Artificial Intelligence in Electric Government; Ethical Challenges and Governance in Jordan

by

Mohammad Ali Alqudah[1]
Fellow of PhD, Department of Computer Science, Khazar University, Azerbaijan
Email: mohammad.ali@khazar.org

Leyla Muradkhanli
Associate Professor, Department of Computer Science, Khazar University, Azerbaijan
Email: leyla@khazar.org

Abstract

Artificial intelligence (AI) is rapidly being applied to a wide range of fields, including e-government. However, AI also raises several challenges and ethical concerns. This article presents the evolution of research on AI in business over time, highlighting seminal works and leading publication venues. It presents several main developmental trends and the resulting challenges. The field was founded on the assumption that can be accurately described to the degree that a machine can be simulated. There is a controversy about what intelligence and types, the human intelligence possesses, and how to simulate it. Artificial intelligence research is highly specialized. AI is the most prominent ethical issue that arises in e-government implementation. Jordan aims to participate in and lead the global governance of AI Research on AI ethics in e-government lacking.

Keywords: artificial intelligence, e-government, ethics, Jordan, human intelligence, etc.

Introduction:

Artificial Intelligence is a branch of computer science generally defined as "studying and designing smart customers" in various kinds of literatures. As a smart customer is an individual that assimilates his[2] environment and takes situations that increase his chances of success in achieving his or his team's mission, this definition, in terms of aims, actions, perception, and environment are due to (Cath et al., 2018) the knowledge and learning as additional criteria. Computer scientist John McCarthy originally coined the term in 1956 (Ryan & Stahl, 2020) and defined it himself as "the science and engineering of intelligent machines." Andreas Kaplan and Michael Heinlein define artificial intelligence as "the ability of a system to correctly interpret external data, learn from this data, and use that knowledge to achieve specific goals and tasks through flexible adaptation." This field was founded on the assumption that the faculty of intelligence can be accurately described to the degree that a machine can simulate (Leminen et al., 2018). This raises a philosophical debate about the nature of the human mind and the limits

[1] Corresponding author
[2] Use of the masculine pronouns in the paper is only for the flow of expression and is in no way related to gender discrimination.

of scientific methods, issues that have been covered in discussions and mythical, fictional, and philosophical stories since ancient times (Russell & Norvig, 2016). There is also controversy about what sort of intelligence and types the human intelligence possesses, and how to simulate it with a machine (Marda, 2018). Artificial intelligence was and still is the cause of highly optimistic ideas, and it has suffered huge setbacks throughout history, and today it has become an essential part of the technology industry, carrying the burden of the most difficult problems in modern computer science (de Sousa et al., 2019).

Literature Review:

The literature review includes the details about e government, e government interactions, ethics definitions, artificial intelligence principles and ethics, guidelines for ethical governance of AI and artificial intelligence in government of Jordan.

E-government:

E-government is a modern system adopted by governments using the World Wide Web and the Internet to link their institutions with each other, link their various services with private institutions and the public in general, and put information within the reach of individuals to create a transparent relationship characterized by speed and accuracy aimed at improving the quality of performance which saves a lot of effort and money for them, thus reducing the cost of service performance (Glybovets & Mohammad, 2017; Al-rawahna et al., 2019).

The electronic government is achieved through realizing the fact that the world today and its developments make it imperative for societies to be advanced and characterized by the existence of three basic conditions: accountability (AL-Zoubi & AL-Zawaideh, 2017) flexibility, and good governance, which represent the pillars of e-government, and the latter came after the emergence of images of administrative and financial corruption in society and its institutions and to reform these matter. Ways of treatment were searched for, so the e-government was one of the preventive remedies against the spread of corruption on the one hand, and work to prevent it from the other side, and the requirements of administrative reform bind government institutions with a pattern of flexibility and clarity in their method of work. Government agencies track the delivery of information and services by managing multiple transmission and delivery channels through traditional methods such as using the phone, fax, or manual methods, but the most important goal is to improve the quality of services and their provision (Sari et al., 2017).

One of the positive factors for the e-government is that it works to reduce the percentage of suspicious and illegal relations possible among officials and workers because it means first and foremost the flow of information, its open circulation through various means of communication, and the availability of citizens' communication with decision-makers and those in charge of matters to stimulate it and besiege corruption, in other words, e-government. It means openness to the public regarding the structure of the government's functions and the financial policies of the public sector that would enhance accountability and credibility and support sound economic policies (Al-Ma'aitah, 2019).

E-Government Interactions:

The diversity of electronic services is discussed ahead: Some aspects of this diversity reflect the sovereignty of the state, such as tax services, documentation, and the use of licenses

and documents, and others represent the social infrastructure and include the services provided by the state to the public of citizens to satisfy their basic needs such as education and health services and achieve the comprehensive development of society. Some of these are provided to businessmen and investors (Ajibade & Mutula, 2019).

i. **E-government transactions with citizens (G2C):** It aims to provide citizens with electronic government services through government websites to meet their personal needs, such as obtaining public or private documents, as documents of a public nature do not require verification of the applicant's identity, e.g. a certificate of registration in the commercial or industrial registry or a certificate of conformity to environmental or health conditions. Governmental agencies can post forms of these certificates on their website. These electronic services also enable obtaining documents of a special nature, including (Sabani et al., 2019) personal certificates such as death, marriage, and divorce certificates, education certificates in their various stages and passports and identity cards.

Due to the privacy of these private data, obtaining them requires making sure of the person who requested it, especially since the law has secured the procedures for obtaining documents, and for this reason, their delivery is manual (Marzooqi et al., 2017).

ii. **E-government transactions with business organizations (G2B):** The government plays the role of a regulator, collector, and customer supporting the business sector regardless of the service or product provided by the private sector institutions, and one of the most important services provided by the government within the framework of its relations with the business organization is the electronic payment of the tax (Santa et al., 2019).

iii. **Transactions between governmental organizations (G2G):** It aims to coordinate between government agencies to perform work in an integrated manner at all administrative levels, and also includes the relationship between central organizations and local agencies, examples of which are the exchange of data and information on regulations and laws, work systems and procedures followed in the performance of a business. The link between government organizations is done through the Internet. Achieving integration in the services that involve more than one government agency is also one of its aims (Pandey & Gupta, 2017).

iv. **Internal services provided to employees of governmental organizations (G2E):** It aims to improve the performance of employees and to clarify the best methods through which business is conducted, as information technology is used in the management of human resources, and includes self-services provided to employees such as obtaining licenses and access to efficiency reports and e-training. It depends on the existence of integrated databases on employees of governmental organizations It is represented by age, qualification, job, academic degree, and marital status (Rao, 2017).

Ethics Definitions:

Ethical principles for knowledge societies emerged from the Universal Declaration of Human Rights and include the right to freedom of expression and universal use of information,

especially information in the public domain, the right to education, the right to privacy, and the right to participate in cultural life. The international debate related to information ethics centers on the ethical, legal, and social aspects of ICT applications.

UNESCO cooperates closely with its member states to support and enhance the ethical dimensions of the Information Society. This is one of the Organization's priorities in its overall efforts to implement the decisions of the World Summit on the Information Society.

The free and accessible use of the information available in interactive networks remains a major goal, and it is a topic that raises multiple ethical issues that require much attention on the part of the international community (Dignum, 2018).

The changes resulting from the rapid development of information and communication technologies provide enormous opportunities for humankind, but at the same time, they pose unprecedented ethical challenges. One of the greatest ethical challenges of the 21st century is striving to build an information society based on mutual respect, commitment to and enforcement of human rights. While digital technologies that have interconnected parts of the world offer many benefits, they also pose risks of abuse and exploitation.

Countries have begun to put in place mechanisms to protect their citizens from these risks, aimed, for example, at ensuring children's safety on the Internet. However, much remains to be done to address the ethical implications of the Information Society (Rossi, 2018).

Artificial intelligence in government of Jordan:

In response to the effective use of customer experience improved, work processes were automated and the analysis became more predictive (Sari et al., 2017) and AI started to be used for electronic governance practices by the governments. In Jordan, AI uses by the governments is trending where the Hashemite Kingdom of Jordan occupies a leading position regionally in digital transformation, as the Kingdom attached great importance to technology and its role in promoting its economic growth, creating quality job opportunities, and raising human development rates for a better life for all. Jordan has been and still is one of the first countries to support institutions and technology companies and is keen to provide the appropriate regulatory environment for them, as the Kingdom appreciates the great role of these institutions in advancing the economy. Jordan is one of the first countries to liberalize its telecommunications sector (Alsharkawi et al., 2021; Alhashmi et al., 2019). This has contributed to creating a solid ICT infrastructure. The results of the global regulatory survey issued by the International Telecommunication Union for the year 2019, which was published at the end of September 2020, revealed the progress of the Telecommunications Regulatory Authority's classification to an advanced level referred to in the countries classified within the fourth generation of regulation, and at a rate of 91% to be the first in the Arab world alongside the Kingdom Saudi Arabia is followed by Morocco, Bahrain, and Oman (Jordan et al., 2020; Sari et al., 2017).

There is no doubt that these technological achievements have made Jordan a pioneering position in developing a fertile ground for innovations and new technologies, and the Kingdom's national digital strategy, which will soon be issued, will define directions on how to take advantage of emerging technologies to enhance service provision in the Kingdom and advance it toward a better life for all.

Guidelines for ethical governance of AI

It is necessary to identify the potential ethical harms and guidelines on safe design, protective measures, and information for the design and application of robots (Wall, 2018).

Similar clear-cut rules and special guidelines for AI in e-government are much-needed. Group on AI published Ethics Guidelines for Trustworthy AI in April 2019 as new guidance. It proposes the concept of "trustworthy AI," and identifies the ethical principles that should be adhered to when developing, deploying, and using AI systems, namely respect for human autonomy, prevention of harm, which are consistent with important components of e-government ethics (Matskevich, 2018). They constitute vital rules and norms for AI in e. g., together with the above-mentioned ethical principles for trustworthy AI. Overall, the principles and guidelines could provide important ideas and specific measures concerning ethical aspects for the Governance Guidelines for Next Generation of Artificial Intelligence.

However, no special governance system or guidelines are suitable for AI in e-government (Rao & Verweij, 2017). To govern e-government -AI, a special global ethical framework and governance system, including refined standards and guidelines, are required (Cath et al., 2018). It is crucial to demarcate an administrative role within the government to drive AI governance and understand the benefits and potential risks for all AI stakeholders, including governments, institutes, and individuals. It is particularly important to clarify the penalties for institutes and individuals who violate the relevant laws, regulations, and norms (de Sousa et al., 2019; Snow, 2017).

Artificial Intelligence Principles and Ethics:

The rapid development and innovation opportunities that AI technology is witnessing in various fields are exciting (Zeng et al., 2018). Despite this, the institutions that use this technology have not yet discussed in-depth and in comprehensive detail, the principles and ethics that must be observed while using artificial intelligence, and the world urgently needs these principles and ethics (Fayyoumi et al., 2020).

Therefore, we created this system of ethics for artificial intelligence to be practical support when adopting artificial intelligence across the city system. It provides technical experts and interested academics and individuals with a guide on how to use AI technology responsibly. This system includes principles, guidelines, and a self-assessment tool that allows developers to evaluate the AI systems that they develop.

Our main goal is to provide standardized guidance that is constantly being revised and improved within the framework of cooperation with our communities. Our overarching goal is to reach a broad agreement and adopt agreed policies to support and enable the ethical use of AI around the world (Yu et al., 2018).

Research method:

Artificial intelligence can be taught to act ethically using social media, court cases, and other data sources (Buenfil et al., 2019). The aim is to prevent the "Tay (bot) effect," where the AI could be maliciously trained on social media to act maliciously. To prevent this, a committee of ethicists could curate and review decisions made by artificially intelligent systems. There are three main phases for inserting ethics considerations into an AI system. In the Training phase, first step is embedding into the system a set of basic ethical principles. The initial operation would require a human in the loop, who would provide supervision and feedback to teach the machine the correct ethical behavior in selected scenarios. After a certain amount of time, or when the machine has accumulated a predefined number of rules, it would be ready to submit to

an Ethics Test (Barry & Doskey, 2020). Adaptive regulations allow one to experiment and learn without going too far. The policies and regulations should achieve a degree of consensus.

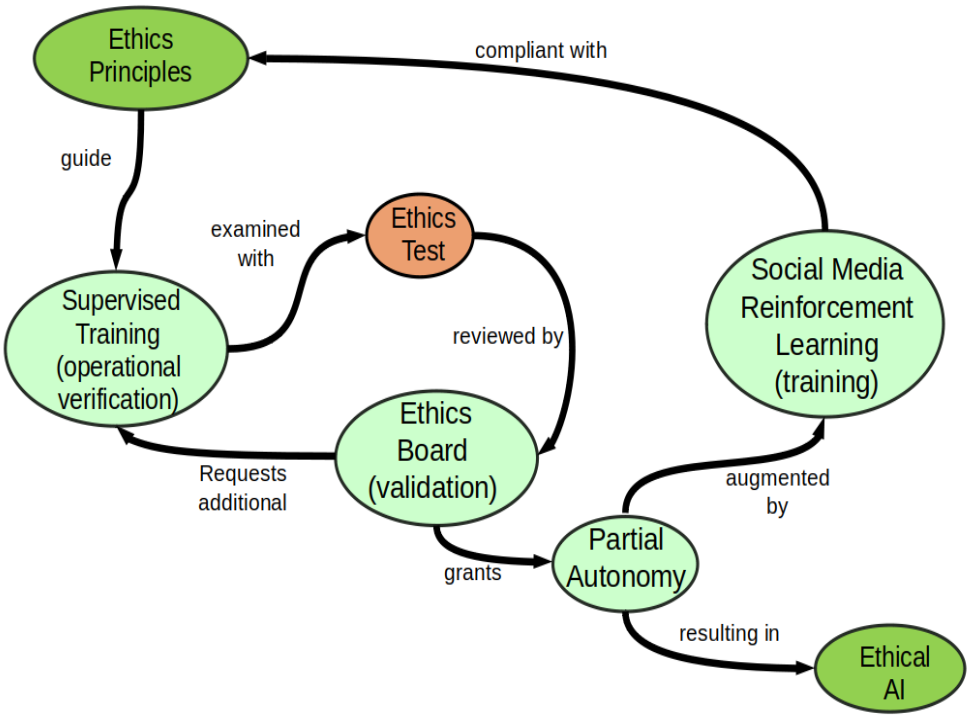

Figure 1: A Conceptual Model for AI Ethics Systemigram

Findings and Discussion:

Ethical AI is a part of the technology ethics for robots and other artificially intelligent creatures. It can be divided into robotics ethics, relating to the ethical behavior of humans when designing, building, using, and creating artificial intelligent beings, and machine ethics concerned with the ethical behavior of artificial moral agents (AMAS). For artificial general intelligence (AGI) machines, preliminary work has been conducted on approaches that incorporate AI machines, which are ethical agents in the full sense, into existing legal and social frameworks.

These approaches focused on the dual consideration of their legal status and rights. Many institutions have recently been dealing with issues involving the ethics of digitalization, including with respect to AI. European Commission has established a "High-Level Expert Group on Artificial Intelligence," the potential for incorrect decisions and the question of who is responsible for such decisions, in cases where AI is used in e-government calls for a differentiated implementation of government ethical principles and a graduated model of liability law. Taking into account the AI and government relations as a contractual obligation can assist in clarifying AI roles and determining their duties.

Conclusion:

Ethical issues have an impact on the implementation of e-government in Jordan. The most prominent ethical issues are security and privacy in the order they have been mentioned.

Security and privacy are confidentiality, integrity and accountability, good governance and trust, universal access, and fairness in that order. Security and privacy are tackled from the infrastructure (systems) perspective and not from the ethical perspective. Artificial intelligence is extensively employed in e-commerce and e-government. The role of IT professionals in addressing ethical issues will be realized through professional regulation. This professional regulation will increase the confidence and trust in information systems. This study explored an area scarcely studied to understand the impact of ethical issues in the deployment and adoption of e-government to provide policymakers with basic information. This study can be applied to a larger number of countries, especially countries that rely heavily on artificial intelligence, which has a major role in e-government.

References

Ahmed, J., Amir, S., Ahmad, F. (2019). Artificial intelligence and its prospective use in armed forces. *Electronic Research Journal of Engineering, Computer and Applied Sciences,* 1, 100-117.

Ajibade, P., & Mutula, S. M. (2019). *Bibliometric Analysis of Citation Trends and Publications on E-government in Southern African Countries: A Human-computer Interactions and IT Alignment Debate*

Alhashmi, S. F. S., Salloum, S. A., & Abdallah, S. (2019). Critical success factors for implementing artificial intelligence (AI) projects in Dubai Government United Arab Emirates (UAE) health sector: applying the extended technology acceptance model (TAM). *International Conference on Advanced Intelligent Systems and Informatics*, 393-405.

Al-Ma'aitah, M. (2019). Drivers of E-Government Citizen Satisfaction and Adoption: The Case of Jordan. *International Journal of E-Business Research (IJEBR)*, *15*(4), 40-55.

Al-rawahna, A. S. M., Chen, S. C., & Hung, C. W. (2019). *The barriers of e-government success: An empirical study from Jordan*. *Available at SSRN 3498847*

Alsharkawi, A., Al-Fetyani, M., Dawas, M., Saadeh, H., & Alyaman, M. (2021). Poverty Classification Using Machine Learning: The Case of Jordan. *Sustainability*, *13*(3), 1412.

AL-Zoubi, M., & AL-Zawaideh, F. (2017). Web-Based For Successful E-Government Adoption: The Jordan National E-Government Portal. *International Review of Management and Business Research*, *6*(1), 320-328.

Baloch, U., Rehman, N. A. (2019). An Empirical study of Bi-Directional Relationship of Exchange Rates with Stock Market Returns an Evidence from South Asian Emerging Economies: An Econometric Analysis. *Electronic Research Journal of Social Sciences and Humanities*, 1 (IV), 34-57.

Barry, P. S., & Doskey, S. (2020). Utilizing Artificial Intelligence to Make Systems Engineering More Human. *A Framework of Human Systems Engineering: Applications and Case Studies*, 19-41.

Buenfil, J., Arnold, R., Abruzzo, B., & Korpela, C. (2019). Artificial Intelligence Ethics: Governance through Social Media. *2019 IEEE International Symposium on Technologies for Homeland Security (HST)*, 1-6.

Cath, C., Wachter, S., Mittelstadt, B., Taddeo, M., & Floridi, L. (2018). Artificial intelligence and the 'good society': the US, EU, and UK approach. *Science and Engineering Ethics*, *24*(2), 505-528.

de Sousa, W. G., de Melo, E. R. P., Bermejo, P. H. D. S., Farias, R. A. S., & Gomes, A. O. (2019). How and where is artificial intelligence in the public sector going? A literature review and research agenda. *Government Information Quarterly*, *36*(4), 101-392.

Dignum, V. (2018). Ethics in artificial intelligence: introduction to the special issue. *Ethics and Information Technology*, (2018), 20:1-3, https://doi.org/10.1007/s10676-018-9450-z

Fayyoumi, E., Idwan, S., & AboShindi, H. (2020). Machine learning and statistical modelling for prediction of novel covid-19 patients case study: Jordan. *Machine Learning*, *11*(5), 3-11.

Glybovets, A., & Mohammad, A. (2017). E-government versus smart government: Jordan versus the United States. *EUREKA: Social and Humanities*, 3, 3-11.

Jordan, S. B., Fenn, S. L., & Shannon, B. B. (2020). Transparency as Threat at the Intersection of Artificial Intelligence and Cyberbiosecurity. *Computer*, 53(10), 59-68.

Leminen, S., Rajahonka, M., Westerlund, M., & Wendelin, R. (2018). The future of the Internet of Things: toward heterarchical ecosystems and service business models. *Journal of Business & Industrial Marketing*

Marda, V. (2018). Artificial intelligence policy in India: a framework for engaging the limits of data-driven decision-making. *Philosophical Transactions of the Royal Society: Mathematical, Physical and Engineering Sciences*, 376(2133), 20180087

Marzooqi, S. Al, Nuaimi, E. Al, & Qirim, N. Al. (2017). E-governance (G2C) in the public sector: citizens acceptance to E-government systems-Dubai's case. *Proceedings of the Second International Conference on Internet of Things, Data and Cloud Computing*, 1-11.

Matskevich, D. (2018). Preparing your business fort he artificial intelligence revolution. *Forbes magazine*. Retrieved February 1, 2021 from https://www.forbes.com/sites/forbestechcouncil/2018/07/12/preparing-your-business-for-the-artificial-intelligence-revolution/

Pandey, V., & Gupta, S. (2017). Understanding G2G e-government project impasse: A stakeholder theory perspective. *Information Development*, *33*(4), 361-374.

Rao, A. S., & Verweij, G. (2017). Sizing the prize: What's the real value of AI for your business and how can you capitalise. *PwC Publication, PwC*.

Rao, V. R. (2017). Improving government to employee (G2E) services through mobile technology–a survey. *International Journal of Computer Applications*, 168(6), 33-45.

Rossi, F. (2018). Building trust in artificial intelligence. *Journal of International Affairs*, 72(1), 127-134.

Russell, S. J., & Norvig, P. (2016). *Artificial intelligence: a modern approach. Malaysia*. Pearson Education Limited.

Ryan, M., & Stahl, B. C. (2020). Artificial intelligence ethics guidelines for developers and users: clarifying their content and normative implications. *Journal of Information, Communication and Ethics in Society*, 72(1), 127-134.

Sabani, A., Deng, H., & Thai, V. (2019). Evaluating the development of E-government in Indonesia. *Proceedings of the 2nd International Conference on Software Engineering and Information Management*, 254-258.

Saboor, K. B., Saboor, Q., Han, L., Zahid, A. S. (2020). Predicting the stock market using machine learning: Long short-term memory. *Electronic Research Journal of Engineering, Computer and Applied Sciences*, 2, 202-219.

Sanni, N., Olawale. (2020). The Choice of Adult Social Medial Utilization; Evidencing from the USA Household. *Electronic Research Journal of Behavioural Sciences*, 3, 46-56.

Santa, R., MacDonald, J. B., & Ferrer, M. (2019). The role of trust in e-Government effectiveness, operational effectiveness and user satisfaction: Lessons from Saudi Arabia in e-G2B. *Government Information Quarterly*, *36*(1), 39-50.

Sari, A., Akkaya, M., & Abdalla, B. (2017). Assessing e-Government systems success in Jordan (e-JC): A validation of TAM and IS Success model. *International Journal of Computer Science and Information Security (IJCSIS)*, 15(2).

Setyawan, I., Sulistyawati, S. (2020). Factors Causing the Spread of Hoax News via Social Media in Village Communities. *Electronic Research Journal of Social Sciences and Humanities*, 2 (II), 223-231.

Sieras, J. C. (2020). An intelligent knowledge-based system for environmental impact assessment of mountain resort development project. *Electronic Research Journal of Engineering, Computer and Applied Sciences*, 2, 37-49.

Snow, J. (2017). This AI traffic system in Pittsburgh has reduced travel time by 25%. *Smart Cities Dive*. Retrieved February 1, 2021 from https://www.smartcitiesdive.com/news/this-ai-traffic-system-in-pittsburgh-has-reduced-travel-time-by-25/447494/

Wall, L. D. (2018). Some financial regulatory implications of artificial intelligence. *Journal of Economics and Business*, 100, 55-63.

Yu, H., Shen, Z., Miao, C., Leung, C., Lesser, V. R., & Yang, Q. (2018). Building ethics into artificial intelligence. *ArXiv Preprint ArXiv:*1812.02953.

Zeng, Y., Lu, E., & Huangfu, C. (2018). Linking artificial intelligence principles. *ArXiv Preprint* ArXiv:1812.04814.