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Artificial Intelligence and Strategic Decision-Making: Economic and Regulatory Implications in Emerging Nigerian Firms

Obi Martins Okwudiri[1*], Nwagbala Stella Chinelo Ph.D[2], Okafor Ifeoma Pethronila Ph.D[3]

[*1] Department of Business Administration, Faculty of Arts, Management and Social Sciences, Admiralty University of Nigeria, Ibusa, Delta State, Nigeria

[2] Department of Business Administration, Faculty of Management Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

[3] Department of Business Administration, Federal Polytechnic Oko, Anambra State, Nigeria

Corresponding Author Obi Martins Okwudiri

Department of Business Administration, Faculty of Arts, Management and Social Sciences, Admiralty University of Nigeria, Ibusa, Delta State, Nigeria

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Abstract: Due to a lack of training or trust in machine-assisted decision-making systems management staff, in particular, often find it difficult to translate AI-generated insights into strategic actions. This study explores Artificial Intelligence (AI) in enhancing strategic decision-making among management staff in selected firms in Delta State, Nigeria. Specifically, it investigates how predictive analytics influences competitive intelligence and how natural language processing (NLP) affects market analysis capabilities. Adopting a descriptive survey design, data were collected through structured questionnaires administered to 55 management-level staff across three firms, with 51 valid responses analysed. Descriptive statistics and Pearson Product-Moment Correlation Coefficient (PPMCC), executed using SPSS (Version 27), were used to evaluate relationships between the variables at a 5% significance level. Findings reveal a statistically significant, strong positive correlation between predictive analytics and competitive intelligence ($r = 0.578$, $p < .001$), and similarly between natural language processing and market analysis ($r = 0.568$, $p < .001$). These results underscore AI's capacity to accelerate decision-making, improve analytical precision, and generate data-driven insights that align with the Knowledge-Based View (KBV) of the firm. The study concludes that AI technologies, when integrated strategically, can significantly elevate organizational performance. Recommendations include greater investment in diverse AI tools, implementation of ongoing staff training, and development of a cohesive AI infrastructure to optimize strategic decision-making outcomes.

Keywords: Artificial Intelligence, Strategic decision making, Market Analysis, Competitive Intelligence, Natural Language Processing, Predictive Analytics in firms.

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Introduction

Artificial Intelligence (AI) has become one of the most important technological advances in the world of business in recent years. It has changed the way companies work, make decisions, and interact with data in a big way. It can be used in a wide array of industries. AI encompassing technologies such as machine learning, natural language processing (NLP), robotics, and predictive analytics, facilitates smarter, faster, and more informed decision-making. However, by mimicking human cognition, AI systems can analyse vast and complex datasets, uncover hidden patterns, and provide actionable insights that would otherwise remain obscured in traditional analysis (Russell & Norvig, 2020). This shift demands advanced tools that can enhance managerial cognition, reduce uncertainty, and improve response time as AI technologies offer a timely and powerful solution (Papadopoulos et.al 2022). As stated in Ihim, Kekeocha and Stella (2025), the business landscape has been completely transformed by digital technology. This has produced creative digital business models that change how organizations operate, interact with customers, and add value (Ihim, Kekeocha & Stella,2025; Awawdeh, Abulaila, Alshanty & Alzoubi, 2022). To lower expenses, improve productivity, and boost competitiveness, digital business models make use of cutting-edge technologies like artificial intelligence, blockchain, mobile commerce, networking, and the Internet of Things. These models enable businesses to negotiate challenging international marketplaces, take advantage of new opportunities, and adjust to the changing needs of customers (Olawale & Devi, 2023; Ihim, Kekeocha, &Stella, 2025)

In the Nigerian business context, particularly in Delta State, where competitive pressure, economic uncertainties, and evolving consumer expectations are prominent, integrating AI into strategic planning is becoming increasingly important. Firms are beginning to recognize that AI is not just a tool for automation, but a strategic asset capable of reshaping organisational thinking and behaviour. As stated in (Avula and Sithole, 2024; Kekeocha et al., 2025), AI technology can enhance working conditions by automating repetitive jobs, giving employees time to do more valuable activities, and improving their job satisfaction. Nevertheless, a comprehensive understanding of the region's opportunities and challenges is necessary for the effective use of AI in this situation, as is a commitment to coordinating AI-driven advancements with greater goals for sustainability (Kekeocha, Ejiogu, Okeke, Nwagbala & Obi-Nwosu, 2025).

Effective AI integration can streamline operations, uncover market opportunities, and enhance competitive intelligence,

particularly when used to support high-level decision-making by management staff (Nembe et al., 2024). Nonetheless, adopting AI is not without its challenges, as many firms struggle with issues such as data quality, algorithmic transparency, workforce readiness, ethical concerns, and system integration. Management staff, in particular, often find it difficult to translate AI-generated insights into strategic actions due to a lack of training or trust in machine-assisted decision-making systems (Uzougbo et al, 2024c).

Statement of the Problem

Despite the compelling benefits of AI, many firms, particularly those in developing regions like Delta State, face substantial barriers to effective implementation, and these disconnect between AI's potential and the actual capacity of management staff to deploy and utilize these tools effectively. Organizational leaders lack the technical knowledge or training needed to interpret AI-driven insights, and existing decision-making processes may not be adequately aligned with AI outputs. Furthermore, while AI tools are increasingly available, their strategic value often goes underutilized due to insufficient human-AI collaboration and in environments where managerial intuition still dominates, the analytical precision and real-time feedback offered by AI technologies may be undervalued or misunderstood. This misalignment can result in missed opportunities, poor resource allocation, and suboptimal strategic outcomes.

Objectives of the Study

i. Examine the impact of predictive analytics on competitive intelligence as utilized by management staff in selected firms.
ii. Assess how natural language processing (NLP) influences market analysis among management staff in the selected firms.

Research Questions

i. What is the relationship between predictive analytics and competitive intelligence among management staff of selected firms in Delta State?
ii. What is the relationship between natural language processing and market analysis among management staff of selected firms in Delta State?
iii.

Literature Review

Conceptual Review

Artificial intelligence

A study by Stella, Francisca, Raphael, Ngozi and Ogechukwu (2025) stated that AI adoption is the process of implementing AI technologies into firms' operations to improve decision-making, productivity, and creativity. Adopting AI could be a double-edged sword for SMEs, who sometimes have fewer resources than larger firms. AI can play a transformative role by enhancing operational efficiency, improving decision-making processes, and fostering innovation (Stella et al., 2025). In modern organizations, Artificial Intelligence (AI) has changed from a supportive analytical tool to a transformative driver of decision-making strategy. The integration of AI facilitates data-driven and strategic planning that is more accurate by leveraging predictive analytics, machine learning models, and advanced simulation tools. AI's ability to support human judgment and change competitive strategies has become more and more crucial as organizations deal with growing market volatility and uncertainty (Zein,2025). Through scenario modelling, real-time market intelligence and predictive analytics, AI improves the efficiency and accuracy of strategic decisions (Rivero,2025). AI is used by the organization to identify market trends, estimate demand, and optimize resources, resulting in proactive rather than reactive strategies (Kurter, 2025).

Strategic Decision Making

Boudlaie and Daroudi (2025) describe strategic decision making (SDM) as a diverse, based on knowledge process in which the success of organizations is determined by the ability of managers to integrate strategic knowledge into decision-making frameworks. They argue that the utilization of structured decision-making models improves both consistency and outcome over time. Jahangirian et al. (2025) emphasize the analytical and technological aspects of SDM, highlighting how organizations are utilizing decision support systems and AI-driven simulations more and more to deal with uncertainty. They emphases that strategic decisions are different from operational ones because of their long-term, high-stakes consequences. Rashid and Khan (2025) describe SDM as a forward-thinking, adaptive approach, emphasizing resilience and flexibility above inflexible long-term planning. To ensure effectiveness in unstable environments, they believe that strategic decisions must incorporate risk management and scenario planning. AI aids managers by analyzing extensive data, maximizing resources, predicting market trends, and enhancing response to changes in the environment. Nevertheless, judgments required human involvement to guarantee conformity with ethical, social, and environmental concerns (Zein, 2025).

Predictive Analytics

Predictive analytics is a core subset of AI that involves the use of statistical techniques, machine learning algorithms, and data mining to analyse historical and real-time data to forecast future events. According to Stella et al. (2025) Businesses that use AI may improve supply chains, gain better market insights, and automate repetitive operations by utilizing data analytics. Traditionally applied in academic fields such as epidemiology, astronomy, and meteorology, predictive analytics has now become an indispensable tool in business. It is employed in diverse sectors for tasks such as customer behaviour prediction, fraud detection, supply chain optimization, and risk assessment (McAndrew et al., 2021). In a strategic perspective, predictive analytics empowers firms to anticipate market trends, consumer preferences, and operational risks with greater accuracy and to fully leverage its potential, firms must cultivate a data-driven culture where data is treated as a strategic asset. This involves not only technical investment in infrastructure and data governance but also cross-functional collaboration among data scientists, managers, and decision-makers (Joel & Oguanobi, 2024). However, challenges persist, particularly around data security, ethical concerns, and the risk of algorithmic bias. Thus, while predictive analytics holds tremendous promise for strategic decision-making, its implementation must be approached with caution and responsibility (Paulus & Kent, 2020).

Competitive Intelligence

Competitive intelligence refers to the systematic collection, analysis, and application of data about competitors, market

conditions, and external business environments, and it plays a crucial role in strategic planning by helping firms anticipate competitive moves, understand industry dynamics, and identify potential opportunities or threats (Mahadevkar et al., 2022). According to Ezeanokwasa, Nwagbala and Nwachukwu (2023) stated that due to turbulent and fast-changing environment, organisations, especially those in emerging economies like Nigeria, are working very hard to grow and maintain a competitive edge. Change initiatives have failed due to poor approaches by management in communicating and implementing change, as this strategy could be affected by inadequate resources, high resistance level and wrong information on the change process in implementing change (Balogun & Hailey, 2014; Ezeanokwasa, Nwagbala & Nwachukwu,2023). AI technologies such as predictive analytics and NLP greatly enhance the scope and accuracy of competitive intelligence as AI systems can analyse patterns in competitor behaviours, scan global databases for relevant trends, and even track pricing changes or strategic alliances. This not only accelerates data collection but also enhances the depth of analysis, allowing firms to develop robust and dynamic competitive strategies. The use of AI in competitive intelligence thus marks a shift from reactive to proactive strategic planning (Kakani et al., 2020).

Natural Language Processing

Natural Language Processing is a branch of AI that enables machines to understand, interpret, and generate human language and it combines computational linguistics with machine learning to facilitate tasks such as text classification, sentiment analysis, speech recognition, and information extraction. NLP has revolutionized the way businesses interact with unstructured data, including customer reviews, online comments, emails, and news articles (Singh et al., 2022). In the realm of strategic decision-making, NLP serves as a powerful tool for capturing real-time market intelligence and consumer sentiment. For example, businesses can analyse customer feedback on social media platforms to assess brand perception or detect early warning signs of dissatisfaction (Kakani et al., 2020). NLP acts as a bridge between vast unstructured information and structured decision-making processes, enabling faster and more informed organizational responses. This capability is useful for decision-makers when trying to gather as much data as possible and as fast as possible to make a decision.

Market Analysis

Market analysis is a foundational component of strategic decision-making that involves evaluating market conditions, customer segments, pricing dynamics, and industry trends. Traditionally reliant on manual research and expert judgment, market analysis has been significantly transformed by the advent of AI technologies. AI-powered tools can now conduct complex simulations, segment markets with precision, and even predict consumer purchasing behaviour with high degrees of accuracy with AI tools, evaluate pricing strategies, and determine market viability (Chintalapati & Pandey, 2022). NLP tools further enhance this process by providing real-time feedback from consumer conversations, enabling firms to make swift and targeted strategic moves. The use of AI in market analysis not only increases efficiency but also offers strategic foresight that can create sustainable competitive advantage (Vlačić et al., 2021). AI technologies have increasingly become enablers of strategic decision-making as they provide decision-makers with timely and accurate insights, simulate various strategic scenarios, and even recommend optimal courses of action based on data patterns. However, human intuition and leadership remain essential; the most effective strategies emerge when AI augments managerial judgment, creating a hybrid decision-making model where human creativity is enhanced by machine intelligence (Kaplan & Haenlein, 2020).

Theoretical Review

This study adopted the Knowledge-Based Theory (KBV). The KBV highlights the complementarity between human intelligence and machine learning as AI does not replace human cognition but rather amplifies it, allowing decision-makers to make more informed, timely, and strategic choices. This dynamic aligns with the growing perspective in management research that AI should be integrated into firms not merely as a technical solution but as a strategic learning partner (Kaplan & Haenlein, 2020). When properly embedded into the organizational fabric, AI technologies can catalyse organizational learning, refine core competencies, and create new knowledge-driven capabilities that reinforce competitive advantage. Artificial Intelligence (AI) is positioned as a powerful enabler of organizational knowledge. AI systems process vast amounts of structured and unstructured data, transforming them into actionable insights that enhance decision-making at all levels. Technologies such as predictive analytics and natural language processing (NLP) significantly contribute to this process by identifying trends, revealing hidden patterns, and recommending strategic courses of action based on evidence rather than intuition alone (Samimi, 2020).

Empirical Review

Gonesh et al. (2023) conducted a study examining the integration of AI into business strategy and its impact on decision-making processes. Using a descriptive and qualitative design, they found that AI not only enhances efficiency and accuracy but also fosters innovation by enabling faster, data-driven insights. However, the study also noted that ethical concerns, data governance issues, and the need for human oversight remain key challenges.

Marimira and Babandi (2025) explored the practical implications of AI on decision-making within microfinance institutions (MFIs) in Zimbabwe. Through in-depth interviews with AI specialists, including engineers, legal consultants, and analytics managers, the study revealed that AI enhances strategic decision-making primarily by improving automation and predictive accuracy. All participants agreed that AI works best as a supportive tool rather than as a substitute for human judgment.

Abayomi et al. (2024) focused on the role of predictive analytics in improving business performance. Their research emphasized that predictive analytics, when effectively applied, can increase profitability, optimize efficiency, and provide a competitive advantage through accurate market forecasts. The study highlighted the integration of AI, big data platforms, and real-time analytics as essential enablers of modern business intelligence.

Younis and Adel (2020) assessed the relationship between AI strategy, human resource management (HRM), and knowledge-sharing quality. Their mixed-methods study showed that creativity-

oriented HRM and strong knowledge-sharing cultures are critical for successful AI adoption. They also found that while AI strategy had no significant direct effect on organisational performance, it did positively impact performance indirectly through improved knowledge sharing and innovation.

Anurag et al. (2025) performed a comprehensive literature review of 64 peer-reviewed articles to understand the role of AI in strategic decision-making. Thematic analysis revealed three key trends: the growing synergy between AI and human judgment, AI's role in strategic adaptability, and increasing concern over cognitive biases, trust, and ethical transparency. The study concluded that AI's real value lies in enabling collaborative decision-making, not just automation.

Kim and Seo (2023) developed a strategic decision-making framework based on AI adoption. Their research combined expert panel discussions, mind-mapping, and literature review to categorize six AI strategy paths from "capability-building" to "new-market-creating" strategies. The study provided a practical guide for SMEs to align their AI strategies with their innovation goals and resource capabilities.

Gap in the knowledge

Limited attention has been given to how AI technologies, specifically predictive analytics and natural language processing (NLP) are applied by management staff within small and medium-sized enterprises (SMEs) and service-oriented firms in emerging economies such as Nigeria. Few studies have empirically assessed the discrete impact of predictive analytics on competitive intelligence or examined the role of NLP in enhancing market analysis capabilities. This study addresses these gaps by offering a focused investigation into how predictive analytics and NLP contribute to strategic intelligence and market responsiveness in selected firms within Delta State. It also contextualizes these findings within a localized business environment, shedding light on organizational dynamics, adoption readiness, and human-AI collaboration in a developing economy.

Materials and Methods

Data were analysed using both descriptive and inferential statistical tools. Descriptive statistics (mean, standard deviation, and frequency distributions) were used to summarize the demographic profile of respondents and the frequency of AI tool usage. Inferential analysis was conducted using Pearson Product-Moment Correlation Coefficient (PPMCC) through SPSS version 27 to test the study's hypotheses at a 5% level of significance. Given the manageable population size, the study adopted a census approach, meaning the entire population was used as the sample. Out of 55 questionnaires given, a total of 51 valid questionnaires were completed and returned.

Table 1: List of Organization under study

Name of Organization	Location	Number of Management Staff
Divine Justice Integrated Resources	Ibusa	19
Ndimark Energy Service Limited	Ogwash-uku	15
Kacho Bangkok Paint Industry	Asaba	21
		55

Source: Research Survey,2025.

Data Presentation

Analysis of Sociodemographic Data

Table 1: Distribution of Respondents by Years in Operation

Variables	Frequency	Percentage (%)
Less than 1 year	3	5.9
1–3 years	6	11.8
4–6 years	11	21.6
7-10 years	14	27.5
Above 10 years	17	33.3
Total	51	100.0

Source: Field Survey, 2025

The demographic data revealed that the majority of firms under study had been in operation for a significant period, with 33.3% operating for over 10 years and 27.5% for 7–10 years. This indicates a relatively mature business environment, conducive to implementing structured decision-making systems.

Table 2: Distribution of Respondents by Position/Designation

Variables	Frequency	Percentage (%)
Top-Level Management	8	15.7
Middle-Level Management	21	41.2
Department Head	22	43.1
Total	51	100.0

Source: Field Survey 2025

In terms of professional hierarchy, 43.1% of respondents were departmental heads, 41.2% were middle-level managers, and 15.7% occupied top executive roles. Additionally, most respondents had 4–6 years of experience in their current roles, suggesting they possessed considerable familiarity with both strategic planning and organizational dynamics.

Table 3: AI Tools Used in the Firms

Variables	Frequency	Percentage (%)
Machine learning models	21	41.2
Predictive analytics	38	74.5
Natural Language Processing (NLP)	28	54.9
Robotic Process Automation (RPA)	16	31.4
AI-powered dashboards	43	84.3

Source: Field Survey, 2025

These figures highlight a growing reliance on intelligent systems, particularly for data visualisation and predictive modelling. Interestingly, 80.4% of respondents confirmed that AI is integrated into management-level decision-making, although only 5.9% had advanced training, suggesting a gap between tool adoption and staff proficiency.

Table 4: Level of AI Training

Variables	Frequency	Percentage (%)
No Training	4	7.8
Basic Awareness	26	51.0
Intermediate Training	18	35.3
Advanced/Expert	3	5.9
Total	51	100.0

Source: Field Survey, 2025

Most management staff reported basic awareness (51.0%) or intermediate training (35.3%) in AI-related tools. A relatively small percentage (7.8%) had received no training, while only 5.9% possessed advanced or expert-level skills. This signals a significant need for continuous professional development and capacity-building in AI-related competencies.

Research Question 1: What is the relationship between predictive analytics and competitive intelligence among management staff of selected firms in Delta State, Nigeria?

S/N	Items	Mean	Standard Deviation	Remark
1	AI-driven predictive analytics are used to inform strategic decision-making processes.	4.06	1.02	Accepted
2	Predictive analytics improved the speed and quality of decision-making	4.20	0.87	Accepted
3	AI tools measure the effectiveness and accuracy of AI-powered tools	3.69	1.10	Accepted
4	AI models help balance data insights with human intuition	4.27	0.89	Accepted

5	Competitive intelligence strategy incorporates AI technologies to gain market trends and competitor activities.	4.25	0.84	Accepted
6	Predictive analytics and competitive intelligence insights are formulated in long-term business strategies.	4.14	0.77	Accepted
7	Competitive intelligence strategies are used through the integration of real-time market insights	4.31	0.73	Accepted
8	AI tools predictive analytics and competitive intelligence affects resource allocation.	3.22	1.27	Accepted
	Grand Mean	4.02	1.01	Accepted

Source: Field Survey, 2025

This indicates that predictive analytics is not only operationalized within strategic contexts but also valued by management as a core input for decision-making. The data supports the conclusion that predictive analytics strengthens the organization's ability to anticipate competitor behaviour and adapt strategies accordingly.

Research Question 2: What is the relationship between natural language processing and market analysis among management staff of selected firms in Delta State, Nigeria?

S/N	Items	Mean	Standard Deviation	Remark
1	NLP tools enhanced the analysis of unstructured customer data.	4.22	0.89	Accepted
2	Integration of NLP contributes to improving the understanding of customer sentiment and preferences	4.08	0.97	Accepted
3	NLP processes and analyses competitor communications and public statements for market intelligence.	4.24	0.85	Accepted
4	NLP-driven market analysis has influenced your organization's product development or service innovation strategies	4.27	0.86	Accepted
5	Integrating AI in market analysis affected the speed and agility of your organization's strategic decision-making processes.	4.10	0.95	Accepted
6	NLP facilitated real-time analysis of social media content and market signals.	4.20	0.90	Accepted
7	Market analysis influenced your organization's international expansion or localization strategies.	4.29	0.87	Accepted
8	Organization train and upskill its workforce to interpret and act upon NLP-generated market analysis insight effectively	4.22	0.88	Accepted
	Grand Mean	4.20	0.90	Accepted

Source: Field Survey, 2025

These responses suggest that management staff see NLP as a practical and valuable tool in navigating dynamic market environments, enhancing their ability to identify trends, adjust offerings, and remain competitive.

Test of Hypotheses

Hypothesis 1

(H_0): There is no significant relationship between predictive analytics and competitive intelligence.

SPSS Output for Pearson Correlation between Predictive Analytics and Competitive Intelligence

		Predictive Analytics	Competitive Intelligence
Predictive Analytics	Pearson Correlation	1	0.578**
	Sig. (2-tailed)		.001
	N	51	51
Competitive Intelligence	Pearson Correlation	0.578	1
	Sig. (2-tailed)	.001	
	N	51	51

Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output

Pearson Product-Moment Correlation analysis yielded r = (0.578, p < .001), indicating a strong, statistically significant positive correlation between predictive analytics and competitive intelligence. Since the p-value is less than the alpha level of 0.05, the null hypothesis is rejected. The findings suggest that as the use of predictive analytics increases, so does the organization's capacity to gather, interpret, and act upon competitive intelligence.

Hypothesis 2

(H_0): There is no significant relationship between natural language processing and market analysis.

SPSS Output for Pearson Correlation between Natural Language Processing and Market Analysis

		Natural Language Processing	**Market Analysis**
Natural Language Processing	Pearson Correlation	1	0.568**
	Sig. (2-tailed)		.001
	N	51	51
Market Analysis	Pearson Correlation	0.568**	1
	Sig. (2-tailed)	.001	
	N	51	51

Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output

Results from the Pearson correlation test revealed r = 0.568, p < .001, confirming another statistically significant, strong positive relationship between the two variables. Thus, the null hypothesis is rejected. The implication is clear: firms that adopt NLP technologies are better positioned to analyse market behaviours, customer sentiment, and strategic signals in real time, enhancing decision-making precision and responsiveness.

Summary of Findings

i. The study revealed a significant, strong positive relationship between predictive analytics and competitive intelligence (r = .578, p < .001). This suggests that AI-powered forecasting tools enable management staff to make more informed strategic decisions by enhancing the quality and speed of competitor analysis.
ii. The study revealed a strong positive correlation between natural language processing and market analysis (r = .568, p < .001). AI technologies allow firms to tap into unstructured data sources, such as customer reviews and social media platforms, thereby enriching market insights and supporting adaptive strategy formulation.

Conclusion

This study provides empirical evidence that Artificial Intelligence (AI), specifically predictive analytics and natural language processing plays a crucial role in enhancing strategic decision-making among management staff in selected firms in Delta State, Nigeria. However, by enabling real-time insights, improving forecasting accuracy, and streamlining market analysis, AI tools are driving a shift from intuition-based to data-driven strategy formulation. These findings align with the Knowledge-Based View (KBV) of the firm, which posits that competitive advantage stems from the effective creation, application, and sharing of knowledge.

Recommendations

i. Top management should increase strategic investment in a diverse portfolio of Artificial Intelligence technologies because this will enable the organization to move from descriptive analysis to more forward-looking, predictive strategies, thereby securing a stronger competitive advantage.
ii. The human resources department should design and implement continuous, role-specific AI training programs that move beyond basic awareness to build intermediate and advanced competencies.

Contributions to Knowledge

The research provides localized, empirical evidence on how AI tools, namely predictive analytics and natural language processing are being adopted and utilized in organizational decision-making in Delta State. This adds a valuable regional perspective to the predominantly Western-centric literature on AI integration in business strategy. By isolating the impact of predictive analytics on competitive intelligence and NLP on market analysis, the study offers a practical framework for understanding how specific AI tools contribute to improved organizational strategy and responsiveness. The study sheds light on how management staff interact with AI systems, revealing their levels of trust, confidence, and training in AI technologies. This contributes to emerging scholarship on human-AI synergy, especially in African managerial contexts.

Suggestions for Further Studies

i. The impact of AI-driven decision-making on organizational performance, innovation, and competitiveness in firms in Delta State.
ii. The role of training and capacity-building programs with AI-driven tools in strategic decision-making in small and medium enterprises.

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