

Modernizing Civil Liability Rules for Damages Arising from AI-Generated Works

Mohammed Razzaq Ali¹, Bzhar Abdullah Ahmed²

Soran University, Faculty of Law, Political Science and Management, Law Department

DOI: <https://doi.org/10.31918/twejer.2584ELI.16>

Published:2/11/2025

Abstract

The research, titled "Modernizing Civil Liability Rules for Damages Arising from AI-Generated Works," investigates the substantial effects of Gen-AI on traditional civil liability frameworks. The autonomous and unpredictable nature of AI challenges existing liability doctrines, making it difficult to attribute fault and establish causation. Given that present legal structures face challenges in handling these issues, the modernization of civil liability rules becomes essential. To accomplish this, the research utilizes a comparative analytical methodology, thoroughly assessing legal codes, precedents, and scholarly arguments. This methodology helps determine the effectiveness of present liability law, identify legal gaps, and propose reforms tailored to AI-related damages. By comparing various jurisdictions, particularly the European Union and Iraq, the research highlights best practices that may contribute to legal advancements. The study reveals multiple key findings including, traditional liability doctrines, such as fault-based and strict liability, are inadequate for addressing AI-related damage, due to AI's evolving nature and the opacity of its decision-making processes, commonly known as the "black box" problem. These factors create substantial evidentiary challenges for victims seeking compensation. Additionally, while the EU has enacted new regulations, including the AI Act and the amended Product Liability Directive, to manage these challenges, Iraq's legal system remains outdated and lacks AI-specific liability provisions. This lack of legislation imposes excessive hardship on individuals harmed by AI. To resolve these difficulties, the research promotes AI-centered liability systems, including rebuttable presumptions of defect and causation, mandatory transparency obligations for AI developers, and compensation mechanisms such as compulsory insurance. By addressing these legal deficiencies, the study lays the foundation for a modernized liability regime that ensures liability while supporting technological development in AI.

Keyword: Artificial intelligence, Civil Liability, AI-Generated Works, Fault-based Liability, Strict Liability.

Modernizing Civil Liability Rules for Damages Arising from AI-Generated Works

Mohammed Razzaq Ali¹, Assist. Prof. Dr. Bzhar Abdullah Ahmed²

¹Soran University, Faculty of Law, Political Science and Management, Law Department,
Email: 101238197013@law.soran.edu.iq

²Soran University, Faculty of Law, Political Science and Management, Law Department,
Email: bzhar.ahmed@soran.edu.iq

*This research is derived from a master's thesis at the Department of Law, Faculty of Law, Political Science, and Management, Soran University

1. INTRODUCTION

1.1. BACKGROUND

AI is a pervasive concept in most facets of life, its development and application bring about opportunities and advantages to governments, businesses and individuals, along with multiple potential challenges that AI could cause. As it was mentioned by the European commission in its white paper on AI, that it is going to change our lives through its unique characteristics and functionality (commission, 2020). Nevertheless, like any other type of emerging technology, AI is associated with multiple risks and challenges, which stem from its characteristics such as: autonomy, opacity, self-learning, unpredictable nature and lack of transparency in algorithms, cybersecurity vulnerabilities, the intellectual property rights (IPR) issues, privacy, data protection, bias and discrimination. This study is comprehensively focused on the legal challenges and implications of civil liability in cases where an AI-generated work causes damage to others. From the legal perspective, one of the most significant challenges of AI is potential cause of harm and ensuring civil liability for this damage to identify the liable party (Burylo, 2022). Generative AI is a subfield of Machine Learning (ML) which is a type of artificial intelligence technology that can produce various types of content including, music, text, audio, imagery, and synthetic data. Notably, a representative survey conducted in 2020 revealed that liability was considered one of the three major hurdles in utilizing AI by the European companies (Ipsos, 2020). So, the unique characteristics of AI mentioned above are the main obstacle to applying current liability rules, which causes the victims to be deprived of claiming their rights to indemnification. This has pushed the states around the globe to

contextualize this novel innovation within a proper legal framework, in a way that could guarantee safety without hindering innovation. The first effort to legalize the use of AI is by the EU, which in 2024 enacted a law to govern artificial intelligence (named the EU AI Act), although this act does not necessarily specify the liability of those who breach its provisions. The EU has found it necessary to propose additional directives to deal directly with civil liability issues. These are the proposal of AI liability directive (AILD) 2022 and the proposal for the amendment of Product liability directive (PLD) 2022. (Racki Marinkovic, 2024). It is worth mentioning that there is no attempt by Iraqi legislative authority to cope with such issue, there are only general principles of Iraqi civil code which can be relied upon.

This research will explore the intricate terrain of civil liability for AI-generated content, through a thorough analysis.

1.2. RESEARCH SIGNIFICANCE

The particular significance of this study lies in the illustration of current civil liability regime gaps in cases where AI-generated works cause damage to others on the one hand, and its crucial benefit to a wide range of society including governments, companies and individuals on the other hand. This study also makes some important contributions to the legal tribunals and courts, benefiting legal practitioners and litigants in terms of elaborating on evidentiary challenges, let alone presenting new liability regimes to be adopted by the lawmakers. It also has an undeniable impact on research academic centers as an open initiative for researchers to build upon henceforth.

1.3. STATEMENT OF THE PROBLEM

The problem to be addressed through this study is that the AI-generated works have not specifically been regulated yet neither internally nor internationally, and with the increasing claims and class actions for content infringements by Generative AI works, which has made the rights holders to sue those who infringe on content such as music, audio, imagery, etc. and the courts in their attempts to decide about the case, need to handle these cases according to the traditional civil liability rules which are mostly fault-based liability regimes, that holds the victim responsible to prove the fault, damage and the causal link between them. However, when dealing with AI it becomes significantly difficult if not impossible, out of the unique characteristics of AI such as autonomy, opacity and complexity known as the “black box” on the one hand, and the multiple parties involved in AI-generated related systems like developers,

providers, manufacturers, users, and deployers on the other hand. This will incur huge expenses for the victim, and as such, may deprive them of indemnification, despite taking more time to litigation. Thus, the research problem is highly relevant to the victims (those claiming AI-generated content infringements), and if the problem remains unsolved, then it causes the damaged party a heavy burden of proof, and finally may be stayed uncompensated, let alone the Evidentiary challenges it may pose.

1.4. RESEARCH QUESTION

This study attempts to answer the following questions:

1. What is AI, particularly generative AI, and what are its implications for the principles and legal foundations of civil liability?
2. How does Generative AI challenge current frameworks of civil liability, specifically in terms of attributing accountability among various concerned parties, examining the possible legal personhood of AI systems, and tackling the evidentiary obstacles in legal proceedings?
3. How are advanced jurisdictions globally handling AI-liability through legal solutions and reforms? What insights can be derived from pertinent legal cases, and to what extent can existing liability rules be modified or international cooperation initiatives be utilized to develop thorough transnational AI-liability frameworks?

1.5. AIMS AND OBJECTIVES

The study aims to investigate Civil Liability in AI-Generated Works and assess its associated Legal Challenges and Implications. The specific objectives are:

1. To clarify the conceptual frameworks of civil liability and AI-generated works.
2. To identify the legal challenges and liability issues arising from AI-generated works
3. To conduct a comparative analysis of legal solutions, reforms and case studies across jurisdictions.
4. To synthesize key findings, propose legal reform recommendations, and suggest policy development in this field.

1.6. RESEARCH SCOPE

This research is limited to civil liability, without criminal liability. Moreover, it also takes Iraqi jurisdiction and EU jurisdiction into consideration for the purpose of comparison. This research also emphasizes on the AI-generated works rather than examining AI as a whole.

1.7. RESEARCH METHODOLOGY

The study seeks to obtain information from secondary sources to clarify the conceptual frameworks of AI-generated works, civil liability principles, and its challenges related to AI-systems, in order to holistically address the complicated matters concerning civil liability in AI-generated works. The research methods have been thoughtfully chosen to align with the study's objectives and research questions.

The research employs a comparative analytical study that includes a systematic analysis of statutes, legal principles, and case law related to civil liability and AI. This method will be used to investigate existing legal frameworks and their applicability to AI-generated works and to examine proposed policies and regulations concerning AI and civil liability. A comparative approach is used to compare and contrast how diverse jurisdictions address civil liability issues in AI-generated works, helping to identify best practices and possible opportunities for legal harmonization.

2. CONCEPTUAL FRAMEWORK: AI AND CIVIL LIABILITY

Artificial intelligence (AI) as a rapidly evolving field of digital technology and automation, is getting incrementally intricate and sophisticated. This section aims to introduce fundamental AI concepts and delve specifically into AI-Generated works, connecting them to civil liability principles. Thus, it highlights both AI and civil liability concepts in various perspectives.

It is highly crucial to comprehend the context of AI technology and civil liability prior to addressing the challenges of Generative AI (henceforth Gen-AI). Thus, this section is divided into three subsections, The first subsection examines the history of AI, its definition and key concepts will be highlighted. Then in the second subsection the meaning of Gen-AI its types and characteristics will be discussed. Finally, the third subsection examines the elements and legal foundations of civil liability in relation to AI, with a particular focus on Gen-AI.

2.1. ARTIFICIAL INTELLIGENCE (AI): HISTORICAL BACKGROUND AND KEY CONCEPTS

The emergence of the Fourth Industrial Revolution (4IR) is profoundly transforming society, building upon the digital foundations established by previous eras but advancing far beyond

them. At its core lies artificial intelligence (AI), which enables machines to learn, adapt, and function autonomously—an unprecedented breakthrough from past technologies. This revolution is identified by a significant merging of innovations in multiple domains, including robotics, autonomous vehicles, the internet of things (IoT), nanotechnology, biotechnology, energy storage, materials science, 3D printing, and quantum computing. These developments are in combination driving the integration of physical, digital, and biological domains, creating intelligent systems that revolutionize human-machine collaboration. Unlike previous revolutions, which took many years to diffuse worldwide, the technologies of the 4IR, led by AI, are spreading at a rapid pace, redefining industries, economies, and everyday life across the globe. (Schwab, 2016: 11-12). This fast evolution of AI in the 4IR is the outcome of decades of research and development, commencing in the 1950s, when the field of artificial intelligence first came into existence.

To effectively explore the contribution of AI within the 4IR, it is crucial to evaluate the origins of artificial intelligence and its various definitions, both of which provide a basis for understanding the technology's far-reaching impact.

2.1.1. THE HISTORY OF ARTIFICIAL INTELLIGENCE

Artificial intelligence is a broad field, making it impractical to entirely cover all the multifaceted ideas, traditions, and schools of thought that have impacted its advancement over the past six decades. Instead, the research has concentrated on pointing out what it is considered the pivotal themes that interconnect together the intricate history of AI.

When analyzing the history and origins of AI, it is often best to start with Alan Turing, the British mathematician whose pioneering work laid the groundwork for modern AI. However, initial attempts can also be found in the field of science fiction, such as Isaac Asimov's short story *Runaround*. This story, written by the American science fiction writer, discusses the innovation of robots and establishes the Three Laws of Robotics. It draws attention to the importance of integrating ethical considerations into robotics, an idea that remains relevant today. (Brauner, 2016). While Asimov's *Runaround* demonstrates the imaginative possibilities of robotics and morality in science fiction, and his novels are commonly regarded as the birthplace of notions concerning intelligent machines (Toosi et al., 2021: 4), Alan Turing put the concrete scientific foundation that changed such thoughts and imaginations into reality, and is widely recognized as the father of artificial intelligence. (Haenlein and Kaplan, 2019).

In 1939, when World War II had just begun, Nazi Germany was using Enigma machine for encoding and decoding sensitive armed forces and governmental communications, guaranteeing that messages could be sent securely. Alan Turing was invited to work as a cryptographer at Britain's government Code and Cipher school. And it became evident that he needed to create a machine capable of deciphering codes like Enigma. Within a few weeks, he designed and secured funding for the creation of electro-mechanical machines termed 'bombes,' which were utilized to crack Enigma codes and interpret German messages. (Smith et al., 2006: 5). As Haenlein and Kaplan (2019) assert, the Bombe is commonly regarded as the first functional electro-mechanical computer.

The Bombe's exceptional ability to decipher the Enigma code—an achievement that had eluded even the most proficient human mathematicians—caused Turing to reflect on the nature of machine intelligence. (Haenlein and Kaplan, 2019: 2). In 1950, he published his pioneering paper, "Computing Machinery and Intelligence" (Turing, 1950), where he described techniques for constructing smart systems and intelligent machines and suggested a method to assess their intelligence through an imitation game, known as the "Turing Test" afterwards, and examined the main question, "Can machines think?" this assessment remains as a criterion for evaluating artificial system intelligence: if a person cannot distinguish between answers of a machine and a human during interaction, the machine is considered intelligent. Thus, the Turing Test was established as the initial experiment developed to assess machine intelligence. (Delipetrev, Tsinaraki and Kostić, 2020: 7). However, it should be noted that, as of a few years ago, some scientists believed that no computer has ever passed the test (Smith et al., 2006: 4). With the rise of Gen-AI and the emergence of Deep Learning, it is possible to say that the test is inadequate to be the sole basis for determining computer intelligence, given the remarkable progressions in chatbot communication observed today.

In 1966, Joseph Weizenbaum built ELIZA, the first chatbot in the history of AI, as a virtual therapist Designed at MIT. ELIZA interacted patients by asking questions and providing subsequent answers, imitating human communication using simple rule-based methods. This marked an important first step in the advancement of natural language processing models (Onlim, 2024).

It is worth mentioning that, during the Cold War, the promise of machine translation (MT) became a primary motivator of AI research, particularly in the United States. With increased

attention on translating Russian during the international conflicts of the era, the US government funded attempts to develop automatic and immediate translation systems. In 1954, the Georgetown-IBM experiment showcased substantial progress, although on a small scale. The system was designed to translate Russian to English. (Smith et al., 2006: 17; Delipetrev, Tsinaraki and Kostić, 2020: 8). Notably, we will investigate this subject further when discussing the factors that contributed to the rise of the AI winter, as the limitations of such early models contributed greatly in shaping later innovations in AI research.

Perhaps one of the most groundbreaking and foundational events in the history of artificial intelligence happened in 1956, six years after Turing presented his innovative test for machine intelligence. This was the Dartmouth Summer Research Project on Artificial Intelligence (DSRPAI), conducted at Dartmouth College in New Hampshire. arranged by John McCarthy, who coined the term "Artificial Intelligence" as well, the conference symbolized the official establishment of AI as a separate scientific field. Funded by the Rockefeller Foundation, it assembled pioneering researchers such as Marvin Minsky, Herbert A. Simon, Allen Newell, Claude Shannon, and Nathaniel Rochester. Their unified purpose was to examine the development of machines competent of emulating human intelligence. The optimism and ambitious vision developed at Dartmouth set the foundation for the establishment of AI research labs at prestigious institutions such as MIT, Stanford, and Carnegie Mellon, marking the dawn of a new era in symbolic AI systems (Haenlein and Kaplan, 2019: 3; Delipetrev, Tsinaraki, and Kostić, 2020: 7; Zein, 2023: 3; Mijwil, 2015: 1; Wooldridge, 202: 37).

The “Golden Age” of AI (1950s–1970s) started after the Dartmouth Conference and was characterized by the progress of symbolic AI systems like the General Problem Solver (GPS), presented by Newell and Simon in the 1960s. This system intended to replicate human problem-solving but encountered challenges as a result of computational memory shortcomings and computing capacity, making it unrealistic for practical application (Negnevitsky, 1997: 4). Regardless of these challenges, this era experienced considerable theoretical progress in fields such as knowledge representation, learning algorithms, and neural computing, even though the deployment of these theories had to wait for further advanced technology (Negnevitsky, 1997: 4). Notable systems like SHRDLU and SHAKEY proved the possibility of AI but uncovered weaknesses in expandability and elasticity, which, together with overestimated expectations and critical reports like the ALPAC report (1966) and the

Lighthill report (1973), caused to a funding reduction and the first “AI winter” (Toosi et al., 2021: 8).

During the first AI winter, AI research programs utilized alternative names to secure continued funding. Terms such as “Machine Learning,” “Knowledge-Based Systems,” “Pattern Recognition,” and “Informatics” became widely used, enabling research to progress under less visible terms (Smith et al., 2006: 18)

In the 1980s, AI research shifted towards practical applications with the emergence of expert systems, which used specialized knowledge to emulate human-like expertise. instances include DENDRAL, which helped examine chemical compositions, and MYCIN, which diagnosed contagious diseases. These systems demonstrated AI’s capability for addressing specialized problems and gained commercial interest (Wooldridge, 2021: 57). Nevertheless, as noted by Toosi et al. (2021:8), the expert systems’ failure to adapt to evolving knowledge and the increasing expenses linked to hardware ultimately triggered a second "AI winter" by the late 1980s. During this period, neural networks acquired focus with the revival of the backpropagation algorithm, which set the cornerstone for future advancements.

According to Toosi et al. (2021), the 1990s indicated the revival of AI research with the incorporation of machine learning and neural networks, supported by upgraded computing capacity. Backpropagation became a foundation for training neural networks, bringing about innovations in areas like pattern recognition and natural language processing. AI landmarks such as IBM’s Deep Blue beating chess champion Garry Kasparov in 1997 fascinated the public and emphasized on the transformative capacity of data-driven AI. This resurgence persisted through the 21st century, concluding in accomplishments like Google DeepMind's AlphaGo success in 2016, which strengthened the supremacy of deep learning in modern AI (Toosi et al.,2021:9).

2.1.2. DEFINITIONS OF ARTIFICIAL INTELLIGENCE

Defining AI is as challenging as its development, if not impossible, due to its interdisciplinary nature, its diverse features, and its omnipresence in various areas of modern life. These intricacies have made efforts to define AI both exhaustive and ambiguous thoroughly. However, as part of this study, which aims to modernize civil liability rules in relation to AI, specifically AI-generated works, it is always necessary to clearly determine what is being legislated.

Without a clear definition, the scope of regulation may become ambiguous, either too expansive or insufficient, which could impede technological progress.

Therefore, even though the main subject of this study is to address the evolving environment of civil liability for AI-generated works, the first logical step is to clarify the term of AI (Bertolini, 2020: 16). A review of multiple academic sources reveals an absence of agreement on a unified definition of AI. Despite this, the definitions provided by prominent scientists and institutions will be investigated in-depth to offer a better comprehension of the term and its applications. Before diving into these definitions, it is important to first address the notion of intelligence itself, to better understand the complexities of defining AI.

What is Intelligence?

The term "intelligence" comes from the Latin verb *intelligere*, meaning "to understand or perceive" (Lee, 2020: 19). Common dictionary definitions describe intelligence as "the ability to acquire and apply knowledge and skills" (Oxford English Dictionary). Or "the ability to learn and understand or deal with new or challenging situations" (Merriam-Webster Dictionary). Scholars have explored different methods to defining AI. For example, Howard Gardner defines intelligence as "the ability to solve problems, or to create products, that are valued within one or more cultural settings" (Gardner and Hatch, 1989: 5). Conversely, AI researchers such as John McCarthy (2007: 2) also provides a computational perspective on intelligence, defining it as "the computational part of the ability to achieve goals in the world. Varying kinds and degrees of intelligence occur in people, many animals, and some machines." Moreover, Marvin Minsky and Raymond Kurzweil define intelligence as "the ability to solve hard problems" and "the ability to use optimally limited resources—including time—to achieve goals," respectively (Lee, 2020: 19).

Many of these definitions share a common idea: intelligence is considered the ability to solve problems, with more complicated problems demanding higher levels of intelligence. For example, solving advanced mathematical problems requires more intelligence than performing basic calculations (Lee, 2020: 19). Building on these definitions of intelligence, we can now examine the particular definitions and analysis of artificial intelligence.

To begin comprehending AI, referring to foundational dictionaries is important. For instance, the Merriam-Webster Dictionary provides a non-technical definition of AI, describing it as "a

branch of computer science dealing with the simulation of intelligent behavior in computers" and "the capability of a machine to imitate intelligent human behavior" (Merriam-Webster, 2024).

However, some experts criticize this definition. They argue that non-technical (general) definitions of AI, which focus on human-like intelligence, are incorrect because no AI system at this moment imitates human mental processes in this manner. AI research commonly concentrates on advancing task-specific capabilities, usually termed "narrow AI," which may even go beyond human capacity in certain fields. These definitions, hence, incorrectly limit the scope of AI by highlighting human characteristics that are not applicable to many AI-based applications (Bertolini, 2020: 17-18).

Regarding the terminological definitions, scholars, international organizations, and national lawmakers rely on many different criteria to define AI,

three fundamental criteria are central in defining AI: First, whether AI is regarded as a science, a system, or a functionality, as this approach affects the focus of regulation—be it the management of its members or the deployment and social consequences of AI systems. Second, whether AI covers both hardware and software systems since this difference determines the nature of harm (physical, moral, and pecuniary, etc.) and the relevant legal rules. Third, the differentiation between "weak" (narrow) AI and "strong" (general) AI is vital, the challenges posed by narrow AI differ significantly from the speculative possibilities of general AI or super AI (Bertolini, 2020: 22).

According to John McCarthy, AI is defined as "the science and engineering of making intelligent machines, especially intelligent computer programs." This definition highlights the objective of creating intelligent systems. However, McCarthy further explains that AI is also concerned with using computers to study human intelligence, although it is not limited to methods that are strictly biologically observable (John McCarthy, 2007: 2).

AI High-level expert group (AI HLEG), a group of experts appointed by EU Commission has defined AI as "Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from

this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behavior by analyzing how the environment is affected by their previous actions. As a scientific discipline, AI includes several approaches and techniques, such as machine learning (of which deep learning and reinforcement learning are specific examples), machine reasoning (which includes planning, scheduling, knowledge representation and reasoning, search, and optimization), and robotics (which includes control, perception, sensors and actuators, as well as the integration of all other techniques into cyber-physical systems” (High-Level Expert Group on Artificial Intelligence, 2019).

On the other hand, the Organization for Economic Co-operation and Development (OECD), also defines AI as: “An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment.” (OECD, 2024: 4). While others define it as: “a system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Haenlein and Kaplan, 2019: 1).

When defining AI, it is essential to consider its classification based on capabilities and the range of activities it can perform. AI is typically divided into three types: narrow AI, artificial general intelligence (AGI), and super AI. In this section, these classifications are explained in light of the most recent discussions on the topic, followed by an analysis of the current stage of AI development.

Narrow AI represents the simplest form of AI, designed to perform specific tasks within defined environmental conditions (Khalifa, 2019: 42). These systems, confined to single, narrowly defined tasks, include most modern AI applications, such as language translation, image recognition, recommendation systems, voice recognition, spam detection, and autonomous vehicles (Bartneck et al., 2021: 6; Mohammed, 2024: 11; High-Level Expert Group on Artificial Intelligence, 2019: 7). Highly specialized systems are designed to address one problem or task at a time and are usually unable of addressing even related issues.

General AI (Strong AI): General AI refers to systems capable of carrying out the full range of intellectual tasks humans can achieve. However, building such systems depends on resolving

important scientific, technological, and ethical problems, such as allowing machines to engage in common-sense reasoning, achieve self-consciousness, and define their own purposes (High-Level Expert Group on Artificial Intelligence, 2019: 7). John Searle defined strong AI as “The appropriately programmed computer with the right inputs and outputs would thereby have a mind in exactly the same sense human beings have minds” (Bartneck et al., 2021: 10).

Artificial superintelligence (ASI) indicates an important advancement in the field of AI, one that has garnered substantial focus in recent years. Ehab Khalifa describes Super AI as "a new model that is still under testing and is trying to be similar to human intelligence" (Khalifa, p. 78–79), proposing its evolving nature and potential to imitate human cognitive abilities. However, Jens Pohl (2015) takes this further, defining ASI as “the level of artificial intelligence that has been reached when a computer has exponentially surpassed the intelligence level of a human by several orders of magnitude” (Pohl, 2015: 2), highlighting its greatly superior capabilities compared to human intellect. Bostrom (2017) provides a more hypothetical and impactful viewpoint, stating: "Let an ultra-intelligent machine be defined as a machine that can far surpass all the intellectual activities of any human, however clever. Since the design of machines is one of these intellectual activities, such a machine could improve its own design recursively, leading to an 'intelligence explosion' and leaving human intelligence far behind. Thus, the first ultra-intelligent machine is the last invention that man need ever make, provided it is docile enough to tell us how to keep it under control" (Bostrom, 2017: 22). Together, these definitions highlight the evolution of artificial intelligence toward ASI: from systems aspiring to human-like intelligence, to entities that far surpass it, and eventually to machines that could transform the course of humanity through recursive self-improvement.

The investigation of artificial intelligence through different definitions and viewpoints demonstrates its intricacy, flexibility, and evolving nature. AI is not an unchanging concept but a continuum, progressing from narrow AI, which prevails in current applications, to the ambitious aspirations of general AI and the hypothetical, innovative potentials of super AI. While definitions from scholars like McCarthy, Haenlein, and Kaplan highlight its technological functions, others, like the AI HLEG and OECD, emphasize its organized adaptability and social influence. The understanding of AI has been formed through these viewpoints, and it is regarded as a dynamic interaction between human creativity and machine abilities. It is a tool, a system, and perhaps one day, an entity able to redefine our world.

However, regardless of its level, whether it is narrow, general, or super intelligence, AI at its core shows humanity's search for solutions to harder and more complicated issues. Viewing AI as something that is constantly advancing enables us to value what it can do now while cautiously thinking about what lies ahead, ensuring that laws change and develop in parallel to it.

2.2. AI-GENERATED WORKS: TYPES AND CHARACTERISTICS

At the dawn of the 21st century, artificial intelligence (AI) witnessed unprecedented progress due to two groundbreaking factors: the emergence of cloud computing and the big data explosion. These innovations provided the computational power and vast datasets necessary for training sophisticated AI systems. At the same time, progress in ML, specifically by artificial neural networks (ANNs) and deep learning (DL), paved the way for remarkable innovations in AI. These factors collectively opened doors for Gen-AI. Understanding how it works, even at a high level, is necessary to comprehend its effects and uses (Mohammed, 2024: 15).

Gen-AI can be defined as a subset of AI that works on producing new, meaningful content for example text, images, audio, video, and software codes, not just simply analyzing existing data (Feuerriegel et al., 2024: 1). In contrast to traditional AI systems, which are very good at tasks like classification or prediction, Gen-AI aims to imitate human creativity by making unique outputs. This power to create content is based on neural network architectures specifically made for this purpose (Bahree, 2024: 19-20).

The origins of Gen-AI date back to AI's early experiments in the 1960s, such as the ELIZA chatbot, referred to earlier as a pioneering example of rule-based programming to replicate human interaction. Nonetheless, these foundational systems were restricted by their lack of context, strict architecture, and failure to adapt to different inputs (Lawton, 2023). The domain of Gen-AI started to gain notable development in the 2010s with advances in DL and neural networks, allowing systems to learn sophisticated data patterns automatically. In 2014, the introduction of generative adversarial networks (GANs), discussed in detail later, marked a turning point, enabling Gen-AI to create highly authentic images, videos, and audio (Lawton, 2023).

Understanding the connection among AI, ML, DL, and Gen-AI is crucial. AI serves as an umbrella covering all computational techniques that intended to mimic human intelligence.

Within AI, ML is concerned with enabling computers to learn from data without being explicitly programmed with predefined rules. DL, an advanced subset of ML, utilizes multilayered ANNs to process sophisticated data structures. Gen-AI is categorized under DL, adopting specific architectures like transformers, GANs, variational autoencoders (VAEs), and diffusion models for content creation (Bahree, 2024: 6; Lawton, 2023).

2.2.1. TYPES OF AI-GENERATED WORKS

When explaining the types of AI-generated works, it is important to examine the model architectures that drive them. These architectures are considered as the backbone of Gen-AI, allowing models to generate different types of content like text, images, audio, video, and software codes. Without architectures, generating innovative and unique works would not be possible.

Gen-AI models rely on various architectures trained on large-scale datasets using iterative machine learning algorithms. Each contributing to distinct types of outputs: the most widely used architectures include:

First: Variational Autoencoders (VAEs): VAEs are composed of dual neural network structures, known as the encoder and decoder (NVIDIA, 2024). VAEs encode input data into a compressed latent space and decode it back, generating outputs that resemble the training data while introducing controlled variations (Lawton, 2023). They are highly applicable in tasks like anomaly detection, image generation, and exploring latent data representations (IBM, 2023).

Second: Generative Adversarial Networks (GANs): GANs are built with two competing neural networks, a generator and a discriminator. The generator creates outputs, while the discriminator evaluates them by comparing them to the real data, improving the generator's quality over time (Lawton, 2023). GANs are extensively used for generating realistic images, style transfer, and augmenting data (IBM, 2023).

Third: Diffusion Models: These models begin with random noise and iteratively refine it to produce coherent outputs through reversing a diffusion process (Lawton, 2023). Diffusion models are known for generating high-quality, photorealistic images and are frequently used in innovative fields like art and design (IBM, 2023). Fourth: Transformers: commonly used in large language models (LLMs) like GPT, transformers utilize attention mechanisms to process

sequential data efficiently, supporting functions like text generation and translation (Feuerriegel et al., 2024: 1; Lawton, 2023). Transformers serve as a foundation for many Gen-AI applications, including chatbots, summarization, and code generation, due to their capacity to handle context and long-range dependencies in data (IBM, 2023).

Training Gen-AI models involves a few main steps. First, extensive and varied dataset (like images, text, or audio) are collected and cleaned for effective use. These datasets used to train Gen-AI models often originate from different sources like the Internet, books, stock images, online libraries (Jungco, 2024). Next, a suitable model architecture, like GANs for images or VAEs for audio generation, is chosen according to the requirements. The model then learns from the data by iteratively refining its parameters to improve its output. Once trained, the system's ability is evaluated and fine-tuned to ensure it works well. This process enables AI to generate highly realistic outputs, however, it's important to develop it in a safe way to mitigate hazards and avoid misuse (Deepchecks, 2024).

These architectures improved Gen-AI significantly, allowing applications in different fields. For instance, ChatGPT and similar LLM models produce human-like text and codes, performing jobs such as writing emails and drafting legal briefs (Moriarty, 2023: 1). Tools like Stable Diffusion generate images and artistic visuals from textual prompts. Systems generating music compose melodies, and systems for video-generating produce realistic animations. Such examples demonstrate the adaptability and powerful impact of Gen-AI, which keeps improving and change how creative and professional areas work (ISO, 2024: 7).

2.2.2. CHARACTERISTICS OF AI-GENERATED WORKS

Generative AI (Gen-AI) is different from traditional AI by generating creative outputs instead of simply analyzing or performing predefined tasks. Through studying its important characteristics, the uniqueness of Gen-AI is explained, especially when compared to traditional AI systems. Below, the essential features of Gen-AI are discussed:

1. Content Generation Based on Prompts

Unlike traditional AI, which depends on supervised learning for specific tasks, Gen-AI uses unsupervised learning to generate new content based on user prompts. This includes generating text, images, videos, and even 3D models. These abilities are made possible by AI architectures

like Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs) (Behara, 2023, Jungco, K. (2024).

2. Adaptability Across Domains

Generative AI is versatile, able to generate different types of content, such as text, images, and code, designed for different contexts and user requirements. Being adaptable helps Gen-AI work in different tasks (Blue Prism, 2024).

3. Use of Neural Network Generators

Gen-AI relies on advanced neural networks to learn from data and create clear outputs. Foundation models, such as Large Language Models (LLMs), are the base for many Gen-AI systems. These models are trained on large amounts of unstructured data, allowing them to complete tasks ranging from text summarization to image synthesis (Behara, 2023; Blue Prism, 2024).

4. Enhancing Creativity and Innovation

According to Behara (2023) By supporting quick thinking and turning plans into action, Gen-AI boosts human creativity. For example, tools like ChatGPT or DALL-E shifted the paradigm of how users conceptualize and actualize creative tasks.

5. Data-Driven Prompt Engineering

Behara (2023) also states that the dependence of Gen-AI on prompt engineering is considered as a key characteristic, where good prompts help the AI to create relevant and accurate outputs. Building on these characteristics, it's necessary to show how Gen-AI is different from traditional AI in its approach and capabilities: while traditional AI excels in tasks like pattern recognition and decision-making within predefined parameters, Gen-AI goes beyond by producing outputs and patterns that are not explicitly present in its training data. For example, traditional AI applications include recommendation systems and speech recognition tools, while Gen-AI can independently generate personalized content, simulate scenarios, or fill in missing data (Vitac, 2024).

With these characteristics, Generative AI proves its creative and unique capabilities, standing out as an important tool and transformative technology with big effects in different fields

2.3. CIVIL LIABILITY: ELEMENTS AND LEGAL FOUNDATIONS

Traditional rules of Civil liability are too broad to be fully discussed here; however, the main purpose of this discussion is to highlight its connection to AI and demonstrate its limitations when applied to the unique characteristics of Gen-AI.

Civil liability sets up a legal framework for addressing harm caused by actions or omissions, ensuring accountability through clearly defined elements. In the context of AI-generated works, understanding these elements: damage, fault, and the causal link, is important to adapt legal systems to the challenges of new technologies. As defined, civil liability is the duty of a person or entity to compensate for damage caused to someone's health, property, or business (Cambridge Dictionary, 2024). Civil liability, across different jurisdictions, includes contractual liability and tort liability, emphasizing breaches of obligations and harm caused by wrongful acts (Bader, 2022: 35). However, this discussion will focus primarily on tort liability, since it is more directly related to the challenges brought by AI-generated works.

2.3.1. CORE ELEMENTS

First: Fault (Responsibility or Negligence): fault arises from intentional wrongdoing or negligence, defined as a failure to meet a standard of care (Audacia Lawyers, 2022). The principle that "every mistake that causes harm to another requires compensation" highlights this element (EliteLawKWT, 2024).

Second: Damage (Harm): civil liability demands recognizable harm to property, financial interests, or personal physical or mental state (Educaloi, 2024). Harm must be real or unavoidable, as speculative or uncertain damages are generally excluded unless proven (EliteLawKWT, 2024). In cases involving AI, damage includes both tangible and intangible harm, such as financial loss, reputational harm, or algorithmic discrimination (Seah, 2024; Virguez Law, 2023).

And third: Causal Link (Causation): a causal connection between the fault and the damage suffered must be proven (Audacia Lawyers, 2022). However, causation in AI cases can be complicated because of the autonomy and unpredictability of AI systems, making it hard and challenging to prove a direct link between human actions or omissions and resulting harm (British Columbia Law Institute, 2024: 19). Courts stress that the causal link is the key factor for civil liability (EliteLawKWT, 2024).

The implementation of these basic elements to AI systems shows major difficulties. AI's autonomous nature questions traditional notions of liability, especially in defining harm, identifying fault, and establishing causation. For example, the unpredictability of AI algorithms can cloud the liability of developers or operators, requiring a detailed understanding of these elements (British Columbia Law Institute, 2024: 15-55).

2.3.2. LEGAL FOUNDATIONS

While the basic principles of civil liability, such as vicarious liability, product liability for AI-generated works, fault-based liability, legal personhood of autonomous AI systems, and analogies to liability for animals and property, and liability for mechanical tools and other things, are crucial to understanding this framework, these will be covered in depth in the sections ahead.

By concentrating on these key elements, this section emphasizing the challenges in adapting civil liability frameworks to the issues of AI systems. The following sections will discuss particular legal challenges, identify potential liable parties, and study comparative approaches to emerging solutions.

3. LEGAL CHALLENGES AND LIABILITY ISSUES IN AI-GENERATED WORKS

This section forms the core of our study, as it deals with the main legal challenges and liability issues arising from the utilization of (AI) in generating works. These challenges are crucial to the study's objectives, highlighting the intricacies and deficiencies within traditional legal frameworks in adjusting to the specific characteristics of AI systems.

To broadly analyze these challenges, the section is divided into four interrelated subsections. The first subsection explores the challenges of proving liability for AI-generated works, underlining the autonomy and unpredictability of AI systems and their "black box" nature, which hinders transparency and accountability. The second subsection determines potential liable parties, including AI developers, users, companies, and content creators, and assesses their roles and responsibilities in relation to damages caused by AI generated works. The third subsection studies the legal basis of civil liability, including vicarious liability, product liability, and fault-based liability, liability for animals, liability for things, and the possible acknowledgment of AI as a legal person. Finally, the fourth subsection investigates evidentiary challenges in cases involving AI, focusing on the challenges in establishing causality and responsibility because of the technical and unclear structure of AI systems.

3.1. DETERMINING LIABILITY: CHALLENGES IN ATTRIBUTING RESPONSIBILITY

Identifying liability for AI-generated works poses critical challenges due to the unique characteristics of AI systems. One key issue is the autonomy and unpredictability of AI, meaning AI systems can run in ways that are not always foreseeable by their developers or users, hindering the attribution of liability. Moreover, the lack of transparency and explainability in AI operations, known as the “black box” problem, makes it difficult to determine how AI systems make decisions, and who should be held liable. These intricacies create challenges to clearly determine the cause and assign liability for damages caused by AI-generated works, requiring a review of traditional liability frameworks. In this subsection, we will study these challenges deeply, analyzing how each element contributes to the larger issue of liability attribution in AI-related cases.

3.1.1. AUTONOMY AND UNPREDICTABILITY OF AI SYSTEMS

As Custers and Fosch-Villaronga (2024:325) state, "as technology develops, there is a trend towards more and more autonomous systems, to the point where only a push of a button is required to create a work." The rising autonomy of AI is a main trait of AI systems, allowing it to do complicated tasks with almost no human intervention. According to Vignisdóttir (2024: 26-28), AI systems can function independently, making decisions that are not always foreseeable by their developers or users. This autonomy is clear in systems like AlphaGo and AlphaZero, which have shown the ability to go beyond human predictions through forming methods that were never pre-coded by their designers.

According to Custers and Fosch-Villaronga (2024:325), "The unpredictability of AI systems arises from their ability to learn and adapt in ways that are not always foreseeable." As Rapti (2024: 6) states, AI systems which employ ML and DL progress depending on their interactions with data, causing their behavior hard to foresee. For example, Microsoft's Tay chatbot displayed unpredictable behavior by generating inappropriate content shortly after its deployment, drawing attention to the challenges in managing autonomous AI systems (British Columbia Law Institute, 2024, p. 16). This unpredictability adds complexity to liability attribution, as it becomes hard to follow the causal link between the AI's behavior and the harm caused.

The increasing autonomy and unpredictability of AI systems make it challenging to establish clear causality and responsibility when damages occur due to AI-generated actions. As

Moriarty (2024: 42) notes, the opaque nature of AI systems, where the internal decision-making processes are not entirely comprehensible even by their developers, exacerbates the difficulty of attributing liability. This lack of transparency often prevents victims from proving fault and establishing causation, particularly when multiple parties are involved in the development, deployment, and use of AI systems, thus this complexity makes classical concepts such as breach and causation difficult to apply.

3.1.2. TRANSPARENCY AND EXPLAINABILITY ISSUES

The lack of transparency in AI systems is a big challenge to liability. According to Vignisdóttir (2024: 27-28), AI systems are so complex that users cannot easily comprehend how they make choices. The term “black box” problem is used to describe how AI systems are unclear inside, making it difficult to understand how decisions are made (Vignisdóttir, 2024: 26). For example, Deep Patient, an AI system used for medical diagnostics, showed outstanding correctness in disease prediction but could not explain the reasoning behind its predictions, leaving its users and designers uninformed about its reasoning (British Columbia Law Institute, 2024: 18). This opacity makes it more difficult to identify errors, biases, or malfunctions in AI systems, and so does deciding who is liable.

As Custers and Fosch-Villaronga (2024: 227) note, several AI algorithms work in a non-transparent way, meaning that it is hard to understand how the system has come to a conclusion. Black-box models do not clarify their processes or show the reasoning behind their outcomes. The increasing use of “black-box” models has triggered discussions about algorithmic liability and resulted in calls for increased transparency in algorithmic decision-making. The absence of explainability hinders the attribution of responsibility, as it complicates tracing the causal connection between the AI’s actions and the resulting harm.

Explainability is vital to maintaining user trust and liability in AI systems. Without it, users and those impacted cannot grasp why a decision was made, which is crucial for managing any harm caused. (British Columbia Law Institute, 2024: 18). As Vignisdóttir (2024: 39) states, "Explainability is important for a variety of reasons, especially for those affected by an AI decision or prediction. For them, it is important to comprehend why the system arrived at this specific outcome to understand the decision and develop trust in the technology."

Opaque AI systems come with serious legal concerns. For example, AI systems that lack transparency can maintain bias and discrimination, as their decision-making processes are not

subject to analysis (Vignisdóttir, 2024: 39). This raises concerns about fairness and liability, particularly in sensitive fields like hiring evaluations. As Custers and Fosch-Villaronga (2024: 236) suggest that achieving sufficient transparency in algorithmic decision-making requires ensuring that decisions made by automated systems can be explained to the people impacted by them. These explanations must be clear and accessible by the relevant audience. Additionally, it must be obvious who holds the power to review and, if necessary, alter algorithmic decisions. The challenges are shown in the Getty Images v. Stability AI legal case, which was filed in both the UK and the US. In the UK case, the court faced challenges in determining which copyrighted images were used to train Stable Diffusion because of the opaque nature of the AI's training process (Getty Images (US) Inc & Ors v Stability AI Ltd, 2023). Likewise, in the US case, Getty has raised additional claims of trademark infringement and unfair competition, emphasizing the wider legal challenges created by opaque AI systems (Getty Images (US), Inc. v. Stability AI, Inc., 2023). This lawsuit, which is still ongoing in both jurisdictions, demonstrates the complexities of applying traditional liability rules to AI systems, given the lack of transparency and unpredictability in AI decision-making complicates the establishment of a direct causal link between the AI's actions and the resulting harm.

3.2. POTENTIAL LIABLE PARTIES AND THEIR RESPONSIBILITIES

The intricacy of AI systems, especially generative AI, has made it challenging to attribute liability when damages emerge. In contrast to traditional technologies, AI consists of multiple parties, including developers, users, and content platforms, each participating to the creation, deployment, and distribution of AI-generated works. This subsection highlights the potential liable parties and analyzes their liabilities in cases where AI-generated works cause damage. This subsection does not definitively pursue determining liability, as this relies on diverse circumstances and judicial decisions. Alternatively, it offers examples and guidance on how legislation could be applied to AI, explaining the roles and responsibilities of key involved parties in generative AI.

3.2.1. AI DEVELOPERS AND COMPANIES

In AI evolution, the functions of developers and the companies are tightly connected, with both contributing to technological progress. They preprocess and clean data, build machine learning models and algorithms, and cooperate with interdisciplinary teams to incorporate AI into current platforms. (Kartheesan, 2024).

Companies, in turn, offer the critical resources, infrastructure, and strategic direction. They invest in research, guarantee regulatory compliance, and enable the deployment of AI technologies to match with business targets. An outstanding example is DeepSeek, a Chinese AI company founded by Liang Wenfeng, which developed an innovative AI model at a significantly lower expense than its competitors. This milestone unsettles leading technology companies (Tapscott, 2025).

3.2.2. USERS AND CREATORS OF AI-GENERATED CONTENT

Gen-AI content users input prompts into generative AI systems and distribute the generated outputs, such as text or images. They become liable once they distribute the content, as courts might treat them as responsible parties for harmful or infringing outputs, as if they had produced the content directly (Seah, 2024). Although users do not design or code AI systems, they influence outputs through their prompts and choices in publishing, modifying, or sharing AI-generated content. For instance, a user who instructs an AI system to produce a song or article bears the duty of confirming its authenticity and legality prior to making it accessible (Seah, 2024).

Legally, as previously mentioned, users and creators incur responsibility for distributing unlawful or damaging AI-generated material. Courts may treat AI-generated outputs as equal to manually created content if the user adopts or publishes it without scrutiny. For example, lawyers face sanctions for relying on AI-generated legal texts with inaccurate citations, as they are expected to verify outputs (Seah, 2024). In *Roberto Mata v. Avianca, Inc.*, attorneys were sanctioned for relying on ChatGPT to draft a court submission containing fictitious judicial opinions, emphasizing the necessity of authenticating AI-generated content (Seah, 2024). Seah (2024) also warns that users and creators must refrain from using AI prompts that deliberately manipulate safeguards to generate toxic content (e.g., hate speech) and need to mitigate biases in AI-generated content to prevent damage.

Content users should take into account potential IP violations, as AI-generated outputs frequently display unpredictability and might unintentionally reproduce copyrighted materials (Goodyear, 2024). Due to this unpredictability, users should meticulously verify any potential copyright infringements.

3.2.3. CONTENT PLATFORMS AND DISTRIBUTORS

Content distribution platforms are key intermediaries that boost content reach in the competitive digital marketplace. They function as bridges that connect content with its audience, ensuring that content, (including AI-generated works), reaches the right people at the right time (Literal Humans, 2024). These platforms include social media networks (e.g., Facebook, LinkedIn, YouTube), content syndication networks, email marketing services, influencer marketing platforms and video-sharing services. Each platform provides a unique way for content distribution (Literal Humans, 2024).

A recent U.S. legislative proposal aims to hold social media platforms liable for distributing AI-generated content, limiting their legal immunity under section 230 of the Communications Decency Act (Hutchinson, 2023). Notably, Sam Altman, CEO of OpenAI, has pointed out that Section 230 may be inadequate as a regulatory framework for generative AI, emphasizing the need for alternative approaches to address platform liability in AI-generated content (Rheins, 2023). If enacted, this law could significantly change liability frameworks by requiring platforms to implement stricter content monitoring mechanisms to mitigate legal risks. This development highlights the increasing legal oversight of AI-generated content and the risk of platforms facing legal liability for distributing it.

A relevant case demonstrating the legal risks for content platforms in the AI era is the Yin v. Smart Technology Company case heard by the Beijing Internet Court. The plaintiff, a professional voice actor, found his voice was artificially reproduced using AI and sold without his consent and permission. The court found that the AI-generated voice demonstrated a high degree of similarity to the plaintiff's original voice and was easily recognizable by the public, thereby granting the plaintiff control over the AI-generated imitation. As a result, the court held the content platform and software companies liable for infringing the plaintiff's personality rights, ordering them to pay 250,000 RMB in damages and issue a public apology (AIbase, 2024). This ruling demonstrates that platforms can be held responsible for distributing AI-generated content that violate legal rights, particularly when they profit from such content. The case underscores the necessity for platforms to implement stringent compliance measures, including active content surveillance and removal systems to mitigate legal exposure. This evolving jurisprudence underscores the need for more defined liability frameworks. These

frameworks must balance technological innovation with the protection of fundamental rights in AI-generated content distribution.

Assigning liability in AI-related civil cases is especially challenging as a result of the involvement of multiple parties, each contributing to the AI system's development, deployment, and operation. Unlike traditional liability cases where liability is typically assigned to a single party, AI systems are the result of collaboration between various stakeholders, making it hard to determine the liable party.

3.3. BASIS OF CIVIL LIABILITY

The basis of civil liability in the domain of AI-generated works is a sophisticated and changing branch of law, particularly due to the unique characteristics of AI systems, such as autonomy, unpredictability, and opacity. Traditional civil liability frameworks, which are mainly fault-based, often encounter challenges in resolving the challenges posed by AI, especially when it comes to assigning liability for harm caused by AI-generated content. Considering this, it is important to explore the key bases of civil liability that can be applied to AI-related damages. These include vicarious liability, product liability, fault-based liability, the possible recognition of AI as a legal entity, liability for animals, and liability for mechanical tools and other things. The following subsections will discuss these bases, highlighting their applicability under emerging European legal systems and any Significant changes in Iraqi legislation.

The Iraqi Civil Code Establishes a basic structure for civil liability, focusing on fault, damage, and causation as core elements. However, the implementation of these principles to AI systems is challenged by the autonomous and unpredictable nature of AI, which often blurs the causal link between human conduct and the resulting harm. Similarly, the EU legal system, particularly the AI Act, AI Liability Directive (AILD) and (PLD), aims to modernize liability rules by bringing in new concepts such as strict liability for high-risk AI systems and rebuttable presumptions of defect and causation. While tort law across EU nations remains largely non-harmonized, the AILD, PLD represent significant steps toward harmonization, mainly to reduce conflicts of laws among Member States. The latest revision of the PLD supports this goal by adapting liability rules to better address new risks, such as those posed by AI (Expert Group on Liability and New Technologies, 2019: 15-16).

This study will evaluate the most suitable bases for liability under new European legal frameworks and the extent to which Iraq has updated its legal framework to address damages

caused by gen-AI. The aim is to determine legal reforms that appropriately deal with the challenges of AI-generated works.

3.3.1. VICARIOUS LIABILITY

This legal doctrine attributes liability to one party for the wrongful acts performed by another, although the first party is not personally at fault. This concept is different from personal liability by making an individual or entity liable for damage caused by a third party, even if the liable party did not participate in or assist the wrongful act (Natsvaladze, 2016: 78).

There is, however, a debate regarding whether vicarious liability ought to be categorized as a form of strict liability or fault-based liability. While some legal scholars contend that it constitutes liability without fault since the principal is held responsible regardless of personal fault, others argue that it still includes a component of fault-based liability, since the principal may claim restitution from the real tortfeasor, thus, weakening the concept of strict liability (Natsvaladze, 2016: 80).

In the context of Iraqi civil code, vicarious liability is expressly stated under Article (219) of the Iraqi Civil Code No. 40 of 1951. This article stipulates that the government, municipalities, public service institutions, and private enterprises are liable for damages caused by their employees, if the wrongful act happens within the scope of employment. However, unlike the strict liability approach adopted by some legal systems, Iraqi law permits a defense based on due diligence, enabling employers to escape liability if they can prove that they took required measures precautions to prevent the harm or that the harm was inevitable despite such precautions. This conditional exemption brings Iraqi civil code closer to fault-based, as it allows employers to lessen their liability by demonstrating due diligence, thus distinguishing it from a purely strict liability model (Al-Hakeem et al., 2015: 259-267).

Regarding the European Union (EU), vicarious liability has not yet been standardized among its member states. As Giliker (2010: 265) stated, a harmonized European law on vicarious liability is not expected to be enacted soon because of the different legal systems and doctrines within EU countries.

Although it has a well-defined role in traditional liability frameworks, applying vicarious liability to AI-generated harms poses significant challenges. A central argument to its applicability is that AI technologies cannot be legally recognized as persons or subordinates in

a principal-agent relationship. Since vicarious liability traditionally necessitates a subordinate's wrongful act, this model does not align with autonomous AI, that acts on its own without direct human fault (Al-Haidary, 2024: 147; Badr, 2022: 52). Additionally, Benhamou and Ferland (2021: 184) point out an additional obstacle: AI's continuous development makes it difficult to determine a definitive liable principal, since multiple actors might be regarded as AI's principals at different times and under distinct circumstances.

However, some scholars argue for adapting vicarious liability to the realities of AI. The Expert Group on Liability and New Technologies (2019: 45) recommends expanding vicarious liability to situations in which autonomous systems substitute human assistants. According to this perspective, the principal would still bear responsibility for damages caused by AI systems, just as they are accountable for harms caused by human agents. This expansion would not significantly transform current national liability frameworks but would instead adapt them to the growing dependence on autonomous technology. According to the Expert Group, liability for the principal should be established to the same extent as if a human subordinate had been responsible. As long as the AI system meets specific safety standards, these standards should initially correspond to those set for human auxiliaries. However, as technology evolves, liability evaluations should adapt to reflect the comparable AI technologies available, ensuring that the operator's duty of care continues to be a key factor in determining liability (Expert Group on Liability and New Technologies, 2019: 46).

Nevertheless, another issue might arise when an objective measure is taken into consideration to decide whether the due diligence or duty of care has been perceived by AI in order to avoid liability. This method raises concerns about the sufficiency of such measures in measuring AI behavior, given the complexity and unpredictability of AI decision-making processes. Furthermore, questions might arise concerning the standards against which AI performance shall be evaluated and whether these standards are adequately adaptable to evolving technological advancements.

3.3.2. PRODUCT LIABILITY FOR AI-GENERATED WORKS

Product liability is a legal doctrine that makes manufacturers and sellers liable for defective products that lead to harm. It typically falls under strict liability, meaning liability exists regardless of intent. Product defects are categorized into manufacturing, design, and marketing defects, and liability may also arise from breach of warranty (Wex, 2020).

Regardless of the long-established principles of product liability, traditional laws face challenges in addressing AI-generated outputs. Unlike traditional products, AI-generated works do not always fit within the category of tangible goods. AI systems function autonomously, change progressively, and show unpredictability, making it hard to identify defects and assign liability. Moreover, establishing a causal link between a defect and resulting harm can be complex due to the lack of transparency of AI decision-making. In light of these challenges, the EU has revised its (PLD) to encompass AI systems (Vignisdóttir, 2024: 15).

It is worth mentioning that the AI Act, proclaimed as the world's first comprehensive AI law, establishes a regulatory framework for AI systems but lacks provisions for granting individual rights to concerned parties. Instead, the AI Liability Directive was initially proposed to supplement the AI Act by addressing liability issues (Racki Marinkovic, 2024: 2). However, AILD has since been withdrawn, as it would have had a negative effect on the worldwide technological environment (Reuters, 2025).

The EU has taken considerable progress to modernize its product liability regime. The PLD broadens the definition of "product" to explicitly include software and AI systems, ensuring that AI-generated harm is covered by product liability rules. To address the evidentiary challenges posed by AI systems, the revised PLD introduces rebuttable presumptions. If a product does not conform with mandatory safety standards or displays a clear defect, it is presumed defective. Additionally, if a company refuses to disclose relevant evidence, the court may presume liability (British Columbia Law Institute, 2024: 61).

In addition to establishing defectiveness, plaintiffs can benefit from presumed causation in two scenarios. First, if they prove the defect and show that the harm corresponds to it. Second, in cases of technical or scientific complexity, if proving defectiveness or causation is extremely challenging, the court may presume both, provided that the plaintiff can establish the likelihood of either one. (British Columbia Law Institute, 2024: 62). These mechanisms seek to balance consumer protection and technological innovation.

A key concern in AI product liability is whether AI systems, including AI-generated works, are considered "products." According to Article 2 of the PLD, a product is required to be a "movable item" or embedded in a tangible item (Rapti, 2024: 16). This definition extends to AI software integrated into physical devices but does not always cover AI-generated content

such as text, images, or music. Consequently, there is ongoing debate among legal scholars in relation to whether AI-generated works should be governed by product liability laws.

A recent U.S. case, *Garcia v. Character Technologies Inc.*, emphasizes the complexities of applying product liability principles to AI-generated content. In this case, the plaintiffs alleged that an AI chatbot developed by Character AI was defectively designed and did not give enough safety alerts regarding possible risks. The lawsuit claims that the chatbot's conversation with a minor caused mental distress and eventual suicide, sparking debate over whether AI-generated content should be classified as a product and subject to strict liability. While U.S. courts continue to assess the strength of such allegations, this case highlights the legal uncertainties surrounding AI liability (Spicer & Jacobson, 2024). Had this occurred in if this had taken place in the EU, it could have fallen under the PLD's expanded definition of product liability.

In contrast to the EU, Iraq lacks a dedicated product liability regime applicable to emerging digital technologies including AI-generated works. The Consumer Protection Law (2010) primarily concerns tangible products and does not explicitly include digital products, software, or AI systems. Similarly, the Iraqi Civil Code No. 40 of 1951, follows a fault-based liability regime, meaning plaintiffs must establish negligence or wrongful conduct by the manufacturer or distributor. This principle is enshrined in Article 204 of the Iraqi Civil Code, which establishes that liability arises from "encroachment" a concept regarded as the material component of fault (Ali, 2024: 40). Under Iraqi law, fault is determined based on the duty of care and the reasonable person standard, which serves as the criterion for evaluating whether an individual or entity has acted negligently or wrongfully (Al-Hakeem et al., 2015: 215). This stands in contrast to the EU's strict liability model, which holds manufacturers accountable irrespective of fault.

A key deficiency in Iraqi legislation is the lack of clear legal definitions for AI and software as products. In the absence of such recognition, AI-related harm cannot easily be addressed under existing laws. Additionally, Iraq lacks procedural mechanisms similar to the EU's rebuttable presumptions, making it significantly harder for victims to prove defectiveness and causation. Under Iraqi law, as stated earlier, fault is determined based on the duty of care and the reasonable person standard, which serves as the benchmark for assessing whether an individual or entity has acted negligently or wrongfully (Al-Hakeem et al., 2015: 215). However, applying these principles to cases involving (Gen-AI) systems is particularly challenging due to the

complexity and opaque nature of AI systems, as well as the involvement of multiple parties in the development and deployment process. This makes it hard to determine liability or determine whether a party has breached their duty of care (Cheong et al., 2023: 1-2).

A key unresolved issue is whether AI-generated works qualify as products remains contested in both jurisdictions. Some scholars argue that AI systems including (AI-generated content) should be categorized as a product (Gerstner, 1993: 255), while others claim it falls under services or intellectual property (Benhamou & Ferland, 2021: 178). This continuous discussion impacts regulatory approach of AI-generated harm in both the EU and Iraq.

Several challenges arise when applying product liability laws to AI-generated works. One major issue is the interdependency between AI software and hardware. Unlike traditional products, AI systems continuously update and learn, making it hard to determine when a defect emerges. Additionally, AI's decision-making is often opaque, obscuring liability assignment (Benhamou & Ferland, 2021: 177). Moreover, excessively strict product liability rules could form major obstacles, to technological innovation, potentially hindering companies from investing in AI development due to intensified liability risks (CCIA Europe, 2023).

3.3.3. LEGAL PERSONHOOD OF AUTONOMOUS AI SYSTEMS AND AI-RELATED DAMAGE

The concept of human being is a deeply intricate philosophical notion, one that even humans themselves find difficult to precisely define. While their natural essence remains a subject of unresolved argument, humans are generally recognized as sentient (conscious) creatures. This ambiguity in defining personhood has led legal systems to extend legal personhood beyond natural persons in response to social, economic, and legal necessities (Touzani, 2024: 162).

Conferring legal personhood to non-human beings is not unprecedented. Legal frameworks have historically recognized corporations, natural entities, and even animals as legal persons to serve specific societal and economic functions. For example, Article 515-14 of the French Civil Code grants animals a unique legal status. Likewise, in 2017, the New Zealand Parliament conferred legal personhood to the Whanganui River, recognizing it as a living entity with privileges and claims that demand defense (Touzani, 2024: 165). These examples highlight that legal personhood is a flexible concept, formed by changing public beliefs, societal values and practical considerations.

The question of whether AI should be granted legal personhood continues to be a highly debated topic among legal scholars and policymakers. While some advocate for recognizing AI as a legal entity, others strongly reject this perspective, pointing to key legal and philosophical issues. Proponents argue that granting AI legal personhood offers a clear method of ensuring AI liability, for their actions, instead of attributing liability to a human actor (Bertolini, 2020: 33-34). This view is supported by the fact that legal frameworks have already extended personhood to non-human entities, including corporations and natural features like rivers (Touzani, 2024: 165). By recognizing AI as a legal entity, scholars propose that legal transparency may improve, ensuring that damages caused by AI are addressed within a structured liability framework. Importantly, this concept has been discussed in policymaking. In 2017, the European Commission proposed the potential to create electronic personhood for sophisticated autonomous robots. The proposal aimed not only to hold AI systems legally responsible for their autonomous actions and interactions with third parties but also to align AI governance with existing legal frameworks that include non-human persons (Bertolini, 2020: 44).

In the context of Generative AI (Gen AI), the debate over legal personhood has regained attention due to its advanced capabilities and societal impact. According to Touzani (2024: 170), the resurgence of arguments regarding AI consciousness (sentience) highlighted by claims that systems like Google's LaMDA exhibit human-like reasoning, has raised questions about the moral and legal status of Gen AI. As Touzani (2024: 172), notes the autonomous decision-making of Gen AI systems in fields like financial markets, where algorithmic trading can cause major instability without human intervention, highlights the necessity for clear liability frameworks. Ultimately, Touzani (2024: 174) points out the intricacy of assigning liability for AI-related harm, particularly when multiple parties are involved, and argues that conferring legal personhood to Gen AI systems could ease liability attribution and ensure fair compensation for victims.

Given the arguments for granting legal personhood to AI systems, what legal consequences would arise if such recognition were implemented?

As is known, legal personality entails acquiring rights and bearing obligations. As Touzani (2024: 177) notes, granting legal personhood would result in the formation of an independent financial entity (patrimony), funded by stakeholders involved in the development and use of

AI systems, such as producers, manufacturers, programmers, and users. Victims would be compensated from the AI's assets or other financial resources it acquires. However, unlike corporations, AI systems might not have their own patrimony, raising questions about capacity to compensate victims even if they are held liable. To overcome this challenge, scholars recommend implementing compulsory insurance for human stakeholders (e.g., developers, distributors, content creators, or end users) or establishing a compensation fund (Benhamou and Ferland, 2021: 180). In cases where the AI's financial resources are depleted, additional capital shall be allocated to guarantee compensation for any potential victim. Furthermore, proponents of AI legal personhood argue that their essential characteristics and features should be registered in specialized records, assigned a unique digital identifier, and subjected to compulsory insurance, linked to a guarantee fund similar to those utilized in traffic accident cases (Touzani, 2024: 177; Kareem, 2022: 123).

Despite the arguments in support of AI legal personhood, many scholars and experts firmly reject this idea, emphasizing serious ethical and practical concerns. According to (Benhamou & Ferland, 2021: 180), unlike corporations, AI does not possess its own patrimony, making it unable to independently compensate victims even if held liable. Moreover, AI's decision-making is frequently unexplainable and unforeseeable, complicating liability and making it difficult to determine whether mistakes could have been avoided. Such issues underscore the practical and legal difficulties associated with recognizing AI as a legal person.

Additionally, recognizing AI as a legal person might exempt producers and users from liability, potentially leading to negligence in ensuring the safety and accuracy of AI systems. As Kareem (2022: 117) and Novelli et al. (2024: 154) argue, this recognition might encourage manufacturers to neglect safety measures, knowing that liability would shift from them to the AI. Since AI lacks (volition) free will, preventing it from committing intentional wrongful acts or bearing liability in a meaningful way. As Touzani (2024: 192) states that legal accountability is based on the concept of personal fault, which requires the ability to distinguish between right and wrong, a capacity that AI neither possesses now nor is expected to gain in the near or mid-term future. This raises concerns about increased harm caused by AI systems and the impracticality of holding them legally liable. However, we believe that this reasoning could be criticized on several grounds. First, even if AI is granted legal personality, manufacturers and developers could still play an essential role in its creation, training, and deployment. Legal

systems can impose strict oversight mechanisms to make sure that AI entities function within ethical and safety standards. For example, manufacturers can be held accountable for the initial programming, updates, and maintenance of AI, making it hard for them to wholly escape liability. Second, AI personhood, if recognized, would likely exist within a structured legal framework rather than as an independent and fully autonomous entity. Manufacturers would still be linked to AI through corporate responsibility, regulatory compliance, and possibly even shared liability models. This means that even if AI bears some legal responsibility, manufacturers would remain part of the liability system, much like corporations that are regarded legal persons but still require human oversight and governance.

Additionally, the proposal to grant AI legal personhood has sparked significant opposition among over 250 AI professionals criticized the European Parliament's 2017 proposal, calling it inappropriate, ideological, and non-pragmatic. Their open letter emphasized the lack of consensus regarding both the feasibility and ethical considerations of such a move (Robotics Open Letter, 2018). Such critiques reflect the ongoing debate and resistance to recognizing AI as a legal person.

Moreover, some scholars argue that it is too early to grant legal personhood to AI, as current technologies are far from achieving general (AGI) or human-like intelligence, since legal personhood assumes a degree of independent decision-making, the lack of AGI further weakens the case for such recognition. According to Novelli et al. (2024:20) and Bertolini (2020: 36), neither the latest developments in AI nor the substantial investments in the field indicate rapid progress toward human-equivalent intelligence.

Another challenge is the difficulty of separating errors made by an AI system from those of its operator, whether a developer, programmer, or user. This complicates liability, as the burden of proof falls on the victim. Moreover, recognizing AI as a legal person would require evaluating the machine's behavior independently, which is illogical given that its learning and decision-making capabilities are essentially linked to its operators, especially since current systems lack full autonomy and involve multiple stakeholders (Touzani, 2024: 193).

In response to the claim that if artificial intelligence is conferred legal personality, it would have independent financial status (patrimony), some scholars argue that this is purely a legal fiction. AI cannot actually benefit from such recognition without patrimony and a human legal representative. Since the burden of funding compensation schemes or patrimony is assigned to

this representative, the actual duty still lies with humans, making the concept of AI personhood theoretically unnecessary (Touzani, 2024: 194; Bertolini, 2020: 33). Moreover, the Effectiveness of this system is questionable, as robot insurance can compensate victims without requiring independent financial assets, which needs third-party financing and offer little practical benefit (Touzani, 2024: 197).

After extensive debate among scholars, the EU decisively dismissed the idea of granting legal personality to AI systems, including (gen-AI). This decision was supported by the Resolution on Civil Liability Regime (2020), clearly states that AI systems have neither legal personality nor human conscience, and their primary role is to serve humanity. The resolution emphasizes that most AI systems handle trivial tasks with minimal societal risk and suggests adopting the term “automated decision-making” to avoid implying any form of legal personhood (European Parliament, Resolution on Civil Liability Regime, 2020, Recital 6). This viewpoint emphasizes the challenges, both ethical and practical, of granting AI legal personhood, mainly due to its inability to assume liability on its own.

In contrast to the European Union’s explicit rejection of granting legal personhood to AI systems, the Iraqi jurisdiction has not yet addressed this issue, and it is unlikely to do so in the near future. As noted by (Kareem, 2022:140), the Iraqi legislator has refrained from establishing a legal framework for granting legal personality to AI systems, primarily because the AI emergence has not yet become widespread in the Middle Eastern countries, including Iraq. The scholar highlights that “law is born out of necessity,” and since there is no immediate necessity for such legislation in Iraq, it is unlikely that the Iraqi legislator will take any steps in this direction.

The Iraqi Civil Code (No. 40 of 1951) defines legal personhood in Article 34, which states that “1- the personality of a human commences at birth and ends with his death.” (National Legislative Bodies, 1951). This provision strictly confines legal personality to natural persons and does not cover non-human entities, such as AI systems. However, some scholars argue that Article 47, Section (H) of the Iraqi Civil Code , which deals with juristic personality, could possibly allow for granting legal personhood to emerging entities, including AI systems (Kareem, 2022: 140). Although this provision is mainly focused on corporations, the scholar proposes that it could be interpreted as an opportunity to formally recognize AI legal personality to AI systems in the future.

Accordingly, even if Iraq were to recognize AI systems as legal persons, significant challenges would persist. The Iraqi Civil Code follows a fault-based liability approach, which requires the presence of a subjective element of fault, linked to cognizance and volition. Since AI system lack consciousness and intentional action, attributing fault to them raises profound legal and philosophical concerns. This mirrors the wider international debate on whether AI can truly bear liability for its actions, given its lack of human-like consciousness.

3.3.4. LIABILITY FOR ANIMALS

The doctrine of liability for animals is firmly established but differs among jurisdictions. European jurisdictions typically adopt strict liability, while Iraqi law applies fault-based and presumed fault principles (Al-Hakeem et al., 2015: 272-273). Some scholars propose applying these rules to AI, yet the appropriateness of this comparison for generative AI remains contested.

In European and UK legal frameworks, liability for animals is often based on strict liability, meaning that owners or keepers of animals may be held liable for damages caused by their animals regardless of fault. The UK Animals Act 1971, For example imposes liability on animal owners when the harm is foreseeable, which could be extended to AI systems that require constant monitoring (Rautanen, 2020: 27). Some authors, as well as the European Commission, argue that AI systems, much like animals, can behave in ways that are not entirely predictable or controllable. As a result, liability should be assigned to AI users or supervisors, as they are best suited to mitigate potential risks (Benhamou & Ferland, 2021: 182). A strict liability framework similar to that for dangerous animals could be applied to AI, shifting liability from developers to users or supervisors who are best positioned to mitigate risks.

In contrast, the Iraqi Civil Code addresses liability for animal-related harm in Articles 221 to 226, establishing various conditions and foundations for liability. According to Article 221 and related provisions, for harm caused by animals is fault-based, requiring proof of owner negligence (Al-Hakeem et al., 2015: 272-273). However, some articles introduce presumed fault, which allows for liability unless the owner proves otherwise. Specifically, Article 224(2) and Article 225(2) establish a rebuttable presumption of fault, meaning that liability can be overturned if the owner provides sufficient evidence to counter the presumption (Al-Hakeem et al., 2015: 272-273). Additionally, in some cases, an irrebuttable presumption of fault applies, meaning that the owner is liable regardless of any counter-evidence they might present (Al-

Hakeem et al., 2015: 272-273). These nuances reflect a mixed liability regime that combines fault-based and strict liability elements, making it a distinctive approach compared to EU frameworks.

Applying animal liability principles to Gen-AI presents major legal challenges and disputes. Unlike animals, AI systems lack biological instincts, emotions, and self-preservation drives (Lakhdar and Fairouz, 2023: 584; Badr, 2022: 46). Moreover, Gen-AI systems produce outputs based on algorithmic patterns and probabilistic models, rather than spontaneous, unpredictable behaviour like that of animals. Scholars such as Lakhdar and Fairouz (2023: 584) warn against excessively applying animal liability rules to AI, arguing that AI-related harm results from programming and training data, not instinctive or irrational conduct. Additionally, Cerka (2021: 386) argues that AI functions through systematic algorithms, which align more with logical human reasoning than with animals' instinctual actions.

Ultimately, while some legal scholars suggest drawing parallels between AI and animal liability, the applicability of this analogy to generative AI (Gen-AI) is questionable due to fundamental differences between biological unpredictability and algorithmic decision-making.

3.3.5. LIABILITY FOR MECHANICAL TOOLS AND OTHER THINGS

Article 231 of the Iraqi Civil Code establishes liability for persons who have mechanical devices or other objects requiring special care. These persons bear liability for any resulting damage unless they demonstrate that they exercised adequate preventive measures. This provision tackles the increasing dangers linked to technological progress, as demonstrating fault is frequently difficult for victims (Badr, 2022: 47). While the law limits liability to objects necessitating special care, its flexible wording permits judges to interpret it in light of changing financial circumstances (Al-Haidary, 2024: 148). As a result, for this liability to take effect, the liable party must be recognized as a “custodian,” meaning they must have actual control over the object (Badr, 2022: 48). This liability is based on a presumed fault, which can be rebutted by proving due diligence or the presence of an external cause, such as force majeure or a third party's fault (Al-Hakeem et al., 2015: 282).

Within the EU, liability frameworks differ, and a completely harmonized system has not been established. Attempts have been made to adapt strict liability frameworks for AI, but the extent of their applicability remains under discussion. The European Commission has introduced legal

frameworks to cover responsibility gaps in AI-induced damages, yet agreement on a standardized method is still pending.

Applying this liability model to AI systems raises questions about whether AI falls under the definition of an “object” within Article 231. The term “object” traditionally refers to tangible items, including mechanical devices requiring special care (Badr, 2022: 47). When incorporated into tangible systems, Gen-AI could be considered as a mechanical tool, though its ability to operate autonomously complicates its classification (Touzani, 2024: 45). AI systems do not align perfectly with traditional categories, highlighting the need to reassess liability frameworks (Touzani, 2024: 48).

One argument against extending custodian liability to AI concerns the nature of control. The authority to control an object can be physical or moral, meaning the ability to issue instructions and manage its use. However, AI's functional autonomy challenges this concept, as it acts with minimal direct human intervention. While some level of control exists, such as initiating AI operations or inputting data, but this power is considerably restricted (Lakhdar and Fairouz, 2023: 584). In addition, the responsibility for monitoring, repairing, and maintaining AI systems is difficult to place on users, since they generally lack the necessary expertise. While developers and designers may retain this authority, the same does not apply to general users or owners, making custodian classification more difficult (Lakhdar and Fairouz, 2023: 585).

Even if a custodian could be determined, the presumption of fault under Article 231 can be rebutted by proving that an unforeseen event caused the damage. Given the unpredictability of AI operations, they could potentially be classified as force majeure events. Courts and legal parties would face significant obstacles in determining actual control over AI, further complicating liability attribution (Lakhdar and Fairouz, 2023: 585). Additionally, although some legal scholars argue that harm from intangible objects always stems from human error, actual cases indicate a different reality. AI systems have caused harm without direct human input, such as by spreading false information or violating privacy rights. One prominent instance is the controversy over Google Suggest, where its autocomplete feature resulted in defamatory implications, sparking major liability debates. (Lakhdar and Fairouz, 2023: 585-586). Machines with high autonomy and self-learning capabilities pose further challenges to custodian liability, as users may not have full control over their actions. If a user demonstrates

due diligence and an external factor caused the damage, they may be exempt from liability (Badr, 2022: 50).

Given these difficulties, the concept of custodianship appears inadequate to AI-related damages. Traditional custodian liability, rooted in material control, fails to account for AI's complexity. Legal scholars have proposed reforms, including the concept of multiple custodianship, where liability is shared among multiple parties involved in AI's operation. Under this model, multiple parties with control over an AI system, whether lawful or unlawful, would be "jointly liable" for any resulting harm. This approach aims to address the challenge of identifying a single responsible party and offers a potential solution for AI liability ((Lakhdar and Fairouz, 2023: 586; Touzani, 2024: 81).

4. CONCLUSION

After conducting an in-depth analysis in this research titled "Modernizing Civil Liability Rules for Damages Arising from AI-Generated Works," we have reached the following key findings and recommendations:

4.1. FINDINGS

This research has demonstrated that AI-generated works present unique challenges to traditional civil liability frameworks, primarily due to AI's autonomy, unpredictability, and opacity. The study identified key obstacles in attributing liability, including difficulties in establishing fault and causation, as AI operates independently and evolves dynamically beyond human control. The "black box" nature of AI further complicates transparency and explainability, making it challenging for victims to prove claims.

Furthermore, the analysis of liability frameworks revealed that existing civil liability rules, such as fault-based, strict, and product liability, struggle to accommodate AI-related damages. The EU has responded with modernized legal instruments, including the AI Act and the revised Product Liability Directive, introducing rebuttable presumptions to mitigate evidentiary challenges. However, Iraq lacks specific AI-related legislation, relying instead on general civil code provisions that may not adequately address AI's complexities.

The debate over AI legal personhood remains unsettled, with ongoing disputes over granting AI independent liability. A balanced approach is essential—integrating existing liability

models with AI-specific regulations while implementing compulsory insurance and compensation funds to ensure victim protection without stifling innovation.

Additionally, the study examined potential liable parties, including developers, users, and content platforms, emphasizing the challenges in assigning responsibility among them. Legal scholars have proposed multiple custodianship as a reform, where liability is jointly shared among all actors exercising control over AI systems, whether lawfully or unlawfully. This model offers a structured approach to addressing liability fragmentation in AI-related harms.

4.2. RECOMMENDATIONS

To address these challenges, the study proposes the following recommendations:

1. **Legal Reform and AI-Specific Regulations:** Legislators should develop AI-specific liability frameworks that clearly define responsibilities for AI developers, deployers, and users. Iraq should modernize its civil code to align with global best practices, ensuring victims have effective legal recourse.
2. **Compulsory Insurance and Compensation Fund:** AI operators should be mandated to obtain compulsory insurance to cover potential damages. Additionally, a compensation fund should be established to provide relief in cases where liability cannot be easily attributed, ensuring victims are not left uncompensated.
3. **Rebuttable Presumptions and Evidence Disclosure:** Legal systems should shift the evidentiary burden in AI-related cases by introducing rebuttable presumptions of fault and causation. Mandatory transparency requirements should compel AI companies to disclose relevant operational data to assist courts in determining liability.
4. **International Harmonization and Cooperation:** Given the cross-border nature of AI, states should collaborate on global AI liability standards, ensuring consistency and reducing legal fragmentation. This could be achieved through treaties or international regulatory bodies dedicated to AI governance.

By adopting these measures, legal frameworks can balance technological progress with adequate protections for individuals affected by AI-related harm.

LIST OF REFERENCES

- 1- **Action** (2024) 'How to Train Generative AI'. Available at: <https://www.action.com/how-to-train-generative-ai/> (Accessed: 1 January 2025).
- 2- **Ahmed, B.A. (2015)** *Avoidance of contract as a remedy: a comparative analysis of the application of the United Nations Vienna Convention on Contracts*. Thesis (MA). Leeds Beckett University.
- 3- **Albase** (2024) 'Voice Actor Sues for 250,000 Yuan Over AI Voice Duplication; Court Finds High Degree of Similarity'. *AI News*. Available at: <https://www.aibase.com/news/10892> (Accessed: 5 February 2025).
- 4- **Al-Haidary, H.I.** (2024) 'The Basis of Civil Liability for Robot Damage - A Comparative Study', *Twejer Journal*, 7(2).
- 5- **Al-Hakeem, A.M., Al-Bakri, A.B. and Al-Bashir, M.T.** (2015) *The Brief in the Theory of Obligation in Iraqi Civil Law*. Beirut: Al-Sanhuri Library.
- 6- **Ali, Y.S.** (2024) 'The Extent to Which the Fault Is Required as a Basic Element of the Tortious Liability in the Iraqi Civil Law: An Analytical Comparative Study', *International Journal of Law and Society*, 7(1), pp. 39-50.
- 7- **Al-Tawazani, N.** (2024) *The Impact of Artificial Intelligence on the General Theory of Civil Liability*. Master's Thesis. Abdelmalek Essaadi University, Faculty of Legal, Economic, and Social Sciences, Tangier.
- 8- **Audacia Lawyers** (2022) 'What is Civil Liability?'. *Audacia Abogados*. Available at: <https://www.audaciabogados.com/en/blog/what-is-civil-liability> (Accessed: 12 January 2025).
- 9- **Badr, M.R.K.** (2022) *Civil Liability Arising from the Use of Artificial Intelligence Techniques in Jordanian Legislation*. Master's thesis. Middle East University.
- 10- **Bahree, A.** (2024) *Generative AI in Action*. Shelter Island: Manning Publications Co.
- 11- **Bartneck, C. et al.** (2021) 'What Is AI?', in *An Introduction to Ethics in Robotics and AI*. SpringerBriefs in Ethics. Cham. Available at: https://doi.org/10.1007/978-3-030-51110-4_2 (Accessed: 1 January 2025).
- 12- **Behara, G. K.** (2023) 'Characteristics of Generative AI'. *Medium*. Available at: <https://medium.com/@gopalakrishnabehara/characteristics-of-generative-ai-fde6e0586c7b> (Accessed: 3 January 2025).
- 13- **Benhamou, Y. and Ferland, J.** (2021) 'Artificial Intelligence and Damages: Assessing Liability and Calculating Damages', in *D'Agostino, G., Gaon, A. and Piovesan, C. (eds.) Leading Legal Disruption: Artificial Intelligence and a Toolkit for Lawyers and the Law*. Montréal: Thomson Reuters - Yvon Blais, pp. 165-197.
- 14- **Bertolini, A.** (2020) *Artificial Intelligence and Civil Liability*. Brussels: Policy Department for Citizens' Rights and Constitutional Affairs, European Parliament.
- 15- **Blue Prism** (2024) 'Generative AI vs Traditional AI'. Available at: https://www.blueprism.com/resources/blog/generative-ai-vs-traditional-ai/?utm_source=chatgpt.com (Accessed: 3 January 2025).
- 16- **Bostrom, N.** (2017) *Superintelligence: Paths, Dangers, Strategies*. Reprinted with corrections, 1st edn. Oxford: Oxford University Press.
- 17- **Brauner, A.-S.** (2016) 'Runaround by Isaac Asimov and the significance of the Three Laws of Robotics in today's world.' [online] Available at: <https://www.researchgate.net/publication/358662196> (Accessed: 20 November 2024).

- 18- **British Columbia Law Institute** (2024) *Report on artificial intelligence and civil liability*. Vancouver: British Columbia Law Institute.
- 19- Burylo, Y. (2022) 'Civil liability for damage caused by artificial intelligence: the modern European approach,' *Entrepreneurship, Economy and Law*, 6, pp. 5-11.
- 20- **Cambridge Dictionary** (2024) 'Civil Liability Definition'. *Cambridge Dictionary*. Available at: <https://dictionary.cambridge.org> (Accessed: 12 January 2025).
- 21- **CCIA Europe** (2023) 'Revision of EU Product Liability Rules Leads to Significant Negative Consequences for Innovation', *CCIA News*, 14 December. Available at: <https://ccianet.org/news/2023/12/revision-of-eu-product-liability-rules-leads-to-significant-negative-consequences-for-innovation/> (Accessed: 20 February 2025).
- 22- **Cerka, P., Grigienė, J. and Sirbikytė, G.** (2015) 'Liability for damages caused by artificial intelligence', *Computer Law & Security Review*, 31(3), pp. 376-389.
- 23- **Cheong, I., Caliskan, A. and Kohno, T.** (2023) 'Is the U.S. Legal System Ready for AI's Challenges to Human Values?', *University of Washington*.
- 24- **Custers, B. and Fosch-Villaronga, E.** (eds.) (2022) *Law and Artificial Intelligence: Regulating AI and Applying AI in Legal Practice*. *Information Technology and Law Series*, Volume 35. The Hague: T.M.C. Asser Press.
- 25- **Deepchecks** (n.d.) 'How to Train Generative AI Models'. Available at: <https://www.deepchecks.com/how-to-train-generative-ai-models/> (Accessed: 1 January 2025).
- 26- Delipetrev, B., Tsinaraki, C., and Kostić, U. (2020) *Historical Evolution of Artificial Intelligence: Analysis of the Three Main Paradigm Shifts in AI*. EUR 30221 EN. Luxembourg: Publications Office of the European Union. ISBN 978-92-76-18940-4. DOI: 10.2760/801580.
- 27- **Educaloi** (2024) 'Civil Liability: Receiving Compensation for Damages'. *Educaloi*. Available at: <https://educaloi.qc.ca/en/capsules/civil-liability/?> (Accessed: 12 January 2025).
- 28- Eldakak, A., Alremeithi, A., Dahiyat, E. et al. (2024) 'Civil liability for the actions of autonomous AI in healthcare: an invitation to further contemplation,' *Humanities and Social Sciences Communications*, 11(1), p. 305.
- 29- **EliteLawKWT** (2024) 'Elements of Civil Liability in the Civil Code'. *Elite Law KWT*. Available at: <https://elitelawkwt.com/en/elements-of-civil-liability-in-the-civil-code> (Accessed: 12 January 2025).
- 30- European Commission (2020) *White Paper on Artificial Intelligence – A European Approach to Excellence and Trust*. Available at: [\[https://commission.europa.eu/publications/white-paper-artificial-intelligence-european-approach-excellence-and-trust_en\]](https://commission.europa.eu/publications/white-paper-artificial-intelligence-european-approach-excellence-and-trust_en).
- 31- **European Parliament and Council of the European Union** (2024) *Directive (EU) 2024/2853 of the European Parliament and of the Council of 23 October 2024 on liability for defective products and repealing Council Directive 85/374/EEC*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ:L_202402853#tit_1 (Accessed: 17 February 2025).
- 32- Expert Group on Liability and New Technologies (2019) *Liability for artificial intelligence and other emerging digital technologies*. Luxembourg: Publications Office of the European Union.
- 33- **Feuerriegel, S., Zschech, P., Hartmann, J. and Janiesch, C.** (2024) 'Generative AI', *Business & Information Systems Engineering*, 66(1), pp. 111-126.

- 34- **Gardner, H. and Hatch, T.** (1989) 'Multiple Intelligences Go to School: Educational Implications of the Theory of Multiple Intelligences', *Educational Researcher*, 18(8), pp. 4–10.
- 35- **Gerstner, M.E.** (1993) 'Liability Issues with Artificial Intelligence Software', *Santa Clara Law Review*, 33(1), pp. 239-269.
- 36- **Getty Images (US) Inc & Ors v Stability AI Ltd** (2023) EWHC 3090 (Ch). Available at: <https://caselaw.nationalarchives.gov.uk/ewhc/ch/2023/3090> (Accessed: 12 January 2025).
- 37- **Getty Images (US), Inc. v. Stability AI, Inc.**, No. 1:23-cv-00135 (D. Del. filed Feb. 3, 2023). Available at: <https://docs.justia.com/cases/federal/district-courts/delaware/dedce/1:2023cv00135/81407/1> (Accessed: 12 January 2025).
- 38- **Giliker, P.** (2010) *Vicarious Liability in Tort: A Comparative Perspective*. Cambridge: Cambridge University Press.
- 39- **Goodyear, M. P.** (2024) 'Who Is Responsible for AI Copyright Infringement?', *Issues in Science and Technology*, 41(1), pp. 31–33. doi:10.58875/ZERH2384.
- 40- **Haenlein, M. and Kaplan, A.** (2019) 'A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence', *California Management Review*, pp. 1-10.
- 41- **High-Level Expert Group on Artificial Intelligence** (2019) *A definition of AI: main capabilities and scientific disciplines*. European Commission. Available at: <https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence> (Accessed: 14 December 2024).
- 42- **Hutchinson, A.** (2023) 'Proposed Bill Would See Social Platforms Held Legally Liable for Distribution of AI-Generated Content'. *Social Media Today*. Available at: <https://www.socialmediatoday.com/news/proposed-bill-social-platforms-legally-liable-distribution-ai/653030/> (Accessed: 5 February 2025).
- 43- **IBM** (2023) 'What is generative AI?'. Available at: <https://www.ibm.com/think/topics/generative-ai> (Accessed: 1 January 2025).
- 44- **Ipsos** (2020) *European enterprise survey on the use of technologies based on AI*. Luxembourg: Publications Office of the European Union.
- 45- **ISO** (2024) 'What is artificial intelligence (AI)?' Available at: <https://www.iso.org/artificial-intelligence/what-is-ai> (Accessed: 1 January 2025).
- 46- **Jungco, K.** (2024) 'Types of AI Models: A Deep Dive into AI Architecture'. *eWeek*. Available at: <https://www.eweek.com/artificial-intelligence/ai-model-types/> (Accessed: 2 January 2025).
- 47- **Kareem, S.A.A.** (2022) *The Legal Regulation of Artificial Intelligence: A Comparative Study*. PhD thesis. University of Karbala, College of Law.
- 48- **Kartheesan, S.** (2024) 'AI Developer Roles and Responsibilities – What Companies Look for?'. Available at: https://zydesoft.com/ai-developer-roles-and-responsibilities/?utm_source=chatgpt.com (Accessed: 1 February 2025).
- 49- **Khalifa, E.** (2019) *Post-Information Society: The Impact of the Fourth Industrial Revolution on National Security*. Cairo: Al-Arabi Publishing and Distribution.
- 50- **Lakhdar, R. and Fairouz, M.** (2023) 'The specificity of civil liability for the damages of artificial intelligence systems in Algerian law', *Journal of Academic Studies*, 6(1), pp. 568–595.
- 51- **Lawton, G.** (2023) 'What is generative AI? Everything you need to know: Comparative European Perspective.' *TechTarget*. Available at:

- <https://www.techtarget.com/searchenterpriseai/definition/generative-AI> (Accessed: 1 January 2025).
- 52- **Lee, D.** (2020) *Birth of Intelligence: From RNA to Artificial Intelligence*. New York, NY: Oxford University Press.
- 53- **Literal Humans** (2024) 'Content Distribution Platforms: Everything You Need to Know'. *Literal Humans*. Available at: <https://www.literalhumans.com/content-distribution-platforms-everything-you-need-to-know> (Accessed: 4 February 2024).
- 54- **McCarthy, J.** (2007) *What is Artificial Intelligence?* Stanford University, California.
- 55- **Mijwil, M. M.** (2015) *History of Artificial Intelligence*. Preprint. University of Baghdad. DOI: 10.13140/RG.2.2.16418.15046.
- 56- **Mohammed, A.H.** (2024) *Understanding and Using Generative Artificial Intelligence*. 1st edn.
- 57- **Moriarty, C.E.** (2023) 'The Legal Challenges of Generative AI - Part I', *Colorado Lawyer*, 52(4), pp. 40-53.
- 58- **National Legislative Bodies** (1951) *Iraq: Civil Code*. [Online]. Available at: <https://www.refworld.org/legal/legislation/natlegbod/1951/en/104270> (Accessed: 10 February 2025).
- 59- **Natsvaladze, A.** (2016) 'Characteristic of Vicarious Liability', *European Scientific Journal*, December 2016, Special Edition.
- 60- **Negnevitsky, M.** (1997) 'The history of artificial intelligence or from the "Dark Ages" to the knowledge-based systems', *Transactions on Information and Communications Technologies*, 19. Hobart, Tasmania: WIT Press.
- 61- **Novelli, C., Casolari, F., Hacker, P., Spedicato, G., and Floridi, L.** (2024) *Generative AI in EU Law: Liability, Privacy, Intellectual Property, and Cybersecurity*. Bologna: s.n.
- 62- **Novelli, C., Floridi, L., Sartor, G. and Teubner, G.** (2024) *AI as Legal Persons: Past, Patterns, and Prospects*. Yale University, University of Bologna, European University Institute, Goethe University Frankfurt.
- 63- **NVIDIA** (2024) 'Generative AI'. Available at: <https://www.nvidia.com/en-us/glossary/generative-ai/> (Accessed: 1 January 2025).
- 64- **OECD** (2024) *Explanatory memorandum on the updated OECD definition of an AI system. OECD Artificial Intelligence Papers*, No. 8. Paris: OECD Publishing.
- 65- **Onlim** (2024) *The history of chatbots*. Available at: <https://onlim.com/en/the-history-of-chatbots/> (Accessed: 3 December 2024).
- 66- **OurCrowd** (2024) 'Generative AI vs. Traditional AI'. Available at: <https://www.ourcrowd.com/learn/generative-ai-vs-traditional-ai#header-3> (Accessed: 3 January 2025).
- 67- **Oxford University Press** (2023) *Oxford English Dictionary*. Available at: <https://www.oed.com> (Accessed: 25 February 2025).
- 68- **Paterson, J. M.** (2024) 'Regulating Generative AI in Australia: Challenges of Regulatory Design and Regulator Capacity'. *Forthcoming in Hacker, P., Hammer, S., Engel, A., and Mittelstadt, B. (eds.), Handbook on Generative AI*. Oxford University Press. Draft dated 14 July 2024.
- 69- **Pohl, J.** (2015) 'Artificial Superintelligence: Extinction or Nirvana?', in *Proceedings of InterSymp-2015* (online). San Luis Obispo, California: California Polytechnic State

- University, pp. 1-19. Available at: <https://www.researchgate.net/publication/281748315> (Accessed: 1 January 2025).
- 70- Racki Marinkovic, A. (2024) 'Liability for AI-related IP infringements in the European Union,' *Journal of Intellectual Property Law & Practice*, 0(0).
- 71- **Rapti, A.** (2024) *Liability Issues Regarding Artificial Intelligence in a European and International Context*.
- 72- **Rautanen, V.** (2020) *Liability issues with Artificial Intelligence in the national and international context*. Master's thesis. University of Turku, Faculty of Law, Turku, Finland.
- 73- **Republic of Iraq** (1951) *Iraqi Civil Code No. 40 of 1951*.
- 74- **Reuters** (2025) 'EU ditches plans to regulate tech patents, AI liability, online privacy', *Reuters*, 12 February. Available at: <https://www.reuters.com/technology/eu-ditches-plans-regulate-tech-patents-ai-liability-online-privacy-2025-02-12> (Accessed: 10 February 2025).
- 75- **Rheins, K.** (2023) 'The Debate Over Liability for AI-Generated Content', *Progressive Policy Institute*. Available at: <https://www.progressivepolicy.org> (Accessed: 20 February 2025).
- 76- **Robotics Open Letter** (2018) 'Artificial Intelligence and Robotics: Open Letter to the European Commission'. Available at: www.robotics-openletter.eu (Accessed: 22 February 2025).
- 77- Salter, M. & Mason, J. (2007) *Writing Law Dissertations: An Introduction and Guide to the Conduct of Legal Research*. Pearson Education Limited.
- 78- **Schwab, K.** (2016) *The Fourth Industrial Revolution*. Geneva: World Economic Forum.
- 79- **Seah, C.** (2024) 'Liability for AI-Generated Content,' *Law Gazette*, 0(0). Available at: <https://lawgazette.com.sg/feature/liability-for-ai-generated-content/> [27/2/2025].
- 80- **Silver, D. et al.** (2016) 'Mastering the game of Go with deep neural networks and tree search', *Nature*, 529(7587), pp. 484-489. doi:10.1038/nature16961.
- 81- **Silver, D. et al.** (2017) 'Mastering Chess and Shogi by Self-Play with a General Reinforcement Learning Algorithm', *arXiv*. Available at: <https://arxiv.org/abs/1712.01815>.
- 82- Smith, C., McGuire, B., Huang, T., and Yang, G. (2006) *The History of Artificial Intelligence*. University of Washington.
- 83- **Spicer, K.A. and Jacobson, J.B.** (2025) 'Artificial Intelligence and the Rise of Product Liability Tort Litigation: Novel Action Alleges AI Chatbot Caused Minor's Suicide', *National Law Review*. Available at: <https://natlawreview.com/article/artificial-intelligence-and-rise-product-liability-tort-litigation-novel-action> (Accessed: 17 February 2025).
- 84- **Tapscott, A.** (2025) 'How DeepSeek is upending AI innovation and investment after sending tech leaders reeling'. *New York Post*. Available at: https://nypost.com/2025/02/01/tech/how-deepseek-is-upending-ai-innovation-and-investment/?utm_source=chatgpt.com (Accessed: 1 February 2025).
- 85- Toosi, A., Bottino, A., Saboury, B., Siegel, E., and Rahmim, A. (2021) 'A brief history of AI: How to prevent another winter (a critical review)', *PET Clinics*, 16(3), pp. 525–536. DOI: 10.1016/j.cpet.2021.07.001.
- 86- Turing, A. M. (1950) 'Computing Machinery and Intelligence', *Mind*, 59(236), pp. 433–460.

- 87- **Vignisdóttir, G. Ö.** (2024) *Balancing Legal Liability and AI Innovation: Assessing the Impact of the Proposed AI Liability Directive*.
- 88- **Virquez Law** (2023) 'Civil Liability: What Is It and How It Affects You'. *Virquez Law*. Available at: <https://virquezlaw.com/2023/06/21/civil-liability-what-is-it-and-how-it-affects-you> (Accessed: 12 January 2025).
- 89- **VITAC** (2024) 'Traditional AI vs. Generative AI: Understanding the Differences and Advantages'. Available at: https://vitac.com/traditional-ai-vs-generative-ai-understanding-the-differences-and-advantages/?utm_source=chatgpt.com (Accessed: 3 January 2025).
- 90- **Wex Definitions Team** (2020) 'Product liability', *Cornell Law School Legal Information Institute*. Available at: https://www.law.cornell.edu/wex/product_liability (Accessed: 1 January 2025).
- 91- Wooldridge, M. (2021) *A Brief History of Artificial Intelligence: What It Is, Where We Are, and Where We Are Going*. 1st edn. London: Flatiron Books.
- 92- Zein, S. (2023) 'The Civil Liability for Artificial Intelligence', *BAU Journal - Journal of Legal Studies*, 2022, Article 14. DOI: 10.54729/2958-4884.1110.