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THE ROLE OF ARTIFICIAL INTELLIGENCE ON THE PUBLIC ENERGY SECTOR PERFORMANCE IN THE UNITED ARAB EMIRATES: THE MEDIATION ROLE OF ORGANIZATIONAL AGILITY

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ABSTRACT

Purpose: This paper presents an in-depth analysis of the interaction between Artificial Intelligence (AI), organizational agility, and performance within the UAE's public energy sector. It explores the transformative role of AI in this context and the critical importance of organizational agility in determining outcomes in the energy field.

Design/methodology/data analysis: The methodology employed in this study is a cross-sectional survey design, with data collected from 245 managers across various public energy companies in the UAE. The survey instrument measured variables pertaining to AI, such as Customer Relationship Management and Cost-efficient IS Operations, and facets of organizational agility, including Responsiveness and Competency, as well as overall Organizational Performance.

Findings: The study's findings reveal a significant direct impact of AI on organizational performance, which is further enhanced by the presence of organizational agility. The data indicates that AI's integration within Customer Relationship Management and Cost-efficient IS Operations positively affects performance. Additionally, organizational agility through its components of Responsiveness and Competency serves as a significant intermediary, amplifying the influence of AI on performance.

Originality/value: The research is grounded in the Process Theory of Change, the Diffusion of AI Theory, and the Resource-Based View Theory, providing a solid theoretical base for its exploration. It offers a nuanced understanding of the combined impact of AI and organizational agility on the public energy sector's performance.

Practical implications: The paper concludes with a conceptual framework that encapsulates these relationships, providing stakeholders with a comprehensive view of the interdependencies between AI, agility, and performance. It stresses the imperative for a strategic embrace of AI and organizational agility to foster resilience, adaptability, and sustainable advancement in the UAE's public energy sector. The insights from this paper guide future strategic orientations, emphasizing the integration of technological innovation with agile organizational practices as a pathway to enhanced performance and sectoral leadership.

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O PAPEL DA INTELIGÊNCIA ARTIFICIAL NO DESEMPENHO DO SETOR PÚBLICO DE ENERGIA NOS EMIRADOS ÁRABES UNIDOS: O PAPEL DE MEDIAÇÃO DA AGILIDADE ORGANIZACIONAL

RESUMO

Objetivo: Este artigo apresenta uma análise aprofundada da interação entre Inteligência Artificial (IA), agilidade organizacional e desempenho no setor público de energia dos Emirados Árabes Unidos. Ele explora o papel transformador da IA neste contexto e a importância crítica da agilidade organizacional na determinação de resultados no campo da energia.

Projeto/metodologia/análise de dados: A metodologia empregada neste estudo é um projeto de pesquisa transversal, com dados coletados de 245 gerentes em várias empresas públicas de energia nos Emirados Árabes Unidos. O instrumento de pesquisa mediu as variáveis referentes à IA, como Gerenciamento de Relacionamento com Cliente e Operações de IS Econômicas, e facetas da agilidade organizacional, incluindo Capacidade de Resposta e Competência, bem como Desempenho Organizacional geral.

Constatações: As conclusões do estudo revelam um impacto direto significativo da IA no desempenho organizacional, que é ainda reforçado pela presença de agilidade organizacional. Os dados indicam que a integração da IA no Gerenciamento de relacionamento com o cliente e nas Operações de IS econômicas afeta positivamente o desempenho. Além disso, a agilidade organizacional através de seus componentes de responsividade e competência serve como um intermediário significativo, ampliando a influência da IA no desempenho.

Originalidade/valor: A pesquisa é fundamentada na Teoria do Processo de Mudança, a Difusão da Teoria da IA e a Teoria da Visão Baseada em Recursos, fornecendo uma base teórica sólida para sua exploração. Oferece uma compreensão matizada do impacto combinado da IA e da agilidade organizacional no desempenho do setor público da energia.

Implicações práticas: o artigo conclui com uma estrutura conceitual que encapsula essas relações, fornecendo às partes interessadas uma visão abrangente das interdependências entre IA, agilidade e desempenho. Ele enfatiza o imperativo de uma adoção estratégica de IA e agilidade organizacional para promover resiliência, adaptabilidade e avanço sustentável no setor público de energia dos Emirados Árabes Unidos. Os insights deste documento guiam as orientações estratégicas futuras, enfatizando a integração da inovação tecnológica com práticas organizacionais ágeis como um caminho para o desempenho aprimorado e a liderança setorial.

Palavras-chave: inteligência artificial, gestão de relacionamento com o cliente, custo-eficiente é operações, agilidade organizacional, capacidade de resposta da organização, competência da organização, desempenho organizacional.

1 INTRODUCTION

In the UAE's public energy sector, a key pillar for the nation's socio-economic progress and sustainability goals, enhancing organizational performance can lead to widespread positive effects. Artificial Intelligence (AI) has emerged as a transformative force, introducing avenues to boost organizational performance in many sectors, the energy domain being a notable one. Artificial intelligence unlocks immense possibilities in realms like customer relationship management (CRM) and information systems (IS) operations. Through AI's capabilities, organizations can innovate their workflows, heighten customer engagement, and ensure cost-efficient IS operations. AI-powered CRM can tailor experiences for customers, and its application in IS can foster efficiency and cost savings (Salim & Dabous, 2022; Lim et al., 2018). However, AI's integration at an institutional scale presents hurdles. Barriers like the need for a proficient workforce, financial implications, data security worries, and resistance to transformation can impede AI's smooth assimilation. Here, Organizational agility, marked by organization responsiveness and organization competency, could be pivotal. Agile establishments can swiftly adapt, embrace new prospects, and address risks stemming from AI incorporation.

The evolution of AI technology aligns with enhanced organizational performance by facilitating the realization of strategic visions. The synergistic effect of information communication tech and AI's efficiency underscores its role in institutional triumphs. Past studies have highlighted the positive correlation between AI's strategic deployment and heightened organizational performance. AI's applications span from scrutinizing consumer interactions to risk evaluation and fiscal operations (Olaleye & Lekunze, 2024). AI's integration enriches traditional operational settings.

Al Yazeedi (2021) posits that escalating professional sector challenges underscore the necessity for AI solutions. Effectively leveraging AI aids in surmounting these challenges and sustaining a competitive edge. AI technologies accentuate communication clarity and boost accessibility. This tech fosters direct dialogues with potential clientele, enhancing understanding of their needs and hopes. Moreover, AI tools empower organizations to refine services aligned with evolving market trends and complexities. Numerous entities utilize AI for strategies like social media outreach due to its cost-effectiveness and transparency. AI further propels organizational expansion by aiding in goal attainment and revolutionizing communication dynamics. As AI flourishes,

establishments receive ample prospects to augment their frameworks and adeptly introduce policy revisions (Al Maalouf et al., 2023).

This research delves into the nexus between artificial intelligence (AI), organizational agility, and performance within the public energy sector. Drawing from domains like information systems, computer science, management, and public governance, the study emphasizes AI's prowess in analytics, automation, and forecasting. Within the energy landscape, AI augments operations, fosters customer relationships, and ensures cost efficiency, thereby elevating organizational performance. Yet, seamlessly weaving AI into operational fabrics remains intricate (Salim & Alsyouf, 2020). For organizations desiring to tap into AI's transformative potential, organizational agility – hallmarked by swift adaptation and innovative learning – becomes indispensable. Such agile bodies can more aptly assimilate AI, counter disruptions, and exploit AI-induced opportunities. This research topic's pertinence is undeniable. The UAE's public energy sector holds immense significance for the nation's economic trajectory and sustainable aspirations. Deciphering AI's optimal utilization for maximizing organizational performance within this sector aligns with national priorities.

By dissecting organizational agility's mediating role, this study could provide actionable recommendations for the UAE's public energy entities to strategize their AI inclusions, navigate challenges, and tap into AI's full spectrum of advantages. While AI-oriented organizational research has gained traction, comprehensive insights into AI's effect on organizational performance, especially considering the influence of factors like organizational agility, remain scarce (Salim & Alsyouf, 2020). This inquiry seeks to enrich the academic discourse, drawing empirical data from the UAE's energy sector, and deepening our grasp on these intricate interrelations. While AI's prospective advantages are tantalizing, a theory-rooted comprehension of its organizational implications, particularly its impact on organizational performance and the mediation role of organizational agility, remains elusive. This investigation aspires to bridge this knowledge void, focusing on AI's influence on the UAE public energy sector's organizational performance and delving into organizational agility's intermediary role.

The aim of this study is to find out the impact of artificial intelligence (customer relationship management and cost-efficient IS operations) on organizational performance in public energy sector in the United Arab Emirates, as well as the mediation role of organizational agility (organization responsiveness and organization competency) for

these relationships. The remaining sections of this paper are designed as follows: Section 2 defines the literature review towards the study variables; Section 3 focuses on illustrating the model used in the study as well as the hypotheses development; Section 4 shows the methodology used; Section 5 analysis the collected data; Section 6 discusses the findings and compare them with the findings of previous studies; and finally Section 7 represents conclusion which includes future research directions.

2 LITERATURE REVIEW

2.1 THE PUBLIC ENERGY SECTOR IN THE UNITED ARAB EMIRATES (UAE)

The UAE's public energy sector is crucial due to its responsibilities in ensuring consistent energy availability, bolstering economic progression, and steering sustainable initiatives. Comprising governmental agencies, oversight bodies, and energy institutions, this sector oversees diverse functions, from energy generation and distribution to endorsing renewable energy pursuits (Salim & Dabous, 2022; Lim et al., 2018). Several distinctive attributes define the UAE's public energy landscape. Predominantly, state-led enterprises spearhead activities in energy creation and delivery. Noteworthy organizations like the Abu Dhabi National Oil Company (ADNOC) and the Emirates National Oil Company (ENOC) hold pivotal positions in the oil and gas realm, focusing intensively on explorative, production, refining, and fuel dissemination tasks. Economically, the public energy sector in the UAE is immensely impactful. It delivers a considerable portion of the nation's GDP and stands as a primary pillar for state earnings (Adekunle, 2023). Activities within this domain spur investments in infrastructural advancements, technological inclusions, and explorative endeavors (Krzymowski, 2020). Additionally, it paves the way for employment opportunities and augments the ascent of interconnected industries like manufacturing, transit, and building sectors (Sushil Jha & Tandon, 2019). Recent evolutions in the UAE's public energy domain spotlight specific trends and progressions. A salient shift is the heightened emphasis on green energy alternatives. The UAE is ardently working towards diversifying its energy sources and curtailing fossil fuel dependence. Undertakings, including solar and wind energy ventures, investments in atomic energy, and championing energy-conservation methods, echo the sector's dedication to sustainable practices and curbing carbon outputs (Salim & Alsyouf, 2020).

2.2 THE CONCEPT OF ORGANIZATIONAL PERFORMANCE IN THE PUBLIC ENERGY SECTOR

Within the realm of the public energy sector, organizational performance stands as a pivotal element, being directly linked to the sector's proficiency in realizing its set objectives and targets. Organizational performance signifies how effectively and efficiently an entity functions to achieve the outcomes it desires (Salim & Dabous, 2022). In the public energy sector, this performance is multifaceted, covering operational, financial, societal, and environmental results.

Certain dimensions and metrics related to organizational performance hold distinct importance within the public energy sector. These areas encompass the sector's activities, sustainable initiatives, and the satisfaction levels of stakeholders. Some critical dimensions are: Financial Health: Aspects like revenue, return on investment, profitability, and cost-effectiveness are essential in gauging the financial health of entities in the public energy sector (Abdallah et al., 2018). These metrics shed light on the sector's capacity to earn, handle expenditures, and strategically allocate resources. Also, Operational Proficiency: Operational metrics delve into the core processes' efficiency in the sector, from generating energy to its distribution. Indicators could involve transmission losses, energy output capabilities, reliability of the distribution grid, and the duration of outages (Lim et al., 2018). Eco-friendly Initiatives: Given the global emphasis on sustainability, the environmental performance of the public energy sector is gaining prominence. Metrics related to carbon footprint, advances in energy efficiency, adherence to environmental norms, and renewable energy capabilities highlight the sector's dedication to eco-consciousness (Salim & Alsyouf, 2020). Consumer Contentment: Metrics centered around customers gauge contentment levels among various energy consumers. Parameters like service quality, response time, dependability, and cost-effectiveness influence consumer contentment in the public energy sector (Saberi et al., 2018).

The significance of organizational performance in the public energy sector is paramount, impacting the sector's competence in meeting its set goals. Superior performance facilitates the sector's responsiveness to the growing energy needs, buttresses economic momentum, and paves the way for sustainable practices. Additionally, robust organizational performance augments the sector's reputation, instills confidence among investors, and lures capital for infrastructural and technological

evolution (Sushil Jha & Tandon, 2019). Several academic endeavors have delved into the dynamics of organizational performance in the public energy sector. For instance, Salim and Dabous (2022) embarked on a SWOT examination of solar photovoltaic infrastructures in UAE's public housing, emphasizing the financial and environmental facets. Similarly, Lim et al. (2018) applied pinch analysis for assessing the UAE's power production sector, taking into account its implications on operational efficiency and eco-sustainability. Such investigations offer profound insights into the multifarious aspects and metrics of organizational performance in the public energy sector. They enrich our comprehension regarding the sector's assets, limitations, potentials, and hurdles in attaining peak performance. With these studies as a foundation, this research aspires to probe the interplay of Artificial Intelligence and organizational agility on the organizational performance of the public energy sector in the UAE.

2.3 THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE PUBLIC ENERGY SECTOR

Artificial Intelligence (AI) has risen as a groundbreaking tool with immense promise for the public energy sector. AI is characterized by the creation of smart machines capable of tasks that generally necessitate human intellect, such as decision-making, problem-solving, learning, and reasoning (Salim & Alsyouf, 2020). Within the public energy sector, the applications of AI span diverse domains, from energy efficiency and generation to distribution and consumer services.In the realm of energy generation for the public energy sector, AI stands to be a game-changer. Power generation processes can leverage machine learning algorithms for heightened efficiency and minimized ecological footprints. AI models can sift through extensive data from variables like energy demand, weather conditions, and renewable energy outputs, facilitating more precise forecasting and orchestration of energy production (Saberi et al., 2018). Consequently, this paves the way for maximized renewable energy utilization and seamless assimilation of fluctuating sources, like solar and wind.

When focusing on energy distribution, AI offers pivotal advancements in refining the administration and functionality of distribution grids. By analyzing instantaneous data derived from devices like sensors and smart meters, AI algorithms can adeptly oversee electricity distribution. Such applications promote superior electricity load distribution, pinpointing of faults, and adept management of outages, translating to enhanced

dependability and diminished disruptions (Salim & Dabous, 2022). For the public energy sector, the prowess of AI-centric technologies is evident in promoting energy conservation. Patterns and irregularities in energy use can be detected through machine learning algorithms, heralding the discovery of opportunities for energy conservation and the orchestration of demand-driven strategies. AI-fueled systems can finetune energy consumption across infrastructures, industrial activities, and transportation avenues, culminating in slashed energy usage and economic benefits (Lim et al., 2018).

Additionally, AI holds the capability to augment consumer-related services in the public energy sector. Through AI-driven chatbots and virtual aides, personalized consumer interactions, query resolutions, and energy management aid can be rendered. By scrutinizing consumer data with AI, energy consumption patterns can be anticipated, and tailored energy strategies can be devised. This amplifies consumer contentment, boosts interaction levels, and promotes judicious energy consumption (Salim & Alsyouf, 2020). Existing scholarly works have delved into AI's footprint in the public energy sector, shedding light on its diverse roles and ramifications. For example, Salim and Dabous (2022) undertook an analysis of solar photovoltaic systems in UAE's public housing, accentuating AI's prowess in elevating energy efficiency and refining energy production. Lim et al. (2018) navigated the integration of AI in charting out the UAE's power production landscape, spotlighting its promise in bolstering operational adeptness and eco-friendliness. Cumulatively, these investigations underscore AI's transformative potential within the public energy sector. Its implementations can revitalize facets like energy generation, customer services, distribution, and efficiency, steering the sector towards sustainability, dependability, and fiscal prudence. These insights emphasize the imperative of continued exploration into AI's contributions to the public energy sector, especially juxtaposed against organizational performance and the intermediary function of organizational agility.

2.4 ORGANIZATIONAL AGILITY IN THE PUBLIC ENERGY SECTOR

Organizational agility plays an essential role in the public energy sector, denoting an organization's capability to effectively adapt, innovate, and navigate changes, opportunities, and obstacles. This entails the proficiency to readily modify strategies, operations, and processes in response to fluctuating technological developments, market scenarios, regulatory stipulations, and consumer requisites (Arsawan et al., 2022). Given

the ever-changing landscape of the public energy sector, organizational agility stands out as vital. This sector faces a myriad of external influences, ranging from evolving energy regulations and technological innovations to environmental challenges and altering consumer aspirations. Agile organizations in this sector have an edge, as they can foresee disruptions, exploit nascent opportunities, and maintain a sustainable performance trajectory (Panichayakorn & Jermsittiparsert, 2019). One crucial facet of organizational agility in the public energy sector is responsiveness, defining an organization's capacity to promptly perceive and proactively adjust to external shifts. Entities that epitomize responsiveness in this sector excel in tracking technological shifts, policy transitions, and market evolutions, facilitating strategic and operational recalibrations as deemed fit (Wamba, 2022). Competency, another pivotal aspect of organizational agility within the public energy sector, encapsulates the intrinsic capabilities, expertise, and resources an organization wields to effectively usher in changes and novelties. Organizations showcasing high competency levels possess the essential technological acumen, knowledge base, and talent pool to buttress agile decision-making processes, brisk initiative rollouts, and incessant enhancements (Holbeche, 2018).

Organizational agility positions entities in the public energy sector to adeptly counter challenges while maximizing nascent prospects. Through heightened responsiveness, these entities can proactively decipher and tackle alterations in market trends, energy stipulations, and consumer inclinations. Such agility ensures alignment with objectives centered around renewable energy, carbon emission curtailment, and sustainable undertakings (Alkatheeri et al., 2021). Moreover, in the public energy sector, organizational agility instills a spirit of ceaseless innovation and enhancement. Agile establishments champion trials, teamwork, and knowledge dissemination, empowering them to welcome cutting-edge tech, pioneer fresh energy production and distribution methods, and uphold operational supremacy (Arsawan et al., 2022). Several academic endeavors have delved into organizational agility's role in the public energy sector, elucidating its significance and ramifications. For instance, Shafiabady et al. (2023) harnessed artificial intelligence in forecasting the sector's organizational agility, spotlighting the synergy between AI prowess and agility. Wang, Huang, and Zhang (2019) probed deep learning's influence on organizational agility, accentuating its potential in augmenting adaptability and responsiveness. These inquiries, alongside

others, enrich our comprehension of organizational agility's paramountcy and its reverberations in the public energy sector.

To encapsulate, for entities within the public energy sector, organizational agility is indispensable in traversing the mutable terrain, addressing impediments, and capitalizing on opportunities. Responsiveness and competency emerge as quintessential to foster agility in this domain. Through these attributes, organizations can proficiently navigate transformations, pioneer innovations, and attain enduring organizational performance. Subsequent scholarly ventures should delve deeper into the catalysts, facilitators, and outcomes of organizational agility within the public energy sector, especially given its fluid character and the escalating prominence of novel tech and green energy avenues.

2.5 THEORETICAL FRAMEWORK

2.5.1 Process Theory of Change

The process theory of change offers a pivotal theoretical grounding to existing studies as a foundational theory. Essentially, the process theory of change suggests that agility emerges from a sophisticated interaction between recognizing and responding to change imperatives (Grandinetti, 2020). Yet, instead of directly inducing transformations, agility zeroes in on specific shifts in strategies and policies, engendering a positive influence on organizational performance both functionally and monetarily (Atocha, 2020). As posited by (Benbya et al., 2021), the theory of change delineates how specific interventions, or a combination thereof, are forecasted to induce particular organizational shifts, rooted in a causative examination anchored in previous evidence.

In the context of assimilating Artificial Intelligence into organizational frameworks, it heralds an array of enhancements in managerial aspects. For instance, by offloading tasks such as data entry, manipulation, and analysis to Artificial Intelligence, managers gain both time and efficiency in their roles. AI not only aids leadership in risk identification and subsequent mitigation using optimal practices and workforce deployment (Jarrahi, 2018a) but also decentralizes decision-making. Employing AI, contemporary organizations can enlist talent through digital assistants and advocate remote collaborations, granting them access to prime talent while simultaneously realizing cost savings through externalization (Khodakarami & Chan, 2016). (Cao et al., 2021) underscored the significance of the Process change theory, especially when

contemplating the infusion of artificial intelligence in professional settings. This theory elucidates the assimilation and actualization of novel technologies and methodologies aimed at amplifying efficacy and productivity. In the realm of Artificial Intelligence, AI epitomizes the practical application of the process change theory. It's equipped to autonomize routine operations, pare down expenses, and augment precision. Furthermore, AI's prowess in rapidly sifting through extensive data sets, pinpointing trends, and executing decisions positions it as a formidable asset for enterprises striving to refine their functions and escalate their returns (Wamba, 2021). An illustrative case of AI augmenting organizational agility was presented by (Gao et al., 2020).

Undoubtedly, Artificial Intelligence (AI) is recalibrating organizational functionalities and bolstering their agility. By mechanizing manual chores and furnishing instantaneous insights, AI facilitates firms in enhancing their operational efficiency and adaptability in the face of market volatility. Additionally, by harnessing multitudinous data sources, AI aids organizations in swift and informed decision-making (Agarwall et al., 2022). This enhanced nimbleness equips organizations to thrive amidst incessant transformations. Utilizing AI for tasks like customer support automation enables entities to promptly cater to client needs, tailoring experiences. Leveraging AI, businesses can pivot their attention to pivotal ventures, all while trimming operational expenditures and elevating client contentment (Venkateswarlu, 2018).

2.5.2 Diffusion of Artificial Intelligence (AI) Theory

The theory of Diffusion of Artificial Intelligence (AI) offers vital support to this research, acting as its soft theoretical foundation by emphasizing the variables and processes involved in AI's adoption. Roger's theory on the diffusion of Artificial Intelligence stands out as a paramount framework that aids in exploring the assimilation of technology across various domains (Ismail, 2006). A unique benefit of applying this diffusion theory to technology incorporation is its holistic approach, not merely delineating the adoption process but also pinpointing the key factors compelling organizations to embrace AI technology (Almaiah et al., 2022). Pertaining to the current investigation, both organizational agility and enhanced performance are central drivers behind the AI technology adoption in government institutions based in the United Arab Emirates (Omar et al., 2017). Johnson (2019) observed that as organizations aspire to heighten their agility, superiority, and operational performance, they discern AI technology as a pivotal instrument in achieving these objectives. Consequently, these

institutions integrate AI technology, ushering in augmented performance and sustainable progression. Maragno (2021) accentuates that Artificial Intelligence (AI) is ushering in profound alterations in organizational decision-making dynamics and customer interactions. AI promises monumental advancements in organizational decision-making by facilitating quicker, more precise analyses of voluminous data sets—beyond the capability of human analysts. With the maturation of AI technologies, a trend emerges: a more harmonious collaboration between AI and humans within professional settings, where both entities contribute to decision-making endeavors. Presently, AI's deployment within organizations not only refines decision-making, efficiency, and precision but also bolsters customer experiences and cultivates opportunities for personnel skill development (Madan & Ashok, 2023).

Elbaz et al., (2020) further underscore that AI is reshaping organizational decision-making paradigms at an accelerated pace. There's a growing propensity for organizations to depend on AI-infused systems to automate and refine decision-making processes. This evolution towards AI-centric decisions introduces the notion of "human-AI symbiosis"—a paradigm where humans and AI forge a collaborative, beneficial alliance. The permeation of this ideology within organizational decision-making is catalyzed by innovations in AI technology, empowering entities to make decisions with heightened speed and precision. As emphasized by (Lund et al., 2020), it's paramount for organizations to discern optimal strategies to harness this burgeoning technology, ensuring maximized efficiency and efficacy.

2.5.3 Resource-Based View Theory

The Resource-Based View (RBV) theory holds a foundational position within the realm of strategic management since its inception. This theory posits that companies can carve out a competitive edge by utilizing resources that are valuable, rare, inimitable, and non-substitutable, commonly referred to as VRIN resources (Barney, 1991). Unlike other perspectives that focus on external competitive forces, the RBV zeroes in on a firm's internal assets as the primary source of its competitive strength.

In the context of RBV, artificial intelligence emerges as a potent strategic asset that holds the potential to augment organizational capacities, leading to enhanced performance (Wamba-Taguimdje et al., 2020). Drawing from this viewpoint, the intrinsic attributes of AI, such as its rare and unique nature, position it as a valuable asset, helping

organizations set themselves apart from rivals and attain exceptional results. Additionally, within the RBV framework, organizational agility is identified as another pivotal strategic asset. This agility equips businesses with the nimbleness to adapt promptly and adeptly to shifts in the commercial landscape, bestowing a competitive edge (Roblek et al., 2022). Hence, to grasp the nexus between AI and organizational performance more profoundly, it's beneficial to perceive organizational agility as an intermediary strategic asset. Essentially, the greater the agility an entity possesses, the more proficiently it can harness AI to optimize its performance.

2.6 CONCEPTUAL FRAMEWORK

The theoretical underpinnings of this research are rooted in the interplay between artificial intelligence (AI), organizational agility, and performance outcomes, informed by three core theoretical perspectives: the Process Theory of Change, Diffusion of AI Theory, and the Resource-Based View. In this framework, AI is perceived as a critical technological catalyst expected to substantially influence organizational outcomes. The Diffusion of AI Theory suggests that embracing and effectively integrating AI can streamline organizational processes, elevate decision-making quality, and spur innovation, thereby bolstering organizational effectiveness (referencing Mishra & Pani, 2021; Wamba-Taguimdje et al., 2020). The concept of organizational agility, defined as the capacity of an organization to swiftly navigate through market shifts and uncertainties, is identified as a crucial strategic asset that augments organizational effectiveness (citing Roblek et al., 2022). This notion is in harmony with the Resource-Based View, which argues that distinctive and valuable organizational attributes, like agility, are instrumental in fostering a competitive edge and enhancing performance (referencing Vasanthan & Suresh, 2022). Drawing from the Process Theory of Change, it is acknowledged that organizational transformation typically unfolds through various stages or mechanisms. Integrating this perspective with existing literature (citing Wijayati et al., 2022; Stylos et al., 2021), the research posits that organizational agility plays a pivotal role in bridging the influence of AI on organizational effectiveness. The premise is that an organization's degree of agility amplifies its capacity to effectively utilize AI to improve outcomes.

Therefore, the proposed conceptual model delineates both direct and mediated pathways through which AI impacts organizational effectiveness. The direct pathway reflects the immediate influence of AI on outcomes, whereas the mediated pathway

highlights the role of organizational agility as an intermediary in the AI-effectiveness nexus. This model forms the foundation for validating the research hypotheses and sheds light on the intricate relationships among AI, organizational agility, and performance, particularly within the UAE's public energy sector.

3 RESEARCH MODEL AND HYPOTHESES

3.1 ARTIFICIAL INTELLIGENCE AND ORGANIZATIONAL AGILITY

(Fosso Wamba, 2022) suggests that Artificial Intelligence (AI) can significantly influence organizational agility by automating routine tasks, processing vast data sets, and delivering insights that shape decision-making. This has the potential to enhance efficiency, speed up decisions, and elevate performance. Yet, the deployment of AI can also bring new hurdles, such as the demand for specific skills and the potential for unforeseen outcomes. As emphasized by (Enad Al-Qaralleh & Atan, 2021) , it's vital for organizations to be mindful of AI's ethical and regulatory dimensions. In essence, while AI can positively shape organizational agility, its successful integration necessitates meticulous planning, implementation, and oversight. (Arsawan et al., 2022) proposed that AI can notably augment organizational agility by automating mundane activities, processing vast volumes of data, and facilitating predictive and decision-making capacities. This can bolster performance by increasing efficiency, minimizing mistakes, and spotlighting new possibilities. However, AI isn't an all-encompassing solution. Its efficacy hinges on the data it's nurtured with, the algorithm's caliber, and the overall quality of its deployment. Plus, AI's integration can result in job transitions, necessitating organizations to gear up for such shifts and retrain their workforce. Based on the discussion, the proposed hypothesis is as follows:

H (1): There is a significant relationship between customer relationship management and organization responsiveness in the UAE public energy sector.

H (2): There is a significant relationship between cost-efficient IS operations and organization responsiveness in the UAE public energy sector.

H (3): There is a significant relationship between customer relationship management and organization competency in the UAE public energy sector.

H (4): There is a significant relationship between cost-efficient IS operations and organization competency in the UAE public energy sector.

3.2 ARTIFICIAL INTELLIGENCE AND ORGANIZATIONAL PERFORMANCE

AI is ushering in transformative changes across diverse sectors, enriching organizational processes and performance. It harnesses smart algorithms and data evaluation methods to emulate human reasoning and problem-solving skills, aiming to refine business operations (Mishra & Pani, 2021). AI's multifaceted contributions include sharpened decision-making, operational enhancements, enriched customer interactions, and the genesis of innovative products (Wamba-Taguimdje et al., 2020). By mechanizing routine activities, AI permits firms to redirect resources toward strategic ventures, thus amplifying performance. Additionally, AI has profound implications for workforce performance and involvement, which are central to overarching organizational outcomes. Studies like those by Wijayati et al. (2022) have discerned a positive nexus between AI and workforce outcomes, with change leadership acting as a regulatory factor. Furthermore, during adversities like the COVID-19 pandemic, AI's significance was underscored in domains like risk management within the agricultural supply chain, underlining its potential in fortifying organizational resilience and performance (Nayal et al., 2022).

Organizational agility is an organization's capability to swiftly, flexibly, and aptly maneuver amidst fluctuating market conditions (Soltani et al., 2020). This agility is pivotal for performance as it empowers organizations to react timely and suitably to market shifts and evolving consumer preferences (Roblek et al., 2022). Numerous studies have delved into the link between agility and performance. For instance, research by Medeiros and Maçada (2022) underscored agility's contribution to gaining a competitive edge, which indirectly boosts performance. Similarly, research on supply chain agility, a facet of organizational agility, has indicated its positive bearing on performance, as demonstrated by studies like Shukor et al. (2021). Based on the discussion, the proposed hypothesis is as follows:

H (5): There is a significant relationship between customer relationship management and organizational performance of the UAE public energy sector.

H (6): There is a significant relationship between cost-efficient IS operations and organizational performance of the UAE public energy sector.

H (7): There is a significant relationship between organization responsiveness and organizational performance of the UAE public energy sector.

H (8): There is a significant relationship between organization competency and organizational performance of the UAE public energy sector.

3.3 THE MEDIATION ROLE OF ORGANIZATIONAL AGILITY

Organizational agility is recognized as a key strategic asset that could potentially act as a mediator between different organizational strategies and their performance outcomes. While the concept of organizational agility has been widely studied, its specific mediating function in the dynamic between AI integration and organizational performance has not been thoroughly explored. Medeiros and Maçada (2022) revealed that organizational agility not only fosters a competitive edge but also indirectly bolsters organizational performance. Similarly, Shukor et al. (2021) identified a beneficial link between supply chain agility (an element of organizational agility) and enhanced performance, hinting at the mediating influence of agility. However, these investigations did not focus on AI implementation as a primary factor, pointing to a possible area for further research. Vasanthan and Suresh (2022) delved into how an engineering services company adapted to disruptive innovations, including technological advancements. Yet, the specific mediating role of agility in the context of such innovations (like AI) on performance was not directly examined. In the realm of supply chain management, several studies have proposed a mediating role for agility. For instance, Zhang et al. (2023) examined how supply chain agility impacts organizational performance. Additionally, Shamout (2020) studied the interplay between supply chain data analytics and supply chain agility, suggesting that agility could have a mediating effect. Nevertheless, these studies fall short of specifically addressing the relationship between AI adoption and organizational performance, thus indicating an unexplored area in the existing literature.

However, the potential mediating role of organizational agility in the dynamic between AI adoption and performance has seen limited exploration. Although agility's significance is well-established, its mediation potential, especially in the AI-performance trajectory, hasn't been extensively probed. This study seeks to bridge this research void by positing that in the UAE's public energy sector, organizational agility might mediate the link between AI adoption and performance, shedding light on the intricate relationship between AI, agility, and performance. Based on the discussion, the proposed hypothesis is as follows:

H (9): The organization responsiveness mediates the relationship between customer relationship management and organizational performance

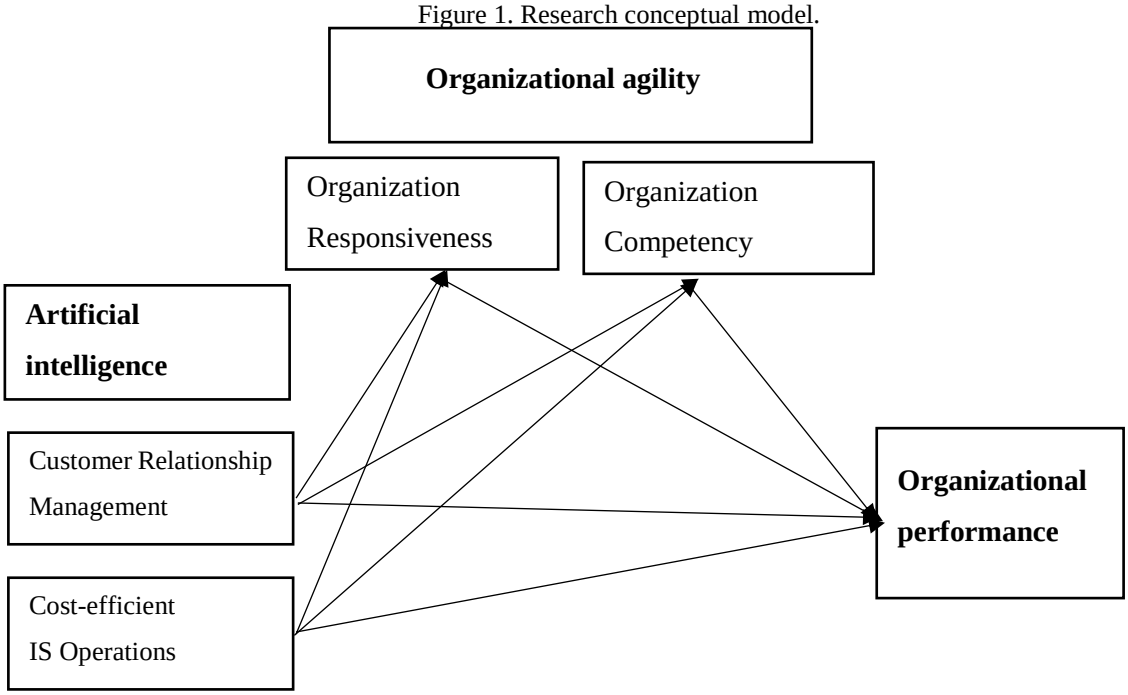
H (10): The organization responsiveness mediates the relationship between cost-efficient IS operations and organizational performance

H (11): The organization competency mediates the relationship between customer relationship management and organizational performance

H (12): The organization competency mediates the relationship between cost-efficient IS operations and organizational performance.

Based on the above arguments, the current paper proposes the framework that shown in Figure 1.

Figure 1. Research conceptual model.



Source: the researcher

4 METHODOLOGY

In this study, a cross-sectional survey methodology was adopted. This approach entails collecting data from a population or a representative segment thereof at one specific moment. This method aligns well with the objectives of this research, which aims to explore the interplay between artificial intelligence and organizational performance, with a focus on the mediating influence of organizational agility within the public energy sector of the United Arab Emirates. By capturing data at a singular time point, the research can assess the current state of these variables and their interrelations (Creswell & Plano

Clark, 2017). The target population of this study encompasses managers from several public energy firms in the UAE. In total, the study considers 717 managers from nine distinct organizations within the UAE's public energy sector, with a sample size of 305 managers being selected for analysis. Opting for a cross-sectional survey approach was also a strategic decision in light of time and resource constraints. This method facilitates the efficient collection of substantial data in a brief timeframe, which is instrumental in enhancing the generalizability of the research findings (Fowler, 2013). Data collection was conducted through a structured survey questionnaire, designed to quantify the key variables: artificial intelligence, organizational agility, and organizational performance. The gathered responses were then subject to statistical analysis to validate the study's hypotheses and address the research questions. However, it's important to acknowledge that while a cross-sectional design can reveal associations between variables, it is not equipped to determine causality. As such, the results of this study were interpreted with an awareness of these methodological constraints, in line with Bryman's (2016) recommendations regarding research design limitations

5 DATA ANALYSIS AND RESULTS

5.1 RESPONSE RATES

Table 1 provides insights into the data collection metrics from a survey. A total of 305 questionnaires were distributed, and out of these, 266 were returned. However, not all returned questionnaires were suitable for analysis; 21 were deemed unusable for various reasons. Consequently, the number of questionnaires that were both returned and usable for the study amounted to 245. This results in a response rate of 87.2%, which reflects the proportion of questionnaires returned out of those distributed. The usable response rate, which is more critical for the integrity of the data, stands at 80.5%. This latter percentage represents the proportion of questionnaires that were both returned and usable out of the total number distributed, thereby providing a more accurate measure of the effective sample size for the study. The high percentage of both response rate and usable response rate indicates a robust sample for the research, minimizing the potential for non-response bias and ensuring a strong foundation for subsequent analysis.

table 1: response rates

Response Rate	
Questionnaires Distributed	305
Returned	266
Unusable Questionnaires	21
Returned and Usable	245
Response Rate	87.2 %
Usable Response Rate	80.5 %

source: generated by the researcher

5.2 PROFILES OF RESPONDENTS

Table 2 outlines the demographic and socio-economic profile of the 245 respondents participating in the study. The majority of respondents are male, constituting 62.3% of the sample, while females represent 37.7%. In terms of education, most respondents have higher education degrees, with Master's and PhD holders accounting for 30.8% and 29.6% respectively. A smaller fraction has a Degree (18.4%), Diploma (12.6%), or High School education (3.4%), with the remaining 5.2% having other educational qualifications. The age distribution of the respondents shows a larger proportion in the 36-45 years range (35.6%), followed by those above 46 years (29.0%), 26-35 years (24.9%), and the least number in the 18-25 years range (10.5%). Regarding work experience, a significant portion of the participants, 45.1%, have over 5 years of experience, while 27.3% have between 3 to 5 years, and 19.7% have between 1 to 3 years. Only 7.9% have less than a year of experience. Examining marital status, more than half of the respondents are married (54.9%). Singles account for 19.5%, divorced for 11.6%, widowed for 7.9%, and separated for 6.1%. When it comes to household income, the largest segment of respondents, 37.0%, earn between 20,001 to 25,000 AED. Those earning 25,001 to 30,000 AED make up 18.2%, and those earning above 30,001 AED constitute 19.6% of the sample. Respondents with incomes ranging from 10,001 to 20,000 AED represent 16.9%, and those earning less than 10,000 AED are 8.3%. This demographic data provides a comprehensive overview of the respondents' backgrounds in terms of gender, education, age, experience, marital status, and household income.

Table 2: Profile of Respondents (N = 245)

	n	%		n	%
Gender			**Highest Education**		
Male	152	62.3	High School	8	3.4
Female	93	37.7	Diploma	31	12.6
			Degree	45	18.4
			Master	75	30.8
			PhD	73	29.6
			Other	13	5.2
Age			**Experience**		
18-25 years	26	10.5	Below than 1 year	19	7.9
26-35 years	61	24.9	1 to 3 years	48	19.7
36- 45 years	87	35.6	3 to 5 years	67	27.3
Above 46 years	71	29.0	Above 5 years	111	45.1
Marital Status			**Household Income**		
Single	48	19.5	Less than 10,000 AED	20	8.3
Married	134	54.9	10,001 to 20,000 AED	41	16.9
Widowed	19	7.9	20,001 to 25,000 AED	90	37.0
Divorced	28	11.6	25,001 to 30,000 AED	44	18.2
Separated	16	6.1	30,001 and above	50	19.6

Source: Generated by SPSS software and illustrated by the researcher

5.3 NORMALITY TEST

Table 3 presents the skewness and kurtosis statistics for the normality test of various constructs, with a sample size of 245 for each. Customer Relationship Management exhibits a skewness statistic of -1.471, indicating a distribution with a tail extending towards lower values; this is also supported by a kurtosis statistic of 0.595, suggesting a flatter peak than a normal distribution. Cost-efficient IS Operations has a skewness of -0.216, suggesting a distribution that is slightly skewed to the left, and a kurtosis of 1.621, which implies a somewhat sharper peak than a normal distribution. Organization Responsiveness shows a skewness of -0.906, which points to a moderately left-skewed distribution, and a kurtosis of 1.328, indicating a more peaked distribution relative to a normal distribution. Organization Competency has a skewness of -1.580, indicating a distribution that is significantly skewed to the left, with a kurtosis of 0.640, suggesting a relatively flat distribution.

Lastly, Organizational Performance has a skewness of -0.412, which is mildly left-skewed, and a kurtosis of 2.642, indicating a distribution with a much sharper peak than a normal distribution. Overall, these statistics suggest that the data may not be perfectly normally distributed, with various degrees of asymmetry and peakedness across the constructs measured. The deviations from normality should be considered when conducting further statistical analyses, as they may influence the validity of parametric test assumptions.

Table 1: Skewness and Kurtosis for Normality Test

	N	Skewness	Kurtosis
	Statistic	Statistic	Statistic
Customer Relationship Management	245	-1.471	0.595
Cost-efficient IS Operations	245	-0.216	1.621
Organization Responsiveness	245	-0.906	1.328
Organization Competency	245	-1.580	0.640
Organizational Performance	245	-0.412	2.642

Source: Generated by SPSS software and illustrated by the researcher

5.4 RELIABILITY TEST

Table 4 reveals the outcomes of the reliability analysis for various constructs, each based on a sample size of 245 responses. The Cronbach's alpha and Composite Reliability scores for Customer Relationship Management are 0.798 and 0.809, respectively, indicating good internal consistency among the items within this construct. Cost-efficient IS Operations has a Cronbach's alpha of 0.724, suggesting acceptable reliability, and a Composite Reliability of 0.840, which is considered good, indicating that the items reliably measure the construct. Organizational responsiveness is reflected with a Cronbach's alpha of 0.795 and a Composite Reliability of 0.903, both of which are well above the commonly accepted threshold for reliability, demonstrating that the construct is measured with high internal consistency. Organization Competency has a Cronbach's alpha of 0.821 and a Composite Reliability of 0.894, both indicating excellent reliability and suggesting that the items form a cohesive construct. Lastly, Organizational Performance records a Cronbach's alpha of 0.799 and a Composite Reliability of 0.802, both scores representing good internal consistency. These scores across the constructs suggest that the survey instrument is reliable and the constructs are well-defined and consistently measured across the set of items included in the survey. The measures are thus suitable for further analysis in research.

Table 4: Reliability Test

	N	Cronbach's alpha	Composite Reliability
Customer Relationship Management	245	0.798	0.809
Cost-efficient IS Operations	245	0.724	0.840
Organization Responsiveness	245	0.795	0.903
Organization Competency	245	0.821	0.894
Organizational Performance	245	0.799	0.802

Source: Generated by SmartPls software and illustrated by the researcher

5.5 DISCRIMINANT VALIDITY

Table 5 presents the results for discriminant validity using the Fornell-Larcker criterion. The diagonal values, which are the square roots of the Average Variance Extracted (AVE) for each construct, are as follows: Customer Relationship Management (CRM) is 0.890, Cost-efficient IS Operations (CEISO) is 0.805, Organization Responsiveness (OR) is 0.899, Organization Competency (OC) is 0.809, and Organizational Performance (OP) is 0.903. These diagonal values should be higher than the off-diagonal values in their corresponding rows and columns to satisfy the Fornell-Larcker criterion for discriminant validity. Looking at the off-diagonal values, the correlation between CRM and CEISO is 0.512, between CRM and OR is 0.634, and CRM and OC is 0.379, with CRM and OP being the lowest at 0.318. These correlations are all lower than the AVE square root of CRM (0.890), indicating good discriminant validity for CRM. For CEISO, the correlation with OR is 0.533, with OC is 0.363, and with OP is 0.295. Since these are all lower than the AVE square root of CEISO (0.805), CEISO also demonstrates good discriminant validity. OR's correlations with OC and OP are 0.379 and 0.252, respectively, both below the AVE square root for OR (0.899), which again indicates that OR has good discriminant validity. OC's correlation with OP is 0.471, which is less than the AVE square root for OC (0.809), suggesting that OC has good discriminant validity as well. Finally, since OP's square root of AVE is 0.903 and the highest correlation with other constructs is 0.471 (with OC), OP clearly has good discriminant validity.

In summary, all constructs exhibit discriminant validity as the square roots of the AVE for each construct (diagonal values) are greater than the correlations between the constructs (off-diagonal values). This indicates that each construct is distinctly different and measures a separate phenomenon as intended in the study.

Table 5: Results of discriminant validity by Fornell-Larcker criterion

	CRM	CEISO	OR	OC	OP
Customer Relationship Management	**0.890**				
Cost-efficient IS Operations	0.512	**0.805**			
Organization Responsiveness	0.634	0.533	**0.899**		
Organization Competency	0.379	0.363	0.379	**0.809**	
Organizational Performance	0.318	0.295	0.252	0.471	**0.903**

Source: Generated by SmartPls software and illustrated by the researcher

5.6 DESCRIPTIVE ANALYSIS

Table 6 provides the descriptive statistics for five study variables based on a sample of 245 respondents. All variables are measured on a scale from 1 to 5. Customer Relationship Management (CRM) has a mean score of 3.871, suggesting a relatively high perceived effectiveness in this area, with a standard deviation of 0.571, indicating moderate variability in responses. Cost-efficient IS Operations has a mean of 3.311, which is the lowest among the means, pointing to a moderately positive assessment of cost efficiency in information system operations. The standard deviation for this variable is 0.309, which is the lowest in the table, reflecting a narrow spread of responses around the mean. Organization Responsiveness scores a mean of 3.939, the highest mean score among the variables, indicating a strong presence of this attribute within the organizations represented. The standard deviation of 0.630 suggests a wider range of perceptions about organizational responsiveness. Organization Competency has a mean score of 3.621, showing a positive assessment overall. The standard deviation is 0.845, the highest on the table, indicating the most considerable variation in how respondents perceive competency within their organizations. Lastly, Organizational Performance has a mean of 3.029, which is close to the mid-point of the scale, suggesting a moderate level of performance as perceived by the respondents. The standard deviation of 0.663 is moderately high, showing a fair amount of dispersion in the performance ratings by the respondents. Overall, these statistics indicate that respondents rate Organization Responsiveness the highest and Cost-efficient IS Operations the lowest on average, with a considerable spread in the perceptions of Organization Competency among respondents.

Table 6: Descriptive Statistics for Study Variables

	N	Min	Max	Mean	Std. Deviation
Customer Relationship Management	245	1	5	3.871	0.571
Cost-efficient IS Operations	245	1	5	3.311	0.309
Organization Responsiveness	245	1	5	3.939	0.630
Organization Competency	245	1	5	3.621	0.845
Organizational Performance	245	1	5	3.029	0.663

Source: Generated by SmartPls software and illustrated by the researcher

5.7 DIRECT EFFECT ANALYSIS (HYPOTHESES TESTING)

Table 7 shows the path coefficients for direct relationships between variables in a study, with a sample size of 245. The standardized beta (Std. Beta) indicates the strength and direction of the relationship, the standard deviation measures the variability of the

beta estimate, the T-value tests the statistical significance of the path coefficient, and the P values indicate the probability that the observed relationship is due to chance.

For Hypothesis 1 (H1), the path from Customer Relationship Management (CRM) to Organization Responsiveness (OR) has a Std. Beta of 0.471, indicating a moderate to strong positive relationship. The standard deviation is low at 0.031, and the T-value of 3.437, coupled with a P value of 0.000, suggests this relationship is statistically significant. Hypothesis 2 (H2) posits a relationship between Cost-efficient IS Operations (CEISO) and OR, with a Std. Beta of 0.303, suggesting a positive relationship, albeit weaker than H1. The standard deviation is higher at 0.070, but with a T-value of 2.983 and a P value of 0.001, the relationship is still statistically significant. For Hypothesis 3 (H3), CRM's effect on Organization Competency (OC) has a Std. Beta of 0.470, indicating a strong positive relationship. A standard deviation of 0.074 and a high T-value of 6.084 with a P value of 0.004 reinforce the statistical significance of this relationship. In Hypothesis 4 (H4), the path from CEISO to OC has a Std. Beta of 0.213, suggesting a positive relationship. The T-value of 5.501 and a P value of 0.000 indicate a significant relationship, despite a higher standard deviation of 0.084.

Hypothesis 5 (H5) examines the effect of CRM on Organizational Performance (OP), with a relatively low Std. Beta of 0.101. However, with a T-value of 2.394 and a P value of 0.000, the relationship is considered statistically significant. Hypothesis 6 (H6) posits a stronger relationship between CEISO and OP, with a Std. Beta of 0.250 and a significant T-value of 5.126, supported by a P value of 0.009. For Hypothesis 7 (H7), the impact of OR on OP shows a Std. Beta of 0.328, with a low standard deviation of 0.032 and a high T-value of 5.787, indicating a statistically significant and positive relationship. Finally, Hypothesis 8 (H8) investigates the relationship between OC and OP. It has the highest Std. Beta of 0.492, signifying a very strong positive relationship. The T-value is 3.456 with a P value of 0.005, confirming its statistical significance.

In summary, all hypotheses show statistically significant path relationships, with varying strengths, indicating that both CRM and CEISO have significant direct effects on OR, OC, and OP. Additionally, OR and OC have significant direct effects on OP. The P values are all below the 0.05 threshold, confirming that the relationships are not due to random chance.

Table 7: Path Coefficients (Direct Relationships)

Hypothesis	Path Relationship	Std. Beta	Standard Deviation	T-value	P Values
H1	CRM -> OR	0.471	0.031	3.437	0.000
H2	CEISO -> OR	0.303	0.070	2.983	0.001
H3	CRM -> OC	0.470	0.074	6.084	0.004
H4	CEISO -> OC	0.213	0.084	5.501	0.000
H5	CRM -> OP	0.101	0.055	2.394	0.000
H6	CEISO -> OP	0.250	0.065	5.126	0.009
H7	OR -> OP	0.328	0.032	5.787	0.000
H8	OC -> OP	0.492	0.069	3.456	0.005

Key: CRM; customer relationship management, CEISO; cost-efficient IS operations, OR; organization responsiveness, OC; organization competency, and OP; organizational performance
Source: Generated by SmartPls software and illustrated by the researcher

5.8 MEDIATION ROLE ANALYSIS (HYPOTHESES TESTING)

Table 8 illustrates the mediation analysis results, evaluating the indirect effects of Customer Relationship Management (CRM) and Cost-efficient IS Operations (CEISO) on Organizational Performance (OP) through the mediators Organization Responsiveness (OR) and Organization Competency (OC).

Hypothesis 9 (H9) evaluates the indirect path from CRM through OR to OP. The Standardized Beta (Std. Beta) is 0.012, which is relatively low, indicating a modest mediation effect. However, the T-value is 3.564, and with a P value of 0.000, this path is statistically significant, suggesting that OR does mediate the relationship between CRM and OP to a small extent. Hypothesis 10 (H10) looks at the mediation effect of OR in the relationship between CEISO and OP. The Std. Beta here is 0.041, with a standard deviation of 0.021. The T-value is 2.233, and the P value is 0.015, which is less than the 0.05 significance level, indicating that OR significantly mediates the relationship between CEISO and OP. For Hypothesis 11 (H11), the mediation effect of OC on the relationship between CRM and OP is analyzed. The Std. Beta is 0.121, which is higher than in H9 and H10, suggesting a stronger mediation effect. The T-value of 2.201 and a P value of 0.000 further indicate that OC is a significant mediator in this relationship. Hypothesis 12 (H12) examines the indirect effect of CEISO on OP through OC. The Std. Beta is 0.008, which is quite low, but the T-value is high at 5.499, and the P value is 0.001, indicating that despite the small Std. Beta, the mediation effect is statistically significant.

In summary, the mediation analysis indicates that both OR and OC serve as significant mediators in the relationships between CRM and OP and between CEISO and OP, with varying degrees of mediation strength. All four hypotheses are supported by P values that are below the 0.05 threshold, confirming that the indirect relationships are significant and not due to random chance.

Table 08: Mediation Analysis

Hypotheses	Path Relationship	Std. Beta	Standard Deviation	T-value	P Values
H 9	CRM -> OR -> OP	0.012	0.019	3.564	0.000
H 10	CEISO -> OR -> OP	0.041	0.021	2.233	0.015
H 11	CRM -> OC -> OP	0.121	0.019	2.201	0.000
H 12	CEISO -> OC -> OP	0.008	0.017	5.499	0.001

Note: * = $p < 0.05$, ** = $p < 0.01$

Source: Generated by SmartPls software and illustrated by the researcher

6 DISCUSSION

This study's findings contribute significantly to the discourse on the transformative role of Artificial Intelligence (AI) within organizational settings, particularly within the public energy sector of the UAE. The results suggest that AI's integration—through dimensions like Customer Relationship Management (CRM) and Cost-efficient IS Operations (CEISO)—can enhance Organizational Performance (OP) directly and indirectly through mediators such as Organization Responsiveness (OR) and Organization Competency (OC). The direct effects observed align with Fosso Wamba (2022) and Arsawan et al. (2022), who assert that AI can streamline operations and enhance decision-making. By automating routine tasks, AI frees up resources, allowing organizations to focus on strategic initiatives that can lead to improved performance. This automation, coupled with AI's capacity for data processing and insight generation, can lead to efficiency gains and the identification of new opportunities. However, echoing the cautions of Enad Al-Qaralleh & Atan (2021), this study also recognizes the challenges posed by AI, including the need for specialized skills and the importance of considering ethical and regulatory concerns. The mediating role of organizational agility—captured by OR and OC—underscores the importance of an organization's capacity to adapt and respond to market changes and internal dynamics, resonating with the findings of Medeiros and Maçada (2022) and Shukor et al. (2021). These studies highlight the contribution of agility to competitive advantage and performance, suggesting that the benefits of AI in performance may be augmented by an organization's ability to adapt and evolve. Interestingly, this study fills a gap highlighted by prior research (Vasanthan & Suresh, 2022; Zhang et al., 2023; Shamout, 2020) by examining the specific mediating role of agility in the AI-performance link. It supports the proposition that organizational agility not only contributes independently to performance but also plays a critical role in enhancing the effects of AI on performance.

7 CONCLUSION AND IMPLICATIONS

The study conducted on the impact of Artificial Intelligence (AI) on the performance of the public energy sector in the United Arab Emirates has yielded insightful conclusions. It has demonstrated that AI has a significant direct impact on organizational performance through the enhancement of Customer Relationship Management and Cost-efficient Information System Operations. These findings are in line with the increasing recognition of AI as a driver of efficiency and decision-making in organizations. Moreover, the study has revealed that organizational agility, characterized by responsiveness and competency, plays a pivotal mediating role in the AI-performance relationship. The ability of an organization to adapt and respond to market and operational changes enhances the benefits that AI brings to organizational performance. The implications of these conclusions are profound for the public energy sector in the UAE. Organizations that are considering or are in the process of implementing AI technologies can expect to see not only direct improvements in performance but also gains through increased agility. This bodes well for the sector's overall competitiveness and its capacity to innovate and adapt to new challenges and opportunities. This research also offers a valuable contribution to the body of knowledge on AI, organizational agility, and performance. It responds to calls from previous studies for more empirical evidence on the mediating role of agility in the AI-performance nexus. By doing so, it provides a clearer understanding of the mechanisms through which AI impacts organizational outcomes. In conclusion, this study affirms the critical role of AI in advancing organizational performance and underscores the importance of fostering organizational agility as a means to maximize the potential benefits of AI. For practitioners, policymakers, and researchers alike, these findings emphasize the need for a holistic approach to AI adoption one that encompasses technological, strategic, and organizational dimensions.

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