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Enhancing Organizational Performance Through Strategic Planning and AI Integration: A Study on Predictive Analysis

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Abstract

This study explores the role of Artificial Intelligence (AI) in enhancing strategic planning and organizational performance in Abu Dhabi's public sector. Despite AI's potential benefits, research in this area, particularly in the public sector, has declined. A comprehensive survey using stratified and random sampling was conducted to gather insights into the perceived benefits, challenges, and resource constraints associated with AI adoption in Abu Dhabi's public sector organizations. The findings analyzed using SPSS demonstrate that AI integration in strategic planning can significantly improve decision-making, efficiency, effectiveness, and public service delivery. This study provides valuable insights for policymakers and public sector managers, emphasizing the importance of AI in achieving long-term strategic goals and maintaining a competitive advantage. Future research should explore diverse contexts, specific AI applications, the integration of emerging technologies, comparative studies between organizations, and the ethical and societal implications of AI adoption to ensure responsible and effective use of AI in strategic planning.

1. Introduction

The relationship between the integration of Artificial Intelligence (AI), strategic planning processes, and performance has been a subject of research since 1999 (Borges et al., 2021a; Keding, 2021; Leo Kumar, 2017; Wamba-Taguimdje et al., 2020). However, research momentum in this area has declined over time. However, the importance of exploring AI's role in strategic planning and management should not be overlooked. This study aims to identify and evaluate the application of AI in the strategic planning process and its impact on public sector performance, with a specific focus on Abu Dhabi in the UAE. Strategic planning is a structured process involving developing, implementing, and monitoring strategies to achieve organizational goals. It includes creating a formal written document outlining the plan and ensuring that all managers and staff align with the organization's vision for the future (Al-Turki, 2011; Avison et al., 2004; Hanna, 1985; Neis et al., 2017). This process is crucial for envisioning the future and establishing standard procedures and operational guidelines. However, challenges arise when professionals work in isolation without a clear understanding of the staff or stakeholders involved. Today, strategic planning has become more streamlined and less complex and involves all levels of management in processes and implementations.

The strategic planning procedure includes necessary adjustments to achieve better organizational performance (Alsharari, 2024; Milton & Delicia, 2024; Vandersmissen et al., 2024). Unlike traditional tactical methods, strategic planning creates more dependable and tailored plans for the current situation and its competitors. Strategic planning offers a comprehensive perspective for finance, human resources, marketing, and operations departments, aligning their capabilities with the organization's mission and goals. Technical and technological aspects are also considered when creating strategic plans for each department.

Rapid advancements in knowledge and technology, including AI, pose universal challenges to organizations (Alhosani & Alhashmi, 2024; Qi et al., 2024; Salsabila & Rohiem, 2024). The public sector in Dubai has yet to address this challenge entirely. Political and top management changes can affect existing strategic plans, necessitating improvements and new initiatives to gain sustainable competitive advantage. The application of AI in strategic planning is crucial for decision-makers to understand the impact of strategic management on the public sector. The UAE government's awareness of the importance of strategic planning has led to developing and revising its public sector strategy, ensuring the full utilization of strategic initiatives to achieve a competitive advantage while maintaining performance. In 2011, the UAE government launched a strategy to promote Information and Communication Technology (ICT) use in all government sectors through the "E-Government Portal." Incorporating ICT into its processes has significantly improved public service delivery and overall public-sector performance. This initiative demonstrates the potential of AI and other technologies to drive innovation and enhance organizational performance in the public sector. Implementing AI and other technologies can result in numerous benefits, including improved efficiency and effectiveness of service delivery. In the UAE, the adoption of e-government strategies has been a critical driver of this change, leading to improved performance and more efficient public service delivery (Mikhaylov et al., 2018).

AI offers various advantages to the public sector's strategic planning and management process. This enables well-informed, evidence-based decisions, leading to improved results and increased efficiency (Borges et al., 2021). AI can also identify new opportunities and areas for improvement that traditional analytical methods may overlook (Singh PricewaterhouseCoopers et al., 2019). Furthermore, AI can free time and resources for other activities, such as public services or new initiative development (Dwivedi et al., 2021). Strategic planning involves setting long-term goals and objectives for an organization and devising a plan to achieve them (Fragouli & Yankson, 2015). AI can assist in this process by analysing data and providing insights to inform strategic planning and identify new opportunities (Borges et al., 2021b). Abu Dhabi's public sector in the UAE is a noteworthy case study for analyzing the application of AI in strategic planning and management. This region is rapidly progressing, prioritizing innovation and technology (Department of Culture and Tourism, 2021). The government has made substantial investments in technology and introduced various initiatives to encourage the integration of AI and other cutting-edge technologies (Abu et al., 2019). Despite significant efforts to promote AI adoption in Abu Dhabi's public sector, progress remains in its early stages (KPMG, 2020). There is limited research on the challenges and opportunities of using AI in this context and its impact on Abu Dhabi's public sector organizational strategy. This study aims to fill this gap by examining the application of AI in the strategic planning and management cycle, and its effect on organizational strategy. This study investigates the connection between AI utilization and the strategic planning process in Abu Dhabi's public sector, focusing on integrating AI in strategic planning and implementation.

2. Literature Review

Artificial Intelligence (AI) advances have significantly transformed how organizations manage information, make decisions, and enhance operational efficiency (Al-Surmi et al., 2022). This literature review explores AI integration in business decision-making and strategic planning, emphasizing how AI strategies can boost operational performance.

Al-Surmi et al. (2022) studied and examined the impact of machine-learning algorithms, predictive analytics, and AI-driven decision support systems on business processes. They found that machine learning improves predictive capabilities, allowing businesses to better anticipate market trends and customer behavior. AI-driven decision support systems enhance decision accuracy and efficiency through real-time data analysis. Their study concluded that combining AI strategies improves operational efficiency, reduces costs, and increases customer satisfaction. Methodologically, this research utilized case studies and empirical analysis across various industries to provide a comprehensive view of AI's effectiveness in enhancing operational performance. Kaggwa et al. (2024) investigated AI's strategic implementation of AI to enhance competitive advantage, focusing on strategic planning, market analysis, and decision-making. Key findings highlight AI's pivotal role of AI in strategic planning by analyzing big data to guide informed decisions, and its application in market analysis to predict trends and adjust strategies. The resulting competitive advantages include better market positioning and increased innovation. This study used a mixed-methods approach, combining qualitative interviews with industry experts and a quantitative analysis of business performance metrics post-AI implementation. This research complements other studies by emphasizing AI's strategic benefits in contrast to operational focuses such as cost reduction and efficiency gains.

Future research should explore how AI integration affects operational and strategic business performance dimensions.

Mikalef & Gupta (2021) emphasized that despite AI's potential benefits, such as insights into customer behavior and operational efficiencies, there is insufficient understanding of developing AI competencies for business-to-business (B2B) marketing. This study presents a conceptual model that explores the relationships among AI competencies, B2B marketing capabilities, and organizational performance. Partial least squares structural equation modeling on survey data from 155 European companies reveals how AI competencies influence B2B marketing capabilities and, in turn, organizational performance. The findings highlight the need to integrate AI technologies with organizational knowledge and note the challenges in AI adoption due to contextual factors. This study distinguished between core technologies and competencies, stressing that effective AI integration requires both technological and strategic expertise. Kitsios & Kamariotou (2021) examined AI's transformative role in business decision-making, showing its potential to disrupt traditional models and enhance agility. This systematic review portrays AI as a strategic asset that can redefine decision-making processes and improve corporate performance while addressing ethical and practical concerns. Key findings suggest that AI can align strategic decisions with organizational values and objectives, fostering sustainable growth. These insights highlight the importance of strategic alignment, knowledge sharing, and AI-based decision-making frameworks in enhancing organizational performance and competitive advantage. Olan et al. (2022) explored the dynamic interplay among AI, knowledge sharing (KS), and organizational performance (OP). They emphasize that while AI technologies can significantly enhance organizational effectiveness and efficiency, their impact is contingent upon the integration of existing and new knowledge. This study utilized a fuzzy set-theoretic approach to address the knowledge gap that exists when AI is implemented without a robust knowledge-sharing system. By analyzing the complementarity and equifinality of AI and KS, this study demonstrates that a combination of these factors, rather than AI alone, is crucial for achieving sustainable improvements in organizational performance. The results underscore that a well-integrated approach that merges AI capabilities with effective knowledge-sharing practices leads to better performance outcomes, particularly in evolving business environments and with technological advancements. The Technology Acceptance Model (TAM) (Davis, 1989) explains that perceived usefulness and ease of use influence AI adoption in strategic planning. Similarly, Innovation Diffusion Theory (IDT) (Rogers, 1962) provides insights into how innovations like AI spread within organizations, influenced by factors such as relative advantage and compatibility with existing processes.

By integrating strategic management theories, such as Mintzberg's strategic planning model, and AI adoption theories, including TAM and IDT, this study provides a comprehensive understanding of how AI can reshape strategic processes in the public sector.

Mikalef et al. (2020) focus on how organizations can leverage AI-specific resources to create an AI capability, which can enhance organizational creativity and performance. Grounded in firms' resource-based theory (RBT), this study identifies tangible, human, and intangible resources as crucial components of AI capability. Despite AI's potential for business value, many organizations face challenges in realizing performance gains owing to implementation and restructuring lags. This study builds on IT capability literature, highlighting the need for complementary resources to leverage AI investments effectively. It also addresses the need for a coherent definition of AI within the organizational context and proposes a multidimensional instrument to measure AI capability. Empirical evidence from a survey of senior technology managers supports this theoretical framework, demonstrating that AI capability positively influences organizational creativity and performance. This study contributes to understanding how firms develop unique, hard-to-imitate capabilities that drive competitive advantage in dynamic environments. Usman et al., (2024) reviewed AI's transformative effects of AI in various industries, particularly in manufacturing. The literature highlights AI's role in boosting operational efficiency and competitiveness through intelligent automation and decision-making. In manufacturing, AI technologies, such as robotics and predictive maintenance, optimize production, reduce downtime, and enhance product quality. This study also explores AI's broader applications of AI in healthcare, finance, and customer service, demonstrating its potential to revolutionize these fields with improved diagnostics, optimized trading, and personalized marketing. Despite these advancements, challenges like ethical concerns, data privacy, and job displacement have been acknowledged. This study emphasizes the need for interdisciplinary research and responsible AI deployment to address these issues and ensure sustainable benefits for organizations and society. Emmanuel Osamuyimen Eboigbe et al. (2023) explored how AI and data analytics revolutionized Business Intelligence (BI). Through a systematic literature review, they highlight the shift from traditional BI methods to AI-driven predictive analytics, enhancing efficiency, accuracy, and insight generation in business decision-making. This study traces BI's evolution of BI, emphasizing that the integration of AI and advanced data analytics is crucial to its current and future landscape. The key findings illustrate that AI convergence with BI tools offers unprecedented data analysis and strategic planning capabilities, significantly departing from previous practices. The study also addresses emerging trends, including ethical considerations, user-friendly AI tools, and their long-term impacts on various industries. This transformation represents a fundamental change in business operations and strategic decision-making, positioning AI and data analytics as central to the BI's future.

Journal (2024) reviewed significant advances in integrating AI into Customer Relationship Management (CRM) systems within Enterprise Resource Planning (ERP) frameworks. This integration represents a transformative shift from traditional CRM practices, facilitating more personalized interactions, improved predictive modeling, and efficient service automation. Critical studies such as those by Chatterjee et al. (2021) and Saura et al. (2021) illustrate AI's role of AI in enhancing CRM functionalities and organizational performance, highlighting its potential to foster a customer-centric approach and automate routine tasks. This review identifies gaps in the literature, particularly in the need for empirical evidence on AI's impact of AI on specific CRM functionalities in various contexts. By addressing these gaps, Jhurani's study contributes to a deeper understanding of AI's benefits in CRM systems, emphasizing the strategic value of AI in improving customer engagement and operational efficiency. Mikalef et al. (2023) examined the impact of AI capabilities on organizational performance in public-sector entities using data from municipalities in Norway, Germany, and Finland. They defined AI capabilities as the effective use and coordination of AI-specific resources and investigated their influence on critical activities and overall performance. The study found that AI capabilities positively affect process automation and cognitive insight generation, thereby enhancing organizational performance. However, cognitive engagement with AI tools negatively impacts performance, indicating challenges like misaligned expectations or resistance. This study highlights AI's mixed effects of AI in public organizations and underscores the need for a strategic approach to leverage AI capabilities to improve performance.

Fosso Wamba (2022) bridges a significant gap in the literature by examining how AI integration affects organizational agility, customer agility, and firm performance. Using the ability to adapt to change, this study establishes that AI assimilation positively influences firm performance, with organizational agility as a more vital mediator than customer agility. Data from 205 U.S. supply chain executives reveal that AI has a more pronounced impact on organizational agility, subsequently improving customer agility and firm performance. This study contributes to understanding AI's role in organizational outcomes and emphasizes the importance of integrating AI across business processes for sustained competitive advantage. The findings align with the existing IT assimilation literature and offer theoretical and practical implications for leveraging AI in organizations. Godwin Nzeako et al. (2024) explored the transformative impact of AI technologies on supply chain management in the IT industry. The authors highlighted how machine learning, deep learning, and neural networks enhance demand forecasting, inventory management, supplier selection, and risk mitigation, thereby optimizing supply chain operations. While emphasizing the benefits of improved forecasting accuracy and operational efficiency, this study also addresses significant challenges, such as data quality, the need for skilled personnel, and organizational resistance. Strategic recommendations include investing in robust data infrastructure, engaging stakeholders, and fostering a culture of continuous innovation. This study contributes to the academic discourse by presenting a comprehensive analysis of AI's potential to revolutionize supply chain processes, outlining both economic and social implications, and suggesting directions for future research to further understand and leverage AI in supply chain optimization.

Chatterjee et al. (2021) explore the integration of AI into customer relationship management (CRM) and its impact on organizational performance and competitive advantage within the B2B sector. This study blends institutional theory and resource-based view (RBV) to examine the transformational shift from traditional to AI-based CRM systems. This highlights the critical role of AI-CRM in automating B2B relationship management and its potential to enhance strategic activities by streamlining data processing and decision-making. The research methodology involved a quantitative survey of 27 organizations using AI-CRM, focusing on firm size, age, and industry type as control variables. The findings indicate that AI-CRM adoption significantly improves organizational performance and competitive advantage. This study emphasizes AI-CRM as a strategic tool that encourages organizations to invest in AI capabilities for sustained market relevance. Rana et al. (2022) explored the impact of AI on digital business models and their influence on sustainable performance and customer satisfaction. This study utilized a systematic review methodology to analyze the strategic implications of AI integration across various industries. Key findings suggest that AI enhances digital business models by enabling more personalized customer experiences, optimizing operational processes, and facilitating data-driven strategic decision-making. The authors propose a framework that aligns AI capabilities with sustainable business practices, emphasizing the role of AI in achieving long-term organizational goals. This study contributes to the understanding of AI's strategic potential of AI in shaping future business landscapes, highlighting the need for continuous innovation and strategic alignment.

This literature review explores the transformative impact of AI on business decision-making and strategic planning, demonstrating its potential to enhance operational efficiency, strategic capabilities, and organizational performance. Critical studies have illustrated the diverse applications of AI across industries and the importance of strategic alignment and knowledge-sharing for successful AI integration. Future research should continue to investigate the dynamic interplay among AI, organizational strategies, and performance metrics, providing further insights into optimizing AI's benefits of AI for businesses and society.

3. Methodology

This study is rooted in a positivist philosophical framework that emphasizes the theory and testing of hypotheses. This research focuses on establishing empirical connections between study variables (Cooper & Schindler, 2004; 2006). Positivism posits that the social world exists independently and that its properties should be measured objectively rather than subjectively inferred (Creswell, 2012). This also suggests similarities between social and natural phenomena that can be studied using the same methods. The research is guided by the belief that reality is external and objective and that knowledge is valuable only if it is based on observations of this external reality. A positivistic quantitative methodology is an appropriate approach for social science research.

3.1 Population and Sample of the Study

The term "population" generally refers to the number of individuals or entities that meet specific criteria and are part of a particular group being studied. This larger group selected a subset known as the sample for detailed analysis. The "universe" encompasses the full range of all possible populations. Furthermore, a population can be defined as a group of people residing in a particular location who share specific characteristics. "Sampling" is the technique used in statistical analysis to select a predetermined number of observations from the larger population.

Sampling is a vital statistical method used to draw inferences regarding a larger population by employing a smaller subset. As Zikmund et al. (2003) elucidated, this technique is used when the entire population cannot be examined because of its large size. Selecting an appropriate sample is crucial to ensure that the results are not skewed toward a particular characteristic. Hence, sampling plays a pivotal role in social science research and is a critical tool for conducting research in this field. The population of this study consisted of the public sector in Abu Dhabi, UAE, particularly Dubai, and employees ranging from top to middle management. This group includes positions such as the head of the department, CAPs lead, and all assistant managers from various departments. The researcher selected these individuals because they were directly involved in developing and implementing the strategic planning process and oversaw all the initiatives. Furthermore, they possess a clear vision of the future, the ability to manage it effectively, and an understanding of how AI can improve overall performance.

3.2 Sampling Method

In this study, simple random sampling was used to ensure that every public sector executive had an equal chance of being included in the study. T-tests were used to assess group differences, while stepwise regression was used to evaluate the influence of multiple variables on organizational performance. This decision was made in line with the guidelines of Yamane et al. (1967) to determine an appropriate sample size based on the population size. The study revealed that approximately 80 administrative officers engaged in strategic planning as per the information obtained from the Staff Registrar Department. Subsequently, using Yamane's table for the sample size calculation, a sample of 30 respondents was determined to be sufficient to obtain accurate results from the questionnaire. Because the population size in this study was not particularly large, the researcher could obtain feedback from the respondents with relative ease.

3.3 Data Collection

Philosophical debate regarding the nature of reality influences the acquisition of knowledge about the world. It encompasses subjective perceptions and beliefs versus observable and objective phenomena. This debate fostered discussions of positivism and phenomenology. It is crucial to acknowledge that all academic research is grounded in a philosophical stance that serves as the foundation for investigations guided by a specific worldview. This study used both the primary and secondary data. The primary data were numerical and collected using a five-point Likert-scale questionnaire comprising three sections (A-C), corresponding to the study's variables and objectives. The questionnaire was developed based on operational indicators identified in the relevant literature and administered via email, allowing respondents to complete a two-week window. According to the organization, the target respondents were registrars in charge of development and planning or any other officers fulfilling this role. These individuals are part of management and are actively involved in strategic planning and implementation processes.

3.3.1 Reliability Test

The credibility of measurements is determined by their ability to generate consistent and stable outcomes across numerous trials, as emphasized by Golafshan (2003) and Kimberlin and Winterstein (2008). Consistency refers to the internal dependability of all scale elements, that is, the ability to measure the same characteristics. By contrast, stability refers to external dependability, which indicates the extent to which the measure varies among users (Drost, 2011).

To improve the reliability of the measurements, a questionnaire was provided with clear instructions and was pre-tested. Cronbach's alpha coefficient, a widely used reliability test in the social sciences, ranges from 0 to 1. A higher coefficient indicated that the items were strongly correlated and consistently measured the concept of interest. Various researchers have proposed different cut-off points, with Sekeran (2003) suggesting a minimum value of 0.5, Nunnally (1978) recommending a value between 0.7 and 0.8 for variables with many items, and Kaliappen & Hillman (2013) advocating a range above 0.5 for studies with variables that have fewer than five items. In this study, a range of above 0.5 was adopted.

3.3.2 Validity Test

Validity is an essential aspect of research that refers to the degree to which the results accurately reflect the phenomenon under investigation. It is crucial to ensure that the research instrument measures the objectives precisely. According to Cooper and Schindler (2014), several types of validity exist, including convergent, face, criterion, content, and discriminant.

The research instrument was modified based on expert input to enhance the face validity. To ensure content validity, this study only included measures grounded in theory and appropriate indicators, as informed by an empirical review, to capture relevant variable indicators. Questions from previous studies (Benkharafa, 2013; Desderio et al., 2015; Golafshani, 2003; Kimberlin & Winterstein, 2008) were adapted and modified to improve the criterion validity. Convergent and discriminant validity were assessed through factor analysis, in which factor loadings and eigenvalues were used as the evaluation criteria.

3.4 Operationalization of Study Variables

The variables in this study were operationalized to facilitate quantitative measurements. The independent variable, the strategic planning process, was operationalized by the study's objectives, as was the moderating variable, organizational characteristics. The intervening variable, AI integration into strategic planning and processes, was operationalized consistently with the objectives of the study. The dependent variable, the performance of organizational strategy in the public sector of Abu Dhabi, was operationalized by the objectives of the study, as shown in Table 1.

Table 1 *Operationalization of study variables*

Variable	Operational Definition and Indicators	Measurement Scale	Supporting Literature
Strategic Planning Process (Independent Variable)	• The type of AI technology being used (e.g., machine learning, natural language processing) • The extent to which AI is integrated into strategic planning processes. • The level of training and support provided to employees using AI.	Likert scale Questionnaire Section B	(Croasmun, 2011; Kusmaryono et al., 2022) Aosa, 1992; Burnside, 2002; Arasa, 2008. (Desderio et al., 2015) Ranasinghe, 2010 David, 2015
Organisation Characteristics (Moderating)	Organizational characteristics Age, structure	Likert scale Questionnaire Section B	Wernerfelt, 1984; Anic et al., 2009

AI integration into strategic planning and process (Intervening Variable)	AI operationalization of strategic planning and processes. AI integration into strategic planning and process	Likert scale Questionnaire Section B	McKinsey 7s model (8's revised) Peter, Waterman, and Phillips, 1982
Performance of Organizational Strategy of The Public Sector In Abu Dhabi (Dependent Variable)	• Achievement in goals	Likert scale Questionnaire Section C	McKinsey 7s model (8's revised) Peter, Waterman, and Phillips, 1982

3.5 Data Analysis

Upon collection, the data were meticulously prepared, analysed, and reported after conducting diagnostics to ensure suitability. This includes tests for normality, multicollinearity, linearity, and homoscedasticity. The data preparation involved verifying and sorting the questionnaires, editing, coding, transcription, and cleaning the data. Subsequently, descriptive and inferential statistics were used to analyse the data, providing researchers with an understanding of demographic information through measures of central tendency and frequency distributions. Inferential statistics helped determine the nature and magnitude of the relationships between variables.

Using correlation analysis, we calculated the correlation coefficient between the variables and the coefficient of determination for the overall goodness-of-fit test. The coefficient of variation (CV) was used to gauge response variations. The Pearson product-moment correlation coefficient (R) was used to establish relationships between the two variables. The correlation coefficients illustrate the magnitude and direction of the relationships, with a positive R indicating a positive relationship and a negative R indicating a negative one (Cooper & Schindler, 2006; Cohen, 1988).

R2 (coefficient of determination) represents the percentage of dependent variable variance explained by independent variables, as shown by the beta coefficients. The relationship between the two variables was examined using simple regression analysis. Stepwise regression analysis was used to assess the extent to which a set of candidate variables enhanced the prediction of the dependent variable beyond the contribution of the previously included independent variables.

A simple regression analysis investigated the connection between the strategic planning process and organizational performance. At the same time, the relationship between these two variables was assessed using path analysis based on Baron and Kenny's (1986) model. The potential moderating influence of organizational characteristics was tested using a stepwise multiple regression analysis, with the interaction term indicating the degree of moderation. Additionally, stepwise regression was employed to determine the joint influence of the strategic planning process and strategy implementation on organizational performance and how it differs from the independent effects of each variable on performance (Cooper & Bougie, 2010; Cooper & Schindler, 2014).

T-test analysis was used to establish the relationship between the public sector's organizational strategy performance in Abu Dhabi (the dependent variable) and the predictor variables of the strategic planning process, managerial characteristics, and strategy implementation. The resulting R2 value indicates the proportion of variance in the dependent variable accounted for by predictor variables. The regression equation is expressed as $P = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \varepsilon$, where P is the performance of accredited universities; β0 is a constant; β1, β2, and β3 are coefficients; X1 = strategic planning process; X2 = organizational characteristics; X3 = strategy implementation; and ε is an error term.

An F-test of significance at a confidence level of 0.05 was used to determine whether the independent variables significantly contributed to the prediction of the dependent variable. The overall significance was determined using p-values ≤ 0.05, and the null hypothesis was rejected if the p-value was less than 0.05; otherwise, the null hypothesis was not rejected. Table 2 presents the results of analysis and interpretation.

The t-test was employed to assess whether significant differences existed between critical demographic groups, such as gender, in their perception of AI integration. Correlation analysis was used to explore the relationships between variables, and reliability analysis ensured the consistency of the measurement instruments.

Table 2 *Analytical models and interpretation*

Objective	Hypothesis	Analytical Model
To evaluate the integration of Artificial Intelligence in strategic planning and management process performance in the public sector of the Abu Dhabi UAE	H1: AI's Involvement in the Strategic Planning Process has a statistically significant influence on the Performance of Public Sector Entities in Abu Dhabi, UAE.	T-test Analysis
	H2: Characteristics related to the Adoption of AI have a statistically significant direct influence on the Performance of Public Sector Entities in Abu Dhabi, UAE.	T-test Analysis
	H3: Characteristics related to the Adoption of AI have a statistically significant moderating effect on the relationship between AI's involvement in the strategic planning process and the Performance of Public Sector Entities in Abu Dhabi, UAE.	T-test Analysis
To determine the extent to which the integration of AI into strategic planning affects the performance of the public sector in the Abu Dhabi UAE	H4: AI Strategy Implementation has a statistically significant mediating effect on the relationship between AI's involvement in strategic planning and the Performance of Public Sector Entities in Abu Dhabi, UAE.	T-test Analysis
	H5: The joint effect of AI Involvement in the Strategic Planning Process, AI Strategy Implementation, and Organizational Characteristics on the Performance of Public Sector Entities in Abu Dhabi, UAE, is greater than the individual effect of these variables on performance.	T-test Analysis

4. Results

An extensive frequency analysis was performed for each variable to identify absent responses. The results revealed that None of the submitted questionnaires lacked any missing information. Moreover, a meticulous evaluation of the dataset revealed that Sections A (Demographic Variables) and B of the questionnaire were fully completed.

4.1 Response Rate

Two hundred and twenty-five emails were distributed throughout the public sector of Abu Dhabi, UAE, containing links to the questionnaires; 205 participants had a response rate of 91.1%.

4.2 Respondents Profile

The demographic makeup of the participants in the current study is a critical aspect to consider when analysing data and understanding the segmentation of the respondents. To interpret the data effectively, it is essential to understand respondents' backgrounds thoroughly. To achieve this, a comprehensive demographic profile of participants must be established. This will enable researchers to identify patterns and trends in data that can be used to categorize respondents into distinct groups. The demographic profile included age, sex, income, educational level, and occupation. By examining this information, researchers can gain insights into the characteristics of the respondents and how they relate to the research questions.

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Table 3 *Demographic profile of the respondents (Gender)*

Gender					
		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	**Male**	111	54.1	54.1	54.1
	Female	94	45.9	45.9	100.0
	Total	205	100.0	100.0	

Table 3 illustrates the demographic composition of the respondents categorized by gender. Among the 205 respondents surveyed, 111 (54.1%) were male and 94 (45.9%) were female. This distribution indicates a slight majority of male respondents compared with female respondents. In cumulative terms, after considering both the male and female respondents, the total was 100%. Overall, the table provides a snapshot of the gender distribution of the respondents who participated in the survey on AI applications in strategic planning and management in the public sector of Abu Dhabi.

Table 4 *Demographic profile of the respondents (Age)*

Age					
		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	18 - 25 years old	13	6.3	6.3	6.3
	26 - 35 years old	90	43.9	43.9	50.2
	36 - 45 years old	89	43.4	43.4	93.7
	46 years old and above	13	6.3	6.3	100.0
	Total	205	100.0	100.0	

Table 4 provides demographic information on the respondents categorized by age. Among the 205 individuals who participated in the survey, 13 (6.3%) were aged between 18 and 25 years, 90 (43.9%) were aged between 26 and 35 years, 89 (43.4%) were aged between 36 and 45 years, and the remaining 13 (6.3%) were aged 46 years or older. The distribution indicated a predominance of respondents aged between 26 and 45 years, collectively accounting for a considerable proportion of the surveyed population (93.7 %) when considering the cumulative percentage.

Table 5 *Demographic profile of the respondents (Years of worked in strategy)*

Years of work in Strategy					
		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Less than one year	7	3.4	3.4	3.4
	1-5 years	22	10.7	10.7	14.1
	6-10 years	78	38.0	38.0	52.2
	11-15 years	79	38.5	38.5	90.7
	above 15 years	19	9.3	9.3	100.0
	Total	205	100.0	100.0	

Table 5 presents the demographic profiles of 205 respondents, categorized by their tenure in strategy-related roles. Among these individuals, seven (3.4%) reported having less than one year of experience, while 22 (10.7%) indicated having worked for one–five years. Additionally, 78 (38.0%) participants reported a tenure of 6–10 years, and 79 (38.5%) had been employed in strategy roles for 11–15 years. Finally, 19 (9.3%) participants reported

having more than 15 years of experience in strategy-related positions. This tenure distribution among respondents provides valuable insights into the diverse experience levels of strategy-related roles. This comprehensively explains the tenure distribution of the surveyed population concerning AI applications in strategic planning and management.

4.3 Descriptive Analysis

The statistical analysis of the dependent variable, which serves as the primary focus of the research, revealed that it ranged from a minimum value of 2.50 to a maximum of 5.00, with a mean score of 4.8878 and a standard deviation of 0.39556. These findings suggest a high level of agreement or intensity among the respondents regarding this variable. Similarly, the moderating variable ranged from 1.00 to 5.00, with a mean of 4.8049 and a standard deviation of 0.71468, indicating high response variability compared to the dependent variable. The independent variable ranged from 1.57 to 5.04, with a mean of 4.4721 and a standard deviation of 0.51904, suggesting a moderately high level of agreement among respondents. Additionally, the intervening variable ranged from 1.60 to 4.84, with a mean of 4.3904 and a standard deviation of 0.51206, indicating moderate agreement or intensity. The number of valid observations (list-wise) for each variable was consistent at 205. These descriptive statistics offer valuable insight into the distribution and characteristics of the variables examined in this study (Table 6).

Table 6 *Descriptive analysis – descriptive statistics for variables*

	Descriptive Statistics					
	N	Min	Max	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Performance Of Organizational Strategy of The Public Sector in Abu Dhabi	205	2.50	5.00	4.8878	0.02763	0.39556
Organisation Characteristics	205	1.00	5.00	4.8049	0.04992	0.71468
Strategic Planning Process	205	1.57	5.04	4.4721	0.03625	0.51904
AI integration into strategic planning and process	205	1.60	4.84	4.3904	0.03576	0.51206
Valid N (listwise)	205					

4.4 T-Test

Based on the t-test analysis performed to evaluate potential variations in responses regarding the execution of organizational strategy in the public sector of Abu Dhabi based on gender, female respondents, with a mean score of 4.8878, were contrasted with male respondents, who had a mean score of 0.23369. The t-test revealed a statistically significant difference between the two genders, indicating that female respondents held a more favourable view of organizational strategy performance than male respondents ($p < 0.05$). This emphasizes the significance of considering gender when assessing the performance of organizational strategies within the public sector of Abu Dhabi.

After conducting a t-test analysis to investigate potential differences in responses related to organizational characteristics based on gender, it was discovered that female respondents, who had a mean response of 4.8049, were compared with male respondents, who had a mean response of 0.23369. The t-test results revealed a statistically significant difference between the two groups, indicating that female respondents tended to have more favourable perceptions of organizational characteristics than male respondents ($p < 0.05$). This suggests that it is crucial to consider gender perspectives when attempting to understand the perceptions of organizational characteristics within the surveyed population.

The t-test analysis, conducted to explore potential differences in responses regarding the strategic planning process based on gender, revealed a statistically significant difference between the two gender groups. Specifically, female respondents, with a mean response of 4.4721, demonstrated a more favourable perception of

the strategic planning process than male respondents, who had a mean response of 0.23369. This suggests that female respondents held a more positive view of the strategic planning process than did male respondents ($p < 0.05$). These results underscore the importance of considering gender perspectives when evaluating perceptions of the surveyed population regarding the strategic planning process.

According to a t-test conducted to explore potential differences in responses regarding the integration of AI into strategic planning and processes based on gender, female respondents, with a mean response of 4.3904, they differed significantly from male respondents, with a mean response of 0.23369. The t-test results revealed a statistically significant difference between the two gender groups, indicating that female respondents perceived the integration of AI into strategic planning and processes more positively than male respondents ($p < 0.05$). These findings highlight the importance of considering gender perspectives when assessing the perceptions of AI integration within the surveyed population.

The t-test results showed that female respondents had a more favourable perception of AI integration than male respondents, suggesting gender-specific differences in AI adoption experiences.

4.5 Reliability Analysis

As Sekaran and Bougie (2010) emphasize, reliability tests are typically conducted to assess the quality of instruments intended for use in real-world settings. Reliability is a tool that measures an instrument's consistency. Cronbach's alpha was used to evaluate the instrument's reliability. The results of the reliability tests are listed in Table 7.

Table 7 *Summary of the reliability results of the study variables*

Reliability Statistics		
Variable	Cronbach's Alpha	N of Items
Strategic Planning Process	0.902	21
AI integration into strategic planning and process	0.920	25
Organisation Characteristics	0.776	3
Performance Of Organizational Strategy of The Public Sector in Abu Dhabi	0.762	3

According to Hair et al. (1998), the minimum acceptable value for Cronbach's alpha is 0.70. This coefficient, which ranges from zero to one, assesses the dependability of the data. As demonstrated in the table above, the value of Cronbach's alpha ranges from 0.4 to 0.920, with values closer to 1 indicating better reliability. This suggests that the data exhibits high internal consistency and reliability (Sekaran, 2003).

4.6 Correlation

This analysis aimed to identify the associations between the variables used in the study following the guidelines outlined by Hair et al. (2008). According to these guidelines, correlation coefficients below 0.2 signify a weak relationship, while coefficients between 0.2 and 0.4 indicate a weak correlation. Correlation coefficients between 0.4 and 0.7 suggest a moderate relationship, and coefficients between 0.7 and 0.9 indicate a strong relationship. Correlations above 0.9 suggest a solid relationship. Based on these criteria, correlations were observed between variables in this study. However, it is essential to note that correlation does not imply causation but merely indicates the strength of the relationship (Zickmund, 2003).

Table 8 provides a summary of the correlations among the variables under investigation. The most robust correlation coefficient, at .925** and statistically significant at the 0.01 level, was found between IV2, "Strategic Planning Process," and IV3, "AI integration into strategic planning and process." This finding indicates a strong positive relationship between the two variables. Furthermore, IV3, "AI integration into strategic planning and process," also demonstrated a strong positive correlation with IV1, "Organization Characteristics," at .712** and was statistically significant at a 0.01 level. However, the correlations between IV1 and DV and between IV2 and DV were relatively weak, .096 and .067, respectively). Nevertheless, both were statistically significant at the 0.01 level.

Table 8 *Correlation table*

Correlations				
	DV	IV1	IV2	IV3
DV-Performance of Organizational Strategy of The Public Sector in Abu Dhabi	1			
IV1-Organization Characteristics	0.096	1		
IV2-Strategic Planning Process	0.067	.657**	1	
IV3-AI integration into strategic planning and process	0.067	.712**	.925**	1
**. Correlation is significant at the 0.01 level (2-tailed).				

In brief, the three independent variables, "Strategic Planning Process," "AI integration into strategic planning and process," and " organizational characteristics," demonstrated strong interconnections with one another, implying their potential impact on the performance of organizational strategy in the public sector of Abu Dhabi. However, the correlations between these variables and the dependent variable, "Performance of Organizational Strategy of the Public Sector in Abu Dhabi," were comparatively weaker, suggesting the need for additional research to examine their interplay more closely.

4.7 Hypothesis Testing

According to the results displayed in Table 9, integrating AI into the strategic planning process impacts organizational performance, reinforcing H1. However, H2 and H3, which proposed that factors related to AI adoption have direct and moderating influences on performance, were not supported, suggesting that these factors do not directly affect organizational performance or significantly affect the relationship between AI involvement and performance. Nonetheless, H4 was accepted, indicating that AI strategy implementation mediates the connection between AI involvement in strategic planning and organizational performance, emphasizing the importance of effective implementation strategies. H5 was also accepted, indicating that the combined effect of AI involvement, strategy implementation, and organizational characteristics surpassed their contributions, highlighting the synergistic impact of these factors in enhancing organizational performance. These findings highlight the crucial role of AI in strategic planning and implementation processes and emphasize the significance of organizational characteristics in leveraging AI for improved performance in the public sector of Abu Dhabi. Hypothesis 1, which examines AI's involvement in strategic planning, is grounded in Mintzberg's strategic planning model, while Hypothesis 4, which examines AI strategy implementation, is supported by TAM and IDT frameworks.

Table 9 *Summary of hypothesis result*

Hypothesis	Result
H1: AI's Involvement in the Strategic Planning Process has a statistically significant influence on the Performance of Public Sector Entities in Abu Dhabi, UAE.	Accepted
H2: Characteristics related to the Adoption of AI have a statistically significant direct influence on the Performance of Public Sector Entities in Abu Dhabi, UAE.	Refuted
H3: Characteristics related to the Adoption of AI have a statistically significant moderating effect on the relationship between AI's involvement in the strategic planning process and the Performance of Public Sector Entities in Abu Dhabi, UAE.	Refuted
H4: AI Strategy Implementation has a statistically significant mediating effect on the relationship between AI's involvement in strategic planning and the Performance of Public Sector Entities in Abu Dhabi, UAE.	Accepted
H5: The joint effect of AI Involvement in the Strategic Planning Process, AI Strategy Implementation, and Organizational Characteristics on the Performance of Public Sector Entities in Abu Dhabi, UAE, is greater than the individual effect of these variables on performance.	Accepted

5. Discussion

The research project sent 225 emails containing links to the questionnaires to Abu Dhabi, the UAE public sector. As a result, an impressive response rate of 91.1% was attained, with 205 questionnaires returned for the analysis. This study aimed to investigate the connection between various independent variables and their effects on the dependent variable within the public sector context in Abu Dhabi, UAE, and to identify the most significant factors influencing the intended outcome.

This study uniquely examined AI integration in the public sector of Abu Dhabi, a context that has not been extensively explored in previous research. Unlike previous studies that have focused on AI in the private sector, this study highlights the distinctive challenges and opportunities of AI adoption in public sector strategic planning. The investigation aimed to determine whether several factors, such as the Strategic Planning Process, AI integration into strategic planning and processes, and organizational characteristics, could explain the Performance of Organizational Strategy of The Public Sector in Abu Dhabi. The study's findings are essential as they shed light on the determinants of performance of the public sector's organizational strategy in Abu Dhabi, which can inform strategic planning and management within organizations. Several researchers have examined the intricacies of the public sector's organizational strategy performance in Abu Dhabi, particularly concerning the strategic planning process encompassing the variables examined in this study. For instance, Atkinson (2006), Ahmad & Schroeder (2011), Amir & Parvar (2014), Ansoff (2005), Bruch, Gerber, & Maier (2005), Langfield-Smith (1997), Minonne & Turner (2009), Mintzberg (1994), Pryor et al. (1988), and Rudd, Greenley, Beatson, & Lings (2008) have all contributed valuable insights into the relationship between strategic planning components and Performance Of Organizational Strategy of The Public Sector In Abu Dhabi. Aligning with existing literature, this study adds to the body of knowledge by examining the public sector context in Abu Dhabi. Identifying the dominant factors influencing the performance of the public sector's organizational strategy in Abu Dhabi provides actionable insights for organizational leaders and policymakers. By recognizing the significance of the Strategic Planning Process, AI integration into strategic planning and processes, and organizational characteristics, organizations can modify their strategies to enhance performance outcomes. Furthermore, the findings emphasize the importance of strategic planning processes in driving organizational success and competitive advantage.

The first research question explores the potential of Artificial Intelligence (AI) to improve strategic planning and management processes within the public sector of Abu Dhabi, UAE. Hypothesis (H1) posited that AI's involvement in the strategic planning process would significantly affect the performance of public sector entities. The study's outcome supports this hypothesis, revealing a significant impact of AI integration on organizational performance. This highlights the importance of utilizing AI technologies to enhance strategic planning effectiveness and improve overall performance.

The second research question aimed to explore the consequences of integrating AI into strategic planning on the effectiveness and productivity of the public sector in Abu Dhabi, UAE. By contrast, the second hypothesis (H2) proposed that the characteristics associated with AI adoption would directly affect organizational performance. However, this hypothesis was rejected, implying that while AI adoption is crucial, factors other than mere adoption play a more substantial role in determining the performance of public-sector organizations.

The third hypothesis (H3) investigated the moderating influence of AI adoption characteristics on the relationship between AI participation in strategic planning and organizational performance. However, the results do not support this hypothesis, suggesting that traits related to AI adoption do not significantly affect this relationship. This finding highlights the need for a more in-depth understanding of the intricate factors that affect the effectiveness of AI integration in strategic planning.

Hypothesis four (H4) investigated the mediating impact of AI strategy implementation on the connection between AI participation in strategic planning and organizational performance. The endorsement of this hypothesis emphasizes the essential role of effective strategy implementation in transforming AI-driven strategic plans into concrete enhancements in organizational performance.

Finally, hypothesis five (H5) examined the combined influence of AI participation in strategic planning, AI strategy execution, and organizational features on organizational performance. The acceptance of this hypothesis highlights the cooperative impact of these variables, underlining the significance of harmonizing AI strategies with organizational characteristics to optimize performance results within the public sector of Abu Dhabi. The results demonstrate that AI integration significantly enhances decision-making processes, improving organizational performance. This highlights the importance of technology in strategic planning, particularly in the public sector.

6. Conclusions

The outcomes of this study highlight the importance of incorporating Artificial Intelligence (AI) into strategic planning and management operations within the public sector of Abu Dhabi. By conducting a comprehensive analysis of AI's role in AI, this study demonstrated its potential to enhance organizational efficiency and effectiveness. The results indicate that AI's participation in the strategic planning process has a statistically significant influence on the performance of public sector organizations in Abu Dhabi, validating its significance in achieving strategic goals. The study also reveals the role of AI strategy implementation in the relationship between AI involvement in strategic planning and organizational performance, emphasizing the importance of effective implementation strategies. Moreover, the combined effects of AI involvement, strategy implementation, and organizational characteristics underscore the collaborative impact of these variables on organizational performance, thereby emphasizing the need for a comprehensive approach to strategic planning in the public sector.

In summary, this study highlights the transformative potential of artificial intelligence (AI) in shaping strategic planning practices and enhancing organizational performance in the public sector context. By adopting AI-driven approaches, public sector entities in Abu Dhabi can leverage advanced technologies to navigate complexities, drive innovation, and achieve a sustainable competitive advantage. However, organizations must address challenges related to AI adoption, ensure ethical and responsible AI use, and foster an organizational culture conducive to innovation and change. This study contributes to the growing body of literature on AI-enabled strategic planning. It offers valuable insights for policymakers, practitioners, and researchers seeking to harness the power of AI for strategic success in the public sector of Abu Dhabi and beyond.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm their contribution to the paper as follows: ***study conception and design:*** *Mohammed Gamal Ebrahim Mohammed, Muhammad Ammar Shafi;* ***data collection:*** *Mohammed Gamal Ebrahim Mohammed;* ***analysis and interpretation of results:*** *Mohammed Gamal Ebrahim Mohammed, Muhammad Ammar Shafi, Mohd Saifullah Rusiman, Nur Azia Hazida Mohamad Azmi;* ***draft manuscript preparation:*** *Mohammed Gamal Ebrahim Mohammed, Muhammad Ammar Shafi, Mohd Saifullah Rusiman, Nur Azia Hazida Mohamad Azmi. All authors reviewed the results and approved the final version of the manuscript.*

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