dispute is subject to the provisions of contractual liability. Furthermore, the nature of the contractual liability arising from artificial intelligence technologies may be based on the Jordanian Consumer Protection Law No. (7) of 2017, which ensures that the consumer is protected against hidden defects that appear in AI technologies.

Based on the above, we find that the Jordanian legislator has imposed a set of legal obligations on the maker of AI systems or their programmer when entering any contract related to AI technologies. This includes holding the manufacturer or programmer responsible for any damage resulting from their breach of the obligations imposed by this contract. The same applies when applying the general rules in the Jordanian Civil Law related to sales provisions, particularly those concerning the seller's obligation to guarantee against hidden defects. This is to counter any claims that might be made by the defendant based on the argument that AI technologies are autonomous and independent in decision-making; it is found that damage caused cannot be left without someone responsible for it, and the injured party cannot be left without compensation for the harm suffered.

Second Subsection: Tort Liability Resulting from Artificial Intelligence Activities

Tort liability is based on a breach of a legal obligation. This type of liability assumes there is no existing relationship between the debtor and the creditor, making tort liability a system of general responsibility that applies to civil wrongs committed by one person against another. Additionally, tort liability is founded on fault, which is the breach of the general legal obligation to not harm others. From this perspective, fault consists of two elements: the first is material, either an encroachment or deviation, and the second is moral, involving awareness and discernment. For the injured party to receive compensation under tort liability rules, they must prove the existence of fault, damage, and a causal relationship between them10.

From this, we conclude that applying tort liability to artificial intelligence faces significant challenges; courts dealing with liability arising from AI actions must identify the legal or natural person responsible for the

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damage caused by these actions. However, the increasing autonomy of artificial intelligence makes assessing the basis of liability difficult, if not impossible in some cases. For example, if artificial intelligence independently makes decisions that cause harm, traditional rules are insufficient to establish legal liability for the damage caused by AI technologies. These rules do not help identify the party responsible for the damage. Proving a breach of duty or fault by the manufacturers, operators, or users of artificial intelligence and establishing a causal link between it and the damage is not straightforward when it comes to the increased autonomy of AI11.

The Jordanian legislator has organized the rules of liability for objects in Articles 289-291 of the Jordanian Civil Law. Article 291 states: "Anyone who has control over objects that require special care to prevent their harm or mechanical devices, guarantees any damage caused by these objects unless it is unavoidable, without prejudice to any specific provisions applicable."

The intention of the Jordanian legislator here was to respond to the requirements of modern technological and industrial development and to align with the potential risks to lives or property. Often, the injured party may not be able to provide proof of negligence on the part of the custodian, thereby hindering their ability to obtain compensation. Thus, if the conditions specified in the text of Article 291 of the Jordanian Civil Law are met, the responsibility for the objects falls on the custodian. The custodian is defined as someone who has the right to manage the object, meaning someone who has actual control over it. Two conditions are required for this responsibility to arise: first, a person must take custody of an object that requires special care or take custody of mechanical devices; second, the damage must result from the action of that object12.

Applying this, the Jordanian Court of Cassation ruled that liability according to the provisions of Article (291) is presumed liability, but it is possible to prove otherwise, and liability can be avoided if it is proven that the damage could not have been prevented.

Based on this, if the conditions mentioned regarding the custodian of objects and machines are met, tort liability for the application of artificial intelligence technologies arises. For example, if a robot used in surgical procedures causes damage to a patient, the person who bears the responsibility is the one who has actual authority over it. Therefore, the responsible party could be the doctor, the user, the hospital owner, the manufacturing company, the programmer, or anyone who has actual control over the robot, unless they can absolve themselves of responsibility by proving a defense.

Second Part: Criminal Liability Arising from Artificial Intelligence Activities

The criminal liability of an artificial intelligence manufacturer becomes particularly significant when such technology commits any behavior that constitutes a crime under the law. Thus, clarifying the extent of its role in criminal liability is urgently needed. A manufacturer can protect itself through clauses stated in the usage agreement signed by the owner, which shields only the owner from criminal liability for crimes committed through this AI entity, thereby absolving the manufacturer of any crime committed by it. Undoubtedly, the current legislative situation no longer keeps pace with the rapid development of artificial intelligence systems. In this study, we will attempt to explain the criminal liability of the manufacturer in the first subsection, then discuss the criminal liability of the owner in the second subsection, and finally address the criminal liability of artificial intelligence itself in the third subsection.

First Subsection: The Criminal Liability of the Manufacturer

The owner of a manufacturing company is liable for defects in robots and artificial intelligence systems that result from poor manufacturing, leading to the commission of a crime. An example is smart devices responsible for improperly moving a patient, which worsens their health condition, or a case where the manufacturer neglects the maintenance of smart machines resulting in injuries or wounds to operators.

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In these examples, the operator, user, or worker is not liable because the fault lies with maintenance defects. Furthermore, a crime could occur due to a programming error by a programmer of artificial intelligence and robotics software. A programmer can release AI technology with flaws that cause criminal liability13.

Manufacturers and producers must adhere to specific standards, most importantly those concerning safety and security. Additionally, products must align with the values and traditions of our society. A notable example of a product that uses artificial intelligence technology but does not conform to our societal values is the sex doll. Therefore, there must be regulations specifying the standards and conditions for products that utilize artificial intelligence technology. Without such controls, the technology could transform from a societal blessing into a disaster threatening the safety and security of citizens.

Given the risks posed by artificial intelligence technologies, due to their reliance on self-learning, autonomous decision-making, and execution capabilities, it is also essential to urgently enact legislation that regulates the rights and duties of manufacturers producing AI software, robots, and the machines that operate with such technologies. While the primary and goal of any product is to maximize profit, this should not overlook other dimensions or the damages that might result from neglecting quality in production. The role of legislation is to set standards that these products must meet, as well as to strengthen penalties for any criminal behavior related to these laws.

It's worth noting that the United Arab Emirates has enacted a federal law to develop legislation that regulates and promotes the advancement and expansion of artificial intelligence technologies through its Legislation Lab. However, the Jordanian legislator has not yet issued any specific law related to artificial intelligence.

Second Subsection: The Criminal Liability of the Owner

The owner or user is considered an important party due to their direct relationship with the artificial intelligence entity. They are in constant contact with it, enjoying its technologies and benefiting from them. Therefore, it is anticipated that they might misuse it for their interests, which could lead to a crime punishable by law. We can envisage the occurrence of such crimes committed by the owner through the following scenarios:

The criminal result occurs due to the act of the owner or user alone, and without this act, the crime would not have occurred, thus fully establishing the owner's liability. An example of this is if an owner of an autonomous vehicle disables the automatic control system and leaves only the voice commands active. If the system issues a command to perform a specific action to avoid an accident and the owner or user fails to comply, then the owner or user is considered responsible, and the owner's liability for an unintentional crime is established.

The criminal result occurs due to the action of the owner or user in collaboration with another party. For example, if the user or owner of an autonomous vehicle modifies its operating software intending to commit a crime, such as a hit-and-run, and tries to attribute the responsibility to the manufacturer, then the owner is liable for an intentional crime. The fact that the crime is based on a mistake, or an accident can open the door for military commanders who use such arguments to justify further assaults. Additionally, it is possible to argue for holding the manufacturer of lethal robots accountable based on the reason that they were programmed to commit crimes.

The Third Subsection: Criminal Liability of Artificial Intelligence Itself

When a crime is committed by an artificial intelligence system itself without any programming errors from the manufacturer or interference from any party, using modern technologies that enable the AI to think and make autonomous decisions, it alone would be responsible for these decisions. In such a case, it is supposed that the criminal liability falls solely on artificial intelligence. This presents a significant dilemma centered around the possibility of imposing punitive sanctions on AI entities. Currently, it might seem far-fetched to speak of AI committing a crime independently without any programming faults due to self-

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evolution within its operating system capable of thinking and decision-making. However, this could become a reality shortly. Therefore, it is essential to consider this possibility now and start thinking about and developing solutions for it15.

In conclusion, despite the advancements achieved by artificial intelligence entities, they have not yet reached the level that enables them to make decisions independently or to be held solely responsible for unintentional errors arising from their actions, at least not currently. This is not because they are incapable, but rather because it is currently unimaginable for such entities to commit a crime without the involvement of other parties like the manufacturer, owner, user, or an external party, and with various motives. However, looking towards the distant future, the possibility that an AI entity might achieve this level of autonomy to commit a crime independently is a conceivable scenario, linked to developments in technology and science fiction.

Conclusion

Results

The legal responsibility arising from the activities of artificial intelligence, which has become apparent with the widespread use of these technologies in all life sectors, does not detach from the responsibility of the innovator, the manufacturer, or every individual involved in all work fields using artificial intelligence.

The study revealed that the existing civil and criminal law texts, which have become insufficient to address crimes involving artificial intelligence technologies, inevitably clash with the principle of the legality of crimes and punishments. It is apparent that the Jordanian Penal Code and Civil Law lack provisions for legal responsibility arising from errors made by artificial intelligence, and they do not adopt any principles that could serve as a basis for establishing criminal liability when using innovations through AI technologies.

Compensation is conceivable and possible within the scope of crimes caused by artificial intelligence technologies in all medical fields, provided there is a causal link between the error and the resulting damage. This compensation can be claimed against the manufacturer or the user employing AI technologies.

Merely acknowledging the limited legal personality of artificial intelligence technologies is not sufficient to overcome the problem of establishing legal liability towards an entity that is essentially just a machine acting through external means. Moreover, the autonomy of AI technologies in bearing the consequences of responsibility opens a wide door that facilitates the commission of remote crimes and allows for easy evasion of punishment.

The crimes that can be committed through artificial intelligence technologies are not finite and tend to increase continuously. This situation conflicts with existing legislation in terms of the ability to prove the legal responsibility for crimes stemming from AI technologies.

Recommendations

- It's crucial to implement monitoring mechanisms for operations involving artificial intelligence technologies, managed by specialists aimed at preventing technical errors that could affect the safety of AI technology users.

- It's essential for the Jordanian legislator to enact a legal provision that mandates artificial intelligence technology companies to establish a compensation fund. This fund would serve to compensate for any damages caused by AI technologies across all areas of life.

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- The legislator has urgedto definitively enact legislation specific to crimes involving artificial intelligence technologies. Therefore, there is a call for immediate legislative intervention to criminalize the harms resulting from artificial intelligence technologies and to address both civil and criminal liabilities.

- The study recommends developing a framework that allows for the application of criminal liability rules to all parties involved in crimes related to artificial intelligence technologies, including the AI system itself, the manufacturer or programmer, and the user, while also revisiting the penal system to ensure it is suitable for this type of crime and appropriate for the modern entities addressed. It suggests establishing penalties that fit these crimes and their perpetrators and emphasizes the need to create a compensation fund for damages resulting from AI errors.

- The legislator hasadvised to recognize the limited legal personality of artificial intelligence technologies to the extent that allows them to share in joint criminal liability with the programmer and user when a crime is committed through AI activities.

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