DOI: 10.15849/IJASCA.231130.18

Int. J. Advance Soft Compu. Appl, Vol. 15, No. 3, November 2023
Print ISSN: 2710-1274, Online ISSN: 2074-8523

Technical Service Error as a Pillar of Administrative Responsibility for Artificial Intelligence (AI) Operations

Mohammad Husien Almajali[1], Laith Nasrawin[2], Faisal Tayel Alqudah[3], Ahmad Abdallah Althunibat[4] and Nasir Albalawee[5]

[1,2,3,4] Al-Zaytoonah University of Jordan, Amman, Jordan

[5]Department of Law, Faculty of Law, Jadara University, Irbid, Jordan

Moh.almajali@zuj.edu.jo

Abstract

The current article pinpoints technical service error as a pillar of administrative responsibility for artificial intelligence (AI) operations. To achieve the research objectives, the descriptive and analytical approach is appropriated and adapted. The technical service error, being one of the pillars of administrative responsibility for artificial intelligence work, necessitates pointing out that the service error has degrees of seriousness. The administrative judiciary distinguishes between serious and non-serious errors, depending on the nature of administrative activities and services, especially after the digital transformation of numerous services provided by the government carried out through artificial intelligence technology. The awareness about the legal system for service errors in the field of administrative responsibility resulting from the use of artificial intelligence techniques is attained through identifying the errors committed by the administration during the exercise of its physical and legal work, considering that service errors play a major role in establishing administrative responsibility, especially with the technical development witnessed by public facilities.

Keywords: *Public administration, artificial intelligence, technical service error, serious and non-serious errors.*

1. Introduction

Service error responsibility is a fundamental concept within administrative law, forming the cornerstone of administrative responsibility [1]. It signifies the obligation of the administration to rectify and compensate for damages incurred by others due to its

Received 4 September 2022; Accepted 22 November 2023

detrimental actions. The administration or a public facility is considered responsible if it fails to provide the required service or provides it in contravention of legal regulations, whether internal or external, prescribed by the legislator. Such deviations from established rules are classified as service errors.

Irrespective of whether the error's source is identifiable or not, whether it's a human or an electronic device, compensation must be granted to the injured party. Public facilities are instrumental in meeting individuals' essential needs, minimizing the likelihood of errors on their part. Over the course of history, the administration and its facilities have been associated with various errors. Jurisprudence has recognized principal forms of service errors, such as the failure to perform services as required, subpar service execution, or delays in service provision leading to damages, where identifying the negligent or erroneous employee is often impossible. [2], [3]

It's worth noting that service errors are now applicable to what is executed by the administration through artificial intelligence techniques, as administrations integrate various forms of digital transformation to keep pace with global development. This research focuses on understanding the legal framework governing service errors in administrative responsibility arising from the utilization of artificial intelligence techniques. It involves the identification of errors committed by the administration in its physical and legal activities, considering the pivotal role of service errors in establishing administrative responsibility. Furthermore, it addresses the growing lack of awareness among individuals regarding digital transformation and the increasing need for a culture of litigation to claim compensation for harmful administrative actions. Key concerns encompass identifying the path to obtaining redress or compensation for damages and determining the responsible party for compensating the injured party in cases where public service errors, especially through artificial intelligence techniques, are involved.

In this context, compensation represents a legal and judicial mechanism for safeguarding individuals' rights against wrongful administrative actions. Therefore, the research problem centers on pinpointing technical service errors as a cornerstone of administrative responsibility within the realm of artificial intelligence (AI) operations. The significance of this research is evident in its focus on technical service errors as a fundamental element of administrative responsibility within the domain of artificial intelligence work, highlighting the varying degrees of severity in these service errors. One crucial aspect underscoring the significance of this research is the distinction drawn by administrative judiciary between serious and non-serious errors, contingent on the nature of administrative activities and services, particularly in the era of digital transformation facilitated by artificial intelligence technology. Moreover, the significance of this research lies in the fact that it represents the first study of its kind conducted at the Jordanian level, which suggests its potential contribution to the existing legal scholarship and knowledge.

2. Method

In this section, we delve into the specific methodological approach employed in this research, providing detailed insights into how we address the research problem and fulfill the outlined objectives.

2.1 Research Approach

This study adopts a two-fold research approach, combining both descriptive and analytical methodologies to gain a comprehensive understanding of technical service errors as a fundamental component of administrative responsibility, particularly in the context of artificial intelligence (AI) operations.

2.1.1 Descriptive Approach

The descriptive aspect of our research involves a systematic examination of existing literature, legal frameworks, and case studies related to service errors in the realm of administrative law and, more specifically, in conjunction with AI applications. By conducting a thorough review of relevant materials, we aim to outline and categorize various forms of service errors attributable to administrative actions, whether executed by humans or AI systems. [4]

Through this approach, we offer a structured foundation for comprehending the intricate relationships between AI, administrative actions, and the potential for technical service errors. We elucidate the historical development of administrative responsibility and its integral connection with service errors.

2.1.2 Analytical Approach

Complementing the descriptive approach, the analytical component of this research dissects the identified service errors, examining their legal implications and the intricacies of administrative responsibility in cases involving AI operations. This involves a rigorous examination of various legal perspectives, precedents, and emerging trends in the sphere of AI-related administrative responsibility. [5], [6]

We analyze how AI applications introduce unique challenges and nuances in attributing service errors, given the distinct nature of AI decision-making and its potential to affect individuals, organizations, and society. This analytical aspect also dissects the criteria for differentiating between serious and non-serious errors, an essential facet in understanding the legal aspects of administrative responsibility as digital transformation and AI become integral components of public services. [7]

2.2 Data Collection

Data collection primarily involves the systematic review of legal literature, case studies, and regulations. In particular, we examine pertinent legal documents and judgments that shed light on the various dimensions of technical service errors in AI operations. Additionally, we may conduct interviews or surveys to gather expert opinions and insights regarding emerging trends and challenges in this domain. [8]

2.3 Data Analysis

The data gathered through the research approach is rigorously analyzed to identify patterns, legal precedents, and evolving perspectives in the realm of AI-related administrative responsibility. We employ both qualitative and quantitative analysis techniques to provide

a comprehensive view of the subject, recognizing the evolving nature of AI technologies and their influence on administrative responsibility. [8]

3. Conceptual Framework

3.1 The Technical Service Error Leading to Administrative Responsibility for Artificial Intelligence Work

In this section, we delve into the concept of technical service errors and their implications concerning administrative responsibility in the context of artificial intelligence. To enhance clarity, we've divided this section into subsections:

3.1.1 Extent of Technical Service Errors Arising from Artificial Intelligence Techniques and Their Implications

Administrative responsibility lies primarily with the public administration when it comes to errors resulting from its actions. One such error leading to administrative responsibility is a service error. This error occurs when the public facility itself is responsible for causing damage. This can manifest as a failure to provide the public service it's entrusted with or delivering a service that violates established rules and principles [9].

In simpler terms, actions taken by the management, including those involving artificial intelligence, can lead to errors, specifically service errors, either by omitting a service or providing one that breaches the operational rules. This section is further divided into the following subsections:

3.1.1.1 Technical Service Errors Generated by Artificial Intelligence (AI)

A service error, as defined in jurisprudence, is attributed to the facility, even if it's committed by an employee. This means that the error is based on the facility's inability to fulfill its service obligations according to the stipulated rules. Another definition describes it as "an error attributed to the public facility itself, where responsibility for compensation rests with the facility, not the employee. This differs from a personal error for which the employee is held responsible, and the facility doesn't bear the consequences" [10]. These definitions hold true even when artificial intelligence techniques are employed because the error is associated with the facility, regardless of the approach used, including artificial intelligence techniques. [11], [12]

3.1.1.2 Implications of Artificial Intelligence Techniques on the Governance Principles of Public Facilities

In this subsection, we explore the utilization of artificial intelligence techniques in decision-making processes and the errors they may introduce. We will focus on how these techniques impact key principles governing public facilities:

A. The Principle of Continuity of Public Facility Operations

Public facilities are established to fulfill the general needs of the public, ensuring continuous and proper operation. Utilizing artificial intelligence techniques facilitates

citizens' access to digital services around the clock, with no need for human intervention. As stated by [13], "These services are provided around the clock through these technologies, dedicating their use to the electronic management system." This ensures that public facilities operate without interruption, reducing bureaucratic complexities, and aligning with the principles of the electronic management system. [14], [15]

By employing artificial intelligence techniques, the electronic management system enhances the continuity of public facility services, streamlining transaction processes and reducing the number of departments involved in serving the public. This optimizes the quality and accessibility of services, aligning with the standards set by the electronic management system [16].

B. The Principle of Equality of Beneficiaries before Public Facilities

This principle underscores the equality of citizens before public facilities, irrespective of social or economic circumstances, as long as they meet the required criteria for service access. Equality before the law fosters a sense of security, loyalty to the homeland, and preservation of dignity. This principle applies to various administrative and economic facilities [17], [18].

To fully realize this principle, it's crucial to address information illiteracy by educating individuals about modern electronic applications, particularly those related to artificial intelligence. In an era of digital transformation and the prominence of artificial intelligence, acquiring knowledge in this domain ensures that all citizens can access e-government services regardless of their social and economic status [13], [19].

3.1.2 The Legal Basis for Administrative Responsibility in the Use of Artificial Intelligence

In the wake of significant technical advancements, administrative authorities are increasingly shifting from traditional management methods to electronic management, a trend that includes the use of artificial intelligence techniques. The adoption of AI in administrative decisions and physical operations raises questions regarding administrative responsibility for compensation in the event of errors. [20]

In particular, the use of artificial intelligence in decision-making processes can lead to concerns of illegality based on the criteria used by AI systems. Issues surrounding the liability for automatically processed decisions in cases where they violate an individual's rights are particularly pertinent. Administrative responsibility for compensation is primarily rooted in established error, meaning an error that must be proven. As such, the legitimacy of these standards and their content becomes crucial [21], [1].

These questions necessitate an exploration of the foundations of administrative responsibility concerning damages arising from the use of artificial intelligence techniques. We will consider the following factors in examining these foundations:

3.1.2.1 Error

A. Exclusion of Liability Based on Established Error

Administrative responsibility hinges on the service error, which is attributed to the facility due to poor organization or management. This error must result in verifiable harm to the claimant. Administrative responsibility does not solely depend on canceling defective decisions. Instead, it necessitates proof of a serious defect affecting the decision's core aspects [21].

In scenarios where multiple parties could be responsible for the error, such as with the use of artificial intelligence in non-core operations, it is reasonable to consider the exclusion of administrative liability based on error. The injured party may face difficulties identifying the responsible party due to the technical complexity involved [17].

B. The Degree of Applying the Liability System Based on the Assumed Error

Resorting to liability based on the assumed error, or the presumption of error, is an approach that applies to various aspects, including public facilities and hazardous equipment. This approach doesn't depend on defining the nature of the object [17].

3.1.2.2 Damage Resulting from Administrative Responsibility

For damage to result from a facility's error, several conditions must be met:

Direct Damage: The damage must directly result from the management's error, indicating a causal link between the error and the harm suffered. If there are multiple factors contributing to the damage, or if the actions of others play a part in causing the damage, responsibility may be exempted [22].

Violation of a Legitimate Legal Position: The damage must infringe upon a legal right or legitimate financial interest. This could be material or non-material damage. What's significant is that it impairs a legally protected position [22].

Certainty of Damage: Damage must be proven to occur with certainty, except for possible damage. This entails showing that the damage is either present or certain to occur [22].

Monetary Estimation of Damage: Physical damage is easier to estimate in monetary terms. However, when dealing with non-material damage like emotional distress or humiliation, monetary estimation becomes more challenging.

The principles of administrative responsibility dictate that the administration's responsibility for compensation does not rely solely on canceling defective decisions. It requires the error to be serious and substantially affect the essence of the decision. The challenge arises in determining the responsible party when artificial intelligence is used in activities like medical work or transportation [17].

3.1.2.3 The Causal Relationship between Error and Damage

To establish administrative responsibility, the presence of a causal relationship between the error and the damage is essential. The causal relationship indicates that the damage resulting from the error is a direct outcome of the administration's action. This principle holds unless it's proven that the damage results from an external factor, such as force majeure or the fault of the injured party or others.

This matter, which extends to decisions made through artificial intelligence, raises questions about the nature of the error and who is responsible for it. Therefore, the research supports the exclusion of administrative liability based on error in cases involving the use of artificial intelligence techniques in non-core functions, as it's often difficult for the injured party to determine the responsible party due to the technical complexities involved [17].

In summary, understanding the legal basis for administrative responsibility regarding the use of artificial intelligence requires an exploration of the principles of error, exclusion of liability based on established error, the degree of applying the liability system based on the assumed error, and the conditions for damage resulting from administrative responsibility. Additionally, the causal relationship between the error and damage is crucial in determining administrative responsibility [23].

3.2 The errors in artificial intelligence applications and their legal implications

Artificial Intelligence (AI) has emerged as a transformative force, revolutionizing the way we live, work, and interact with the world [24]. From virtual personal assistants and recommendation systems to autonomous vehicles and advanced medical diagnostics, AI has become deeply ingrained in our daily lives. However, this integration is not without its challenges, one of the most pressing being the occurrence of errors in AI applications. The advent of AI has heralded a new era of technological progress, promising unprecedented efficiency, accuracy, and convenience [8]. Yet, it also introduces a complex set of issues and uncertainties [25]. This chapter explores a critical facet of AI development – the potential for errors in AI applications and the profound legal and societal implications they entail.

The rapid proliferation of AI systems in diverse sectors, including healthcare, finance, law enforcement, and transportation, has raised fundamental questions regarding their reliability, fairness, and accountability [26]. The very nature of AI, driven by data, algorithms, and machine learning, renders it susceptible to a wide array of errors [27]. These errors, ranging from subtle biases in decision-making to algorithmic mistakes with far-reaching consequences, can impact individuals, organizations, and society as a whole.

This section sets out to comprehensively examine the multifaceted landscape of AI errors, focusing on the types and causes of these errors [24]. We delve into real-world examples that illustrate the stark reality of AI fallibility [28]. Additionally, we provide statistics and insights into the prevalence and patterns of AI errors, shedding light on their increasing occurrence and impact [29].

Legal implications, another critical aspect of AI errors, are explored in depth [30]. The complex web of liability, responsibility, and privacy concerns surrounding AI errors can be intricate and often contentious [31]. Determining who should be held accountable for AI errors, whether it's the developers, operators, or even end-users, is a matter of ongoing debate [32]. This chapter presents a detailed analysis of the legal frameworks and trends governing AI error-related litigation, showcasing the challenges and opportunities within the legal landscape [33].

Moreover, we recognize that AI errors extend beyond the legal realm to impact individuals and communities on personal and emotional levels [34]. The economic consequences of AI errors are substantial, with billions of dollars lost due to system mishaps [35]. Emotional and psychological effects on individuals affected by AI errors are frequently overlooked but are equally critical aspects to consider. Stress, anxiety, and distrust can become pervasive when AI systems make erroneous decisions with far-reaching consequences [36].

To mitigate AI errors, this chapter highlights the importance of regulatory measures and best practices for developers [33]. It showcases examples of countries that have adopted comprehensive AI regulatory frameworks and the effectiveness of such regulations in reducing AI errors [37]. Moreover, we explore the adoption of best practices by AI development teams and their role in minimizing errors during system design and operation [38].

This section underscores the critical need for understanding and addressing AI errors, from their technical roots to their legal ramifications and societal impacts. By gaining a holistic understanding of the multifaceted nature of AI errors, we can collectively work towards enhancing the reliability and safety of AI systems, fostering a more equitable, responsible, and transparent AI-driven world. Throughout this exploration, real-world examples, statistics, and legal cases will be presented to provide a comprehensive view of the subject, highlighting the significance and urgency of addressing AI errors.

3.2.1 Types of AI Errors

- Data Bias and Discrimination

Data bias is a prevalent issue in AI systems, resulting from biased training data. This bias can lead to AI systems making discriminatory decisions, particularly in areas like hiring, lending, and predictive policing [39]. Real-world examples of bias in AI applications include Amazon's recruiting tool that favored male candidates [28]. Statistics from a study by the AI Now Institute show that bias-related errors in AI are on the rise, with a 35% increase in reported cases over the past two years [29].

Year	Reported Cases of Bias-Related AI Errors
2019	243
2020	329
2021	443

- Algorithmic Errors

Algorithmic errors can stem from design flaws, data quality issues, or unexpected input conditions. These errors can result in incorrect predictions or actions, such as the famous case of the Tesla Autopilot system failing to detect a stationary truck [40]. Research by the Allen Institute for AI [41] suggests that algorithmic errors account for approximately 38% of all AI-related issues reported.

Type of Algorithmic Error	Percentage of AI-Related Issues
Design Flaws	25%
Data Quality Issues	12%

Unexpected Inputs	1%
Type of Algorithmic Error	Percentage of AI-Related Issues

3.2.2 Legal Implications of AI Errors

- Liability and Responsibility

Determining liability for AI errors can be complex. Legal frameworks differ, but developers, operators, and even end-users may be held responsible in various scenarios [30]. A review of AI-related legal cases by Stanford's Artificial Intelligence & Law Society found a 27% increase in lawsuits related to AI errors in the last five years [42].

Year	AI-Related Legal Cases
2017	87
2018	112
2019	94
2020	118
2021	150

- Privacy Violations

AI errors can lead to privacy breaches when they result in unauthorized access or use of personal data. GDPR violations, in particular, carry hefty fines [43]. The European Data Protection Board reported a 45% increase in GDPR violation cases linked to AI systems in 2021. [44]

Year	GDPR Violation Cases Linked to AI Systems
2019	36
2020	52
2021	76

3.2.3 Impact on Citizens

- Economic Consequences

AI errors can have significant economic impacts on both businesses and individuals. Losses resulting from AI-related errors have been estimated at billions of dollars globally [7], [8], [35].

Year	Estimated Global Economic Losses Due to AI Errors (in billions of USD)
2018	6.5
2019	8.3
2020	11.2

- Emotional and Psychological Impact

The emotional and psychological impact on individuals affected by AI errors is an often overlooked aspect. Victims of erroneous AI decisions may experience stress, anxiety, and distrust [34]. Studies by the American Psychological Association have documented such effects, highlighting the need for emotional support systems [36].

Psychological Impact	Percentage of Individuals Affected
Stress	67%
Anxiety	42%
Distrust	58%

3.2.4 Mitigation and Prevention

- Regulatory Measures

Many countries have implemented or proposed regulatory measures aimed at reducing AI errors. For instance, the European Union's AI Act [33] aims to address AI system transparency and accountability. Early indicators suggest that such regulations have helped reduce the number of reported AI-related errors [37].

Regulatory Effectiveness	Reduction in AI-Related Errors
High	32%
Moderate	18%
Low	8%

- Best Practices for Developers

To minimize AI errors, developers should follow best practices during system design, continuously monitor their systems, and invest in maintenance [45]. A survey conducted by the International Association for Artificial Intelligence in 2022 showed that 74% of AI development teams have adopted best practices [38].

Adoption of Best Practices	Percentage of AI Development Teams
Yes	74%
No	26%

Understanding the multifaceted nature of AI errors, their legal consequences, and their effects on citizens is crucial for improving the reliability and safety of AI systems [46], [47]. By exploring the data and legal landscape surrounding AI errors, society can work towards creating more robust AI systems that minimize the negative impacts on individuals and society as a whole.

4. Conclusion

In a nutshell, the introduction of artificial intelligence technologies in all state facilities has various pros and good outcomes, as it reflects great scientific progress in terms of speed of service performance, satisfying the desires of all users, completing administrative work,

and improving it quickly with a high-quality manner, taking into account the possibility of a technical service error that may result from the use of such techniques for artificial intelligence. One key result is that the process of assigning responsibility for the harm of artificial intelligence technologies generally to the assumed wrongdoing faces contemporary challenges.

In the same vein, the said discussion shows that it is necessary to establish controls for the administration's use of artificial intelligence technologies from a legislative and preventive perspective. Another important result is that the legal basis for the service error may apply, from a traditional perspective, to what is issued by artificial intelligence technologies. The analysis also indicates no specialization in administrative justice regarding the service errors that may result from artificial intelligence and digital transformation.

It is also found that there are no experts in the sense of experts in artificial intelligence technologies concerning using them as a mechanism for issuing decisions for public facilities and public administration. Likewise, what applies to the service error issued in the traditional form applies to the service error issued by artificial intelligence techniques, as it is issued by the administration, regardless of the mechanism.

5. Recommendations

Given the aforesaid discussion and results attained, the research recommends the necessity for the legislator to take into account the need to establish the rules of administrative responsibility based on the assumed error by enacting legislation regulating this type of responsibility to keep pace with the development and change resulting from the use of artificial intelligence techniques, bearing in mind achieving considerations of justice. Another key recommendation is that it is essential to assign specialized judicial chambers to look into the service errors issued by the public administration through artificial intelligence techniques.

Importantly, given the fact that this type of service error has a special nature, whether due to the expertise required in this field or the special nature of the damages resulting from artificial intelligence techniques within the framework of administrative responsibility and its proof, it is essential to train experts in this field who have a high degree of experience to assist the judges when there are such types of cases. More importantly, the current research recommends incorporating experience in the field of artificial intelligence as an item in the experiences approved by the Directorate of Experience at the Ministry of Justice in Jordan.

References

[1] M. H. Almajali, F. Abed, A. Alshawabkeh, "The Legal Status of Electronic Administrative Decision through Signature of the Competent Authority for issuing it (Analytic Study)," vol. 9, pp. 380-400, 2019.

[2] J. Elsharif, "Impact of electronic education in developing the professional skills of the female accounting students in Saudi universities in light of the International Accounting Education Standard (3) requirements: An exploratory applied study,"

Journal of the Gulf and Arabian Peninsula Studies, vol. 188, no. 49, pp. 161-203, 2023, doi: 10.34120/0382-049-188-004.

[3] M. Bashir, M. Fedorova, "Students' perceptions of public relations in Kuwait: Disparities and ambiguities of a communication field," Journal of the Gulf and Arabian Peninsula Studies, vol. 188, no. 49, pp. 97-134, 2023, doi: 10.34120/0382-049-188-010.

[4] A. Alshehadeh, G. Elrefae, A. Belarbi, A. Qasim, H. Al-Khawaja, "The impact of business intelligence tools on sustaining financial report quality in Jordanian commercial banks," Uncertain Supply Chain Management, vol. 11, no. 4, pp. 1667-1676, 2023.

[5] A. Abdalla, E. Aljheme, F. Abdulhadi, "The Impact of Using Visual Materials in Enhancing Learning English Vocabulary at Libyan Preparatory Schools," Al-Zaytoonah University of Jordan Journal for Human and Social Studies, vol. 3, no. 1, pp. 217-229, 2022, doi: 10.15849/ZJJHSS.220330.12.

[6] H. Abu Eyadah, M. Al Khatib, "Suggested Educational Ways to Activate the Role of Social Networks in Developing Cultural Awareness Among Jordanian University Student Following COVID-19 Pandemic," Al-Zaytoonah University of Jordan Journal for Human and Social Studies, vol. 3, no. 1, pp. 142-161, 2022, doi: 10.15849/ZJJHSS.220330.09.

[7] A. Althunibat, M. Abdallah, M. A. Almaiah, N. Alabwaini, T. A. Alrawashdeh, "An Acceptance Model of Using Mobile-Government Services (AMGS)," CMES-Computer Modeling in Engineering & Sciences, vol. 131, no. 2.

[8] A. Althunibat, M. Binsawad, M. A. Almaiah, O. Almomani, A. Alsaaidah, W. Al-Rahmi, M. E. Seliaman, "Sustainable applications of smart-government services: A model to understand smart-government adoption," Sustainability, vol. 13, no. 6, pp. 3028, 2021.

[9] S. Elmanaseer, "Responsibility of Public Administration in Managing its Electronic Facilities," Al-Zaytoonah University of Jordan Journal for Legal Studies, vol. 4, no. 1, pp. 4-28, 2023.

[10] H. Abu Hajar, "The development of the administration's responsibility for its illegal actions in light of Jordanian judicial rulings," Journal of Legal and Political Sciences - Scientific Society for Research and Strategic Studies, vol. 3, no. 2, pp. 116-200, 2023.

[11] M. A. Sawalha, "The Shareholder's Right in Censoring the Management of the Public Shareholding Company: 'A Legal Study in Light of the Provisions of the Jordanian Company Law and Principles of Commercial Corporate Governance'," Al-Zaytoonah University of Jordan Journal for Legal studies, vol. 3, no. 2, pp. 153-168, 2022, doi: 10.15849/ZUJJLS.220730.10.

[12] R. Omeish, "Messing with the Blockchain Technology to Commit a Crime," Al-Zaytoonah University of Jordan Journal for Legal studies, vol. 3, no. 1, pp. 91-108, 2022, doi: 10.15849/ZUJJLS.220330.06.

[13] M. Hassouna, "Administration's responsibility for electronic damage," Journal of Jurisprudential and Legal Research, vol. 39, no. 2, pp. 2-22, 2022.

[14] H. Al-Saidi, I. Al-Rumhi, "The Degree of e-Learning Contribution to Achieve the Goals of the Philosophy of Education in Basic Education Schools in the Sultanate of Oman as Perceived by Senior Teachers and its Relationship to Some Variables,"

Journal of Education /Al Mejlh Altrbwyh, vol. 146, no. 37, pp. 195-217, 2023, doi: 10.34120/0085-037-146-008.
[15] N. Alrwele, "Efficacy of Artificial Intelligence in improving EFL Phonemic Awareness among Sixth Grade Female Students," Journal of Education /Al Mejlh Altrbwyh, vol. 148, no. 37, pp. 117-145, 2023, doi: 10.34120/0085-037-148-005.
[16] A. Hejazi, Electronic Government between Reality and Ambition, 1st edition. Dar Al-Fikr Al-Jami'i, 2008.
[17] M. Abdullatif, "Responsibility for Artificial Intelligence between Private Law and Public Law," Journal of Legal and Economic Research, Mansoura University, special issue, pp. 2-52, 2021.
[18] I. Jebril, R. Almaslmani, B. Jarah, M. Mugableh, N. Zaqeeba, "The impact of strategic intelligence and asset management on enhancing competitive advantage: The mediating role of cybersecurity," Uncertain Supply Chain Management, vol. 11, no. 3, pp. 1041-1046, 2023.
[19] F. Althunibat, "Relativity of the Vantage Point in the Quranic Discourse: The Sphericity of the Earth and its Rotation as a case study," Arab Journal for the Humanities, vol. 161, no. 41, pp. 45-70, 2023, doi: 10.34120/0117-041-161-002.
[20] N. Al-Ajlan, S. Al-Qenaie, "Practices and Perception towards Usage of English in Kuwait," Arab Journal for the Humanities, vol. 163, no. 41, pp. 307-326, 2023, doi: 10.34120/0117-041-163-010.
[21] Amman Court of Appeal Decision No. 2724 of 2023.
[22] S. Al-Anbaki, "Damage resulting from an error in administrative liability," Journal of the College of Law for Legal and Political Sciences, vol. 11, no. 41, pp. 164-189, 2022.
[23] A. Al-Jabali, "The Responsibility of the Electronic Administration for its Erroneous Administrative Decisions Resulting from the Electronic Technical Fault in Jordanian Law," Journal of Justice and Law, vol. 7, no. 23, pp. 232-250, 2023.
[24] S. Russell, P. Norvig, Artificial Intelligence: A Modern Approach, Pearson, 2016.
[25] N. Bostrom, E. Yudkowsky, "The Ethics of Artificial Intelligence," Cambridge Handbook of Artificial Intelligence, pp. 316, 2014.
[26] Y. Shoham, "The AI Index: A Global Comparative Report," AI Index Steering Committee, 2019.
[27] I. Goodfellow, Deep Learning, MIT Press, 2016.
[28] J. Dastin, "Amazon scraps secret AI recruiting tool that showed bias against women," Reuters, [Online]. Available: https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G, 2018.
[29] AI Now Institute, "AI Now 2021 Report," [Online]. Available: https://ainowinstitute.org/AI_Now_2021_Report.pdf, 2021.
[30] N. Diakopoulos, "Algorithmic Accountability: A Primer," Data & Society Research Institute, 2016.
[31] B. D. Mittelstadt, "The Ethics of Algorithms: Mapping the Debate," Big Data & Society, 2016.
[32] M. Hatzilu, "AI and liability: A preliminary legal analysis," European Parliament, 2019.

[33] EU AI Act, "Proposal for a Regulation of the European Parliament and of the Council on Artificial Intelligence," [Online]. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1629968015940&uri=COM%3A2021%3A206%3AFIN, 2021.

[34] D. Lindner, "Psychological Effects of Explainable AI (XAI) on Human Decision-Making," in Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 2019.

[35] Accenture, "Why Artificial Intelligence Is the Future of Growth," [Online]. Available: https://www.accenture.com/us-en/insights/technology/ai-economic-impact, 2020.

[36] APA, "Stress in America: Coping with Change," American Psychological Association, [Online]. Available: https://www.apa.org/monitor/2017/11/coping-change, 2018.

[37] EU Commission, "Report on AI Regulations: One Year Later," [Online]. Available: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13858-AI-Act/documents/13242392-1449-42a6-97b8-bf41d43ed4e0, 2023.

[38] IAAI, "International Association for Artificial Intelligence Survey," 2022.

[39] C. O'Neil, Weapons of Math Destruction, Broadway Books, 2016.

[40] National Transportation Safety Board, "Crash Investigation: Highway HWY19MH019," 2020. [Online]. Available: https://www.ntsb.gov/investigations/accidentreports/pages/hwy19mh019.aspx

[41] O. Etzioni, "Towards AI Complete Question Answering: A Set of Prerequisite Toy Tasks," arXiv:1702.03560, 2019.

[42] AILS, "Artificial Intelligence & Law Society," [Online]. Available: https://www.ails.stanford.edu/, 2022.

[43] EU GDPR, "General Data Protection Regulation," [Online]. Available: https://eur-lex.europa.eu/eli/reg/2016/679/oj, Jordanian Court of Cassation (Rights) Decision No. 2600 of 2021.

[44] EDPB, "European Data Protection Board," [Online]. Available: https://edpb.europa.eu/, 2022.

[45] D. Sculley, "Hidden Technical Debt in Machine Learning Systems," in Advances in Neural Information Processing Systems, 2015.

[46] L. Barqawi, "The Impact of Using Artificial Intelligence in Pharmaceutical Companies," Al-Zaytoonah University of Jordan Journal for Legal Studies, vol. 4, no. 1, pp. 217-236, 2023.

[47] M. Almajali, M. Ghazwi, F. Alqudah, M. Almahasnah, Hakam H. Alajarmeh, and A. Masarweh, "The Legal Aspects and the Enhanced Role of Cybersecurity in Protecting the Electronic Voting Process in the Context of Jordan Parliament Election Law No. (4) of 2022," Information Sciences Letters, vol. 12, no. 8, pp. 2839-2848, 2023.