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Balancing efficiency and ethics in public administration: The role of artificial intelligence in administration law of the Middle East

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ABSTRACT

This study examines the integration of Artificial Intelligence (AI) in public administration within the Middle East, aiming to balance efficiency enhancements with ethical considerations. The objective is to identify the most suitable AI implementation strategy that optimizes operational efficiency while ensuring ethical compliance, transparency, and public acceptance in administrative law. The research employs the VIKOR multi-criteria decision-making method to evaluate four alternative AI implementation strategies. These alternatives are assessed against five criteria: efficiency improvement, cost reduction, ethical compliance, transparency, and public acceptance. Each criterion is weighted according to its importance, and an evaluation matrix is constructed to apply the VIKOR method for ranking and selecting the optimal strategy. The VIKOR analysis indicates that Alternative B (Partial Automation with Human Oversight) is the most favorable strategy, effectively balancing efficiency gains and ethical requirements. Alternative C (AI-Assisted Decision Making) ranks second. The findings suggest that integrating AI with human oversight offers a compromise solution that enhances administrative efficiency while upholding ethical standards, transparency, and public acceptance in the Middle Eastern context.

KEYWORDS: Artificial Intelligence, Public Administration, Administrative Law, Middle East, Efficiency Improvement, Ethical Compliance, VIKOR Method, Multi-Criteria Decision Making, AI Implementation Strategies, Transparency, Public Acceptance

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Introduction

1.1. Background and Significance

The rapid advancement of Artificial Intelligence (AI) technologies has significantly impacted various sectors worldwide, including public administration. In the Middle East, governments are increasingly exploring AI to enhance the efficiency of administrative processes, improve service delivery, and foster economic growth. The integration of AI into public administration holds the promise of streamlining bureaucratic procedures, reducing operational costs, and providing more responsive services to citizens.

However, the adoption of AI in governmental functions raises critical ethical considerations. Issues such as transparency, accountability, privacy, and potential biases in AI algorithms necessitate a careful examination. The intersection of efficiency and ethics becomes particularly pronounced in the realm of administrative law, where decisions can significantly affect individual rights and societal norms. Balancing these aspects is crucial to ensure that technological advancements do not compromise fundamental legal and ethical standards.

Balancing efficiency and ethics in public administration, particularly through the application of artificial intelligence (AI) in administrative law in the Middle East, presents both opportunities and challenges. AI's integration into public administration can significantly enhance operational efficiencies, streamline processes, and provide more effective services to the public. In regions like the Middle East where bureaucratic processes can sometimes be slow and cumbersome, AI technologies such as machine learning algorithms and data analytics can automate routine tasks, optimize resource allocation, and facilitate quicker decision-making. This leads to a more agile government that can respond more rapidly to the needs of its citizens.

However, the deployment of AI in public administration also raises substantial ethical concerns. Issues such as privacy, transparency, and accountability come to the forefront. In the Middle East, where governance structures vary widely, the implementation of AI systems must be carefully managed to avoid potential misuse of power and ensure that citizens' data are handled with the utmost confidentiality and integrity. Moreover, there is a risk that AI could lead to decision-making processes that are opaque and difficult for the public to understand or challenge, potentially undermining trust in public institutions.

To effectively integrate AI into administrative law, Middle Eastern countries need robust legal frameworks that address these ethical dilemmas. This involves creating regulations that ensure AI applications in public administration are transparent, accountable, and aligned with international human rights standards. Developing such frameworks requires a multi-stakeholder approach involving government officials, AI experts, ethicists, and the public. Ensuring that AI systems are not only efficient but also fair and just can help in fostering broader acceptance and trust among the population.

Furthermore, ongoing monitoring and evaluation are crucial to balance efficiency and ethics continuously. As AI technologies evolve, so too should the regulatory and ethical frameworks governing their use in public administration. Middle Eastern countries can benefit from setting up independent bodies tasked with the oversight of AI implementations, conducting regular audits, and adapting policies as necessary. This adaptive approach can help mitigate risks, address unforeseen challenges, and ensure that the use of AI in public administration remains both innovative and aligned with the public good, thereby promoting a harmonious balance between efficiency and ethical governance.

1.2. Problem Statement and Objectives

The successful implementation of AI in administrative law in the Middle East also hinges on capacity building and public engagement. It's essential for governments in the region to invest in the necessary technological infrastructure and to foster a skilled workforce capable of developing, managing, and overseeing AI systems. This includes training public sector employees not only in technical skills but also in ethical considerations related to AI usage. Capacity building ensures that the workforce can adapt to new technologies and apply them effectively, maximizing benefits while minimizing risks associated with AI.

Moreover, public engagement plays a critical role in the ethical deployment of AI in public administration. By involving citizens in the discussion and decision-making processes, governments can ensure that the development and implementation of AI technologies align with the public's needs and values. This can be achieved through public consultations, awareness campaigns, and participatory decision-making processes. Such inclusive practices help in building trust and ensuring that AI applications respect cultural and societal

norms, which are particularly diverse across the Middle East.

In conclusion, the incorporation of artificial intelligence in administrative law within the Middle East offers significant potential to enhance the efficiency of public services. However, this technological advance must be carefully balanced with ethical considerations to avoid pitfalls such as loss of privacy, reduced transparency, and potential biases in automated decisions. With the right frameworks, ongoing oversight, capacity building, and public engagement, AI can be a powerful tool for improving governance and delivering public services that are both effective and aligned with the ethical standards expected by the public. Through these measures, Middle Eastern countries can harness the benefits of AI while maintaining the trust and confidence of their citizens in the digital age.

Despite the potential benefits, there is a lack of consensus on the most appropriate strategy for implementing AI in public administration that simultaneously maximizes efficiency and upholds ethical principles. The challenge lies in identifying an AI integration approach that satisfies operational objectives without infringing on ethical considerations such as fairness, transparency, and public trust.

This study aims to address this gap by evaluating different AI implementation strategies within the context of Middle Eastern administrative law. Utilizing the VIKOR multi-criteria decision-making method, the research assesses four alternatives—ranging from full automation to maintaining the current non-AI system—against criteria that encapsulate both efficiency and ethical dimensions. The objective is to determine a balanced approach that can guide policymakers in effectively integrating AI into public administration while adhering to ethical imperatives.

Literature Review

2.1. AI Integration and Efficiency in Public Administration

The integration of Artificial Intelligence (AI) into public administration has been a focal point for enhancing operational efficiency and service delivery. Gil-Garcia, Dawes, and Pardo (2018) emphasize the crossroads of digital government and public management research, highlighting the transformative potential of AI in governmental processes. The adoption of e-government initiatives has been shown to improve financial management within the public sector, as discussed by Cuadrado-Ballesteros, Santis, and Bisogno (2022). They argue that modern accounting systems, bolstered by AI technologies, can lead to greater transparency and efficiency in public financial operations.

Alazzam et al. (2023a) explore the development of innovative models for e-commerce, which have parallels in public administration regarding the need for secure and efficient digital platforms. Their work underscores the importance of aligning technological advancements with economic security, a concept that is equally pertinent in the public sector. Similarly, Alazzam et al. (2023b) delve into information models for e-commerce platforms, stressing the necessity for legal compliance and adaptability in the face of global digitalization—a challenge also faced by public institutions integrating AI.

The pursuit of sustainable development through technological means is another critical aspect. Boggia and Cortina (2010) propose the use of multi-criteria models to measure sustainable development, a methodology that can be adapted to assess AI implementation strategies in public administration. Voronov et al. (2023) further discuss public administration's role in planning for sustainable development amid total digitalization, highlighting the need for strategic approaches in technology adoption to achieve long-term regional development goals.

2.2. Ethical Considerations and Challenges in AI Implementation

While AI offers significant benefits, it also poses ethical challenges that public administration must address. Hafer and Ran (2016) focus on the importance of citizen participation and identity construction as motivations for public engagement. This perspective is crucial when considering AI's impact on transparency and accountability in government actions. Ensuring that AI systems do not undermine public trust is imperative for successful implementation.

Kohler and Dimancesco (2020) discuss the risks of corruption in public procurement, particularly in the pharmaceutical sector. They highlight how anti-corruption measures, transparency, and accountability can mitigate these risks—principles that are equally relevant when integrating AI into public administration to

prevent misuse and ensure ethical compliance.

Cybersecurity is another significant concern. Coppolino et al. (2018) address how public administrations can protect themselves from cybersecurity threats, emphasizing the importance of projects like COMPACT that focus on enhancing cybersecurity measures. Chałubińska–Jentkiewicz (2022) reinforces this by examining cybersecurity as a public task in administration, advocating for robust policies and frameworks to safeguard sensitive data and systems against cyber threats.

The role of public administration in times of crisis, such as the COVID-19 pandemic, has also shed light on the need for adaptable and ethical AI solutions. Dunlop, Ongaro, and Baker (2020) propose a research agenda for public policy and administration scholars in response to COVID-19, highlighting the necessity for responsive and responsible governance aided by technology.

Hololobov and Antonova (2022) discuss the priorities of public administration in developing the education system within the context of transforming state policies in culture. Their insights suggest that ethical considerations in AI deployment extend beyond immediate administrative functions to broader societal impacts, such as education and cultural development.

Vasconcelos (2021) brings attention to social justice and sustainable regional development, reflecting on the discourse and practice in public policies and budgeting. According to Alrfoua et al. (2025) the integration of AI must align with these social justice goals, ensuring equitable access and avoiding the exacerbation of existing inequalities.

Methodology

3.1. Research Design and Criteria Selection

This study adopts a quantitative research approach utilizing the VIKOR multi-criteria decision-making (MCDM) method to evaluate different AI implementation strategies in public administration within the Middle East. The research design involves several key steps:

1. Identification of Alternatives: Four distinct AI implementation strategies were identified based on varying levels of automation and human involvement:
    - Alternative A: Full Automation with AI
    - Alternative B: Partial Automation with Human Oversight
    - Alternative C: AI-Assisted Decision Making
    - Alternative D: Maintaining the Current System without AI
2. Selection of Evaluation Criteria: Five criteria were selected to assess the alternatives, encompassing both efficiency and ethical considerations:
    - C1: Efficiency Improvement
    - C2: Cost Reduction
    - C3: Ethical Compliance
    - C4: Transparency
    - C5: Public Acceptance

These criteria were chosen based on their relevance to the objectives of public administration and the ethical implications of AI integration. Input from experts in public administration, ethics, and AI technology informed the selection to ensure a comprehensive evaluation.

3. Assignment of Weights to Criteria: Each criterion was assigned a weight reflecting its relative importance in the decision-making process. The weights were determined through consultations with stakeholders and experts, ensuring that both efficiency and ethical aspects were appropriately prioritized:
    - C1 (Efficiency Improvement): 0.25
    - C2 (Cost Reduction): 0.20
    - C3 (Ethical Compliance): 0.25
    - C4 (Transparency): 0.15
    - C5 (Public Acceptance): 0.15
4. Data Collection: Data for the evaluation matrix were collected through surveys and expert assessments. Stakeholders, including public administrators, legal experts, technologists, and representatives from civil society, provided ratings for each alternative against the selected criteria on a scale from 1 (worst)

to 5 (best).

3.2. Application of the VIKOR Method

To analyze the data and rank the alternatives, the VIKOR method was employed. VIKOR is a multi-criteria decision-making (MCDM) technique that focuses on identifying a compromise solution among conflicting criteria, which is particularly useful when decision-makers seek a balance between efficiency and ethics.

The application of the VIKOR method involves several steps:

1. Establishing the Decision Matrix: A matrix is created where each alternative is evaluated against each criterion based on the collected data. This matrix serves as the foundation for the analysis.
2. Identifying Best and Worst Values: For each criterion, the best (ideal) and worst (anti-ideal) performance values are determined among all alternatives. These values represent the benchmarks for comparison.
3. Calculating the Utility and Regret Measures:
    - The Utility Measure assesses the overall closeness of an alternative to the ideal solution by aggregating the weighted differences across all criteria.
    - The Regret Measure reflects the maximum individual regret, representing the worst performance among all criteria for each alternative.
4. Computing the VIKOR Index: The VIKOR index integrates the utility and regret measures to provide a ranking of the alternatives. It calculates a compromise solution that is closest to the ideal while considering the decision-maker's preference for the majority (utility) or the minority (regret) criteria.
5. Ranking and Selecting Alternatives: Alternatives are ranked based on their VIKOR index values. The alternative with the lowest index is considered the best compromise solution. The method also examines acceptable advantage and stability conditions to ensure that the top-ranked alternative is significantly better than others and that the decision is robust.

By following these steps, the VIKOR method systematically evaluates each AI implementation strategy against the defined criteria. This approach allows for an objective analysis that accounts for the trade-offs between efficiency improvements and ethical considerations, leading to a well-informed decision on the most suitable strategy for AI integration in public administration.

Reaserch Results

4.1. Main Data

In the context of balancing efficiency and ethics in public administration, particularly concerning the role of artificial intelligence (AI) in administrative law in the Middle East, decision-makers face complex choices. These choices often involve conflicting criteria, such as maximizing efficiency while ensuring ethical compliance. To address this multi-criteria decision-making (MCDM) problem, we will apply the VIKOR method (VlseKriterijumska Optimizacija I Kompromisno Resenje), which focuses on ranking and selecting from a set of alternatives in the presence of conflicting criteria.

We consider four alternatives for implementing AI in public administration:

- Alternative A: Full Automation with AI
- Alternative B: Partial Automation with Human Oversight
- Alternative C: AI-Assisted Decision Making
- Alternative D: Maintain Current System without AI

The decision criteria encompass both efficiency and ethical considerations:

1. C1: Efficiency Improvement
2. C2: Cost Reduction
3. C3: Ethical Compliance
4. C4: Transparency
5. C5: Public Acceptance

Assigned Weights for Criteria (Total sum = 1):

- C1: 0.25
- C2: 0.20

- C3: 0.25
- C4: 0.15
- C5: 0.15

4.2. Modeling

Each alternative is evaluated against each criterion on a scale from 1 (worst) to 5 (best). Evaluation matrix in table 1.

Table 1. Evaluation matrix

Alternatives	C1	C2	C3	C4	C5
A	5	4	2	2	2
B	4	3	4	4	4
C	3	2	5	5	5
D	2	1	3	3	3

Also, we need to determine best (f*) and worst (f^-) values (table 2).

Table 2. Determine Best (f*) and Worst (f^-) Values

Criteria	Best	Worst
C1	5	2
C2	4	1
C3	5	2
C4	5	2
C5	5	2

Compute the normalized difference (Dij) (1):

$$D_j=(f^*-f_{ij})/(f^*-f^-) \quad (1)$$

Lets build normalized difference matrix (table 3).

Table 3. Normalized difference matrix

Alternatives	C1	C2	C3	C4	C5
A	0	0	1	1	1
B	0.3333	0.3333	0.3333	0.3333	0.3333
C	0.6667	0.6667	0	0	0
D	1	1	0.6667	0.6667	0.6667

Next, we need calculate the utility measure (Si) and regret measure (Ri) (2):

$$Si=\Sigma jwj*Dij \quad (2)$$
$$Ri= MAXjwj*Dij$$

Calculations resuls in table 4.

Table 4. Calculations resuls

Criteria	Best	Worst
A	0.55	0.25
B	0.3333	0.0833
C	0.3	0.1667
D	0.8167	0.25

Next is Compute the VIKOR Index (3):

$$Qi=v\cdot(S-S*)/(Si-S*)+(1-v)\cdot(R--R*)/(Ri-R*) \quad (3)$$

Where:

- $S*=\min(Si)=0.3S$
- $S--=\max(Si)=0.8167$
- $R*=\min(Ri)=0.0833$
- $R--=\max(Ri)=0.25$
- $v=0.5$ (weight of the decision-making strategy)

Calculations resuls in table 5.

Table 5. Calculations of the VIKOR Index

Alternatives	Q
A	0.7418
B	0.0323
C	0.25
D	1

The VIKOR method suggests that Alternative B (Partial Automation with Human Oversight) is the most favorable option, balancing efficiency and ethical considerations effectively. Alternative C (AI-Assisted Decision Making) is the second-best option.

However, the difference between the Q values of Alternative B and Alternative C does not meet the acceptable advantage condition (the difference should be at least $DQ=1/(n-1)=0.3333$, but it is approximately 0.2177). Therefore, both alternatives can be considered as compromise solutions.

Final Recommendation:

- Primary Recommendation: Alternative B - Partial Automation with Human Oversight
- Secondary Recommendation: Alternative C - AI-Assisted Decision Making

These alternatives offer a balanced approach, enhancing efficiency while maintaining ethical standards, transparency, and public acceptance in public administration within the Middle East context.

4.3. Policy Recommendations

Based on the findings of the VIKOR analysis, the following policy recommendations are proposed for the integration of AI into public administration in the Middle East:

1. Adopt Partial Automation with Human Oversight (Alternative B): This strategy effectively balances efficiency improvements with ethical compliance, transparency, and public acceptance. Policymakers should prioritize this approach to leverage AI's benefits while mitigating potential ethical risks.
2. Ensure Ethical Compliance and Transparency: Implement robust ethical guidelines and oversight mechanisms to govern AI applications. This includes establishing ethics committees, regular audits, and transparency protocols to maintain public trust.
3. Enhance Public Acceptance through Engagement: Engage with the public to increase awareness and understanding of AI initiatives. Solicit feedback and involve citizens in the decision-making process to foster acceptance and address concerns.
4. Invest in Capacity Building: Develop the skills and knowledge of public administrators to work effectively alongside AI systems. Training programs and educational initiatives are essential to ensure successful integration.

4.4. Implementation Strategies

To operationalize the recommended policy, a phased implementation strategy is proposed, comprising specific actions and timelines. The following table outlines the key components of this strategy (table 3).

Table 3. Implementation Roadmap for AI Integration in Public Administration

Phase	Timeframe	Key actions
Phase 1: Initiation and Planning	1-3 m	- Establish an AI Integration Task Force - Develop ethical guidelines and policies - Conduct a needs assessment and stakeholder analysis
Phase 2: Pilot Implementation	4-9 m	- Select pilot departments for AI integration - Implement AI systems with human oversight - Provide training for staff in pilot departments
Phase 3: Monitoring and Evaluation	10-12 m	- Monitor performance and ethical compliance of AI systems - Collect feedback from staff and the public - Analyze data to assess impact and identify issues
Phase 4: Scaling and Optimization	Year 2	- Gradually expand AI integration to other departments - Update policies and ethical guidelines as needed - Continue training and capacity building efforts

Key Implementation Steps:

1. Establish Governance Structures: Form dedicated teams and committees to oversee AI integration, ensuring alignment with ethical standards and organizational goals.
2. Develop Ethical Frameworks: Create comprehensive guidelines that address privacy, data protection, algorithmic transparency, and accountability.
3. Pilot Testing: Begin with limited implementation in selected areas to assess effectiveness and identify challenges.
4. Continuous Monitoring: Implement ongoing evaluation mechanisms to monitor AI performance, ethical compliance, and public perception.
5. Scale Up Gradually: Use insights from pilot phases to inform broader implementation, making necessary adjustments to policies and practices.
6. Stakeholder Engagement: Maintain open communication channels with employees, citizens, and other stakeholders to build trust and gather valuable feedback.

The recommended implementation strategy emphasizes a cautious and measured approach to integrating AI into public administration. By prioritizing ethical considerations and involving human oversight, the strategy aims to enhance efficiency while safeguarding public interests and maintaining trust in governmental institutions.

Discussions

5.1. Analysis of Findings in Relation to Existing Literature

The results of this study, which identify **Partial Automation with Human Oversight** (**Alternative B**) as the optimal strategy for integrating AI into public administration in the Middle East, align with existing research emphasizing the importance of human involvement in technological processes. Bryson et al. (2013) highlight the critical role of designing effective public participation processes to enhance transparency and trust in government

actions. This underscores our finding that public acceptance is significantly higher when AI implementation includes human oversight, ensuring that citizens remain engaged and informed.

Kryshtanovych et al. (2023) discuss the formation of social leadership in public safety through modern modeling techniques, emphasizing the necessity of human leadership in overseeing technological advancements. Their work supports the notion that human oversight in AI systems can enhance public safety and security by providing ethical guidance and accountability.

Melnychuk et al. (2023) address the threats to effective management of personnel potential in public administration. They argue that human resources are crucial for the successful implementation of new technologies. This aligns with our recommendation for investing in training and capacity building to equip public administrators with the skills necessary to manage AI systems effectively.

Ongaro and van Thiel (2018) explore the diversity of languages and administrative traditions in Europe, emphasizing that public administration practices must be context-specific. This is particularly relevant in the Middle Eastern context, where cultural and linguistic nuances necessitate human involvement to ensure AI systems are appropriately adapted and ethically implemented.

The importance of institutional complementarity for social and economic development, as discussed by Bilan et al. (2019), further supports the integration of AI with human oversight. Strong institutions and ethical frameworks are essential for leveraging technological advancements to achieve sustainable development goals.

5.2. Implications, Limitations, and Future Research Directions

The study's findings have significant implications for policymakers in the Middle East. The preference for partial automation suggests that a hybrid approach, combining AI capabilities with human judgment, is more acceptable and effective in enhancing public administration efficiency while maintaining ethical standards. This approach is consistent with the views of Natalis et al. (2023), who emphasize the law's critical role in shaping human-environment relationships post-COVID-19, highlighting the need for legal frameworks that support ethical technological integration.

However, the study has limitations. The reliance on the VIKOR method involves subjective weighting of criteria, which may introduce bias. Additionally, the rapidly evolving nature of AI technology means that strategies effective today may require adaptation in the future. Yarova and Mishenin (2019) and Awaisheh & Al-Dabba (2024) highlight the need for developing comprehensive economic and socio-ecological indicators to monitor such changes within the context of national security.

Future research should focus on longitudinal studies to assess the long-term impacts of partial AI automation on public administration efficiency and ethical compliance. Jovovic et al. (2017) suggest that sustainable regional development depends on institutional policies and practices, indicating that ongoing evaluation of AI integration is necessary to ensure alignment with regional development goals.

Moreover, developing competencies among public management specialists is crucial. Melnychenko and Akimova (2019) advocate for the implementation of foreign experiences in Ukraine to enhance the skills of public administration professionals. Similar approaches could be beneficial in the Middle Eastern context to prepare personnel for the challenges of AI integration.

Kryshtanovych et al. (2020) emphasize the importance of evaluating circular economy implementations in the EU for sustainable development, suggesting that integrating AI in public administration should also consider environmental sustainability. This adds another layer to the ethical considerations, aligning technological advancements with broader sustainability objectives.

Conclusions

6.1. Summary of Findings

The application of the VIKOR method provided a systematic evaluation of the four proposed AI implementation strategies against critical criteria. The analysis revealed that Alternative B (Partial Automation with Human Oversight) emerged as the most favorable option. This strategy effectively balances the enhancement of efficiency and cost reduction with the necessity of ethical compliance, transparency, and public acceptance. Alternative C (AI-Assisted Decision Making) was identified as the second-best option, indicating its potential as a viable alternative.

The results underscore the importance of human involvement in AI systems within public administration. By incorporating human oversight, Alternative B mitigates ethical concerns associated with full automation, such as lack of transparency and accountability, while still capitalizing on the efficiency gains offered by AI technologies.

6.2. Implications and Recommendations

The findings have significant implications for policymakers and administrators in the Middle East seeking to integrate AI into public administration. The preference for partial automation suggests that a hybrid approach, combining AI capabilities with human judgment, is more acceptable and effective in the current socio-legal context. This approach can help maintain public trust and ensure that ethical standards are upheld during the transition towards more technologically advanced administrative processes. It is recommended that governments adopt a phased implementation of AI, beginning with partial automation that includes robust human oversight mechanisms. This strategy allows for the gradual integration of AI technologies while continuously monitoring and addressing ethical considerations. Additionally, establishing clear regulatory frameworks and guidelines for AI use in public administration can further enhance transparency and accountability.

Future research should focus on longitudinal studies to monitor the long-term effects of AI integration on administrative efficiency and ethical compliance. Expanding the evaluation criteria to include additional factors such as legal implications, cultural considerations, and technological readiness can provide a more comprehensive understanding of AI's role in public administration.

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