

**ADAPTIVE AI SYSTEMS AND BUSINESS TRANSFORMATION: A FOCUS ON NIGERIA'S
EMERGING 21ST CENTURY FINANCIAL SECTOR**

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ABSTRACT

In this paper, the relationship between adaptive Artificial Intelligence (AI) systems and business transformation is discussed. The discussion aimed at delineating the nature of adaptive AI and its role in advancing improved business features learning, responsiveness, and competitiveness; all of which are considered imperative for the survival of businesses, particular such operational within the context of the Nigerian financial sector. The paper is designed as a theoretical paper, with sections structured in line with the concepts of interest. The knowledge-based view (KBV) theory was adopted as the theoretical premise for the paper. Its position on the significance of knowledge for both reactive and proactive actions within unpredictable settings was expatiated in line with clarifying the role of adaptive AI in knowledge application and business transformation. From the discussion, it was concluded that adaptive AI is essential, given its capacity to influence business outcomes, and enhance the extent of dynamism expressed or demonstrated by the business in its coping or navigation of the changes in its environment.

Keywords: Adaptive AI systems, business transformation, knowledge-based view theory, competitiveness, responsiveness.

INTRODUCTION

The realities of the Nigerian financial sector, have in recent years, shifted tremendously. Notable among these shifts are the provision of an updated Foreign Exchange (FX) manual in May 2026 by the Central Bank of Nigeria (CBN) in view of stabilizing foreign exchange, payment modernization and the accelerated growth of Fintech, through supportive regulatory frameworks, and the recent bank recapitalization concluded in March 31, 2026 with the mobilization of 4.65 trillion naira in line with enhancing risk absorption and strengthening the country's financial ecosystem (Yahaya, 2026; Abubakar et al., 2026). These shifts hold several implications for businesses and institutions within the sector (Lam, 2025; Siau et al., 2022; Eryk, 2020). First, the need for operational responsiveness, second, an innovative stance to products and services, and third, a strategic realigning of systems and frameworks with those of the environment; all three of which suggest the imperatives of the overall transformation of businesses, as criterion for the survival and success (Adebayo et al., 2021; Akinbode et al., 2021).

One of the major change-enablers of the 21st century is Artificial Intelligence (AI). This assertion follows the identification of the 21st century as technology driven and as heavily reliant on information transfer. As a technological component, AI plays a key role in the forwardness or proactiveness of businesses, enriching their capacity for efficiency, sustained value, quality and innovative products and services and also competitiveness (Ozili, 2024; Ashta & Hermann, 2021; Elegunde & Osagie, 2020). According to Kumar (2021), AI serves businesses in a variety of ways. From facilitating cost-effectiveness through increased control and coordination of operations, to diagnostic and predictive analysis, AI can also be adaptive in nature, facilitating learning, real-time decision making and agile modifications designed to ensure operational pace with the changes or shifts in the business environment.

Research barely scratches the surface when it comes to adaptive AI and its role in business transformation, especially within the highly unpredictable and tumultuous Nigerian economic

environment. This observation follows the growth and dominant focus on AI research mostly across manufacturing, supply chain and technology firms (Kolluri, 2024; PWC, 2020); highlighting the role of AI as a mechanism in the coordination of supply or manufacturing activities of organisations, and its usefulness in facilitating optimal resource utility, tracking of operations and the integration of processes and activities. Drawing on the earlier noted concerns of reality shifts in the Nigerian financial sector, and the imperatives of business transformation for sustained competitiveness and success, this paper thus extends the focus on AI to the Nigerian financial sector: specifically, discussing and role of AI in the transformation of businesses in the Nigerian financial sector.

LITERATURE REVIEW

Knowledge-Based View Theory

The knowledge-based view theory is one which highlights the role of knowledge in creating and boosting the capacities of businesses and their ability to compete and thrive within their environment. In advancing the theory, Bayo (2015) draws substantially on the resource-based view theory, as knowledge is considered a resource, critical to the organisations dynamism and ability to adjust to the changes in the environment. Gnizy et al., (2014) opine that the development and application of knowledge enable the effective contextualisation of products and services, with businesses, building on data or information generated from the environment. However, scholars (Solanki & Sujee, 2022; Zamiri & Esmaeili, 2024) argue that the perspective of knowledge that borders primarily on learning, most often emphasize a reactive disposition to the environment, underrating the role of knowledge in proactive actions and the development of adaptive capabilities that enable swift responses or adjustments to the shifts in the environment of the organisation.

This theory positions the use of Adaptive AI as significant in engaging its environment. Bayo (2015) asserts that the adaptive AI positions and repositions businesses in a flow of continuous efforts to match the tempo of change and development in the environment. Such conditions learning and effective knowledge management in ways that the consistently inform possibilities of change or shifts in the political, legal or economic arena or context of the business. The knowledge -based view theory in this vein, identifies the focus on knowledge development as fundamental in navigating the uncertainties and changes in the environment. The theory advocates the adoption and use of necessary mechanisms and technology tools in harnessing data or information from the environment. Adaptive AI, provides the framework through which learning is continuously advanced and knowledge generated is integrated within the fabrics of the organisation and utilized in the transformation and structuring of organisational roles and responsibilities, decision-making, strategic choices or alternatives, and the functions and operations of the business (Omotayo, 2015).

Adaptive AI Systems

The concept of adaptive, as applied within the framework or context of AI systems, refers to the capacity for computer learning systems, to integrate real-time information in their processing and analysis of contexts, and effectively adjusting algorithms and other related features to accommodate or adjust to new or emerging concerns or factors (Qatawneh et al., 2024; Mukthar et al., 2025). In this sense, adaptive AI is not only the dynamic disposition of AI toward change, but also the capacity to restructure and reconfigure systems to admit or engage such change in a manner that favours the objectives of the business or that is in its interest. Adaptive AI systems focus on robustness, and are particularly useful in navigating highly unpredictable and competitive environment (Uford & Akpan, 2024). AI systems, provide organisations with the necessary linkage and control measures for effective functional flow and efficient processes. The integration of AI is considered an imperative within the dispensation of today's economic and business context. It offers organisations the tools for operating at the pace of change, enhancing performance and enriching decisions (Copeland, 2025; Bahoo et al., 2024).

Related research affirms to the multi-layered nature of AI use and integration within business organisations. According to scholars (Efobi et al., 2018; Oladipupo & Adegbite, 2021; Russell & Norvig, 2020), this is structured into the (a) functional (b) process, and (c) operational.

Function-based application: The application of AI from a functional perspective and concern in the organisation occurs at the individual level in the workplace. It focuses on the workers use and application of AI systems in the performance of roles and in their management of documents, or other related personal concerns. Functional applications of AI systems, often come authorized by management, especially within organisations with high insecurity risk or privacy concerns, however, in most cases, employees have the autonomy of applying what works for them. This is as employees tend to apply or integrate related AI systems in both professional and personal ways, depending on factors such as convenience, accessibility, and ease of use of such technology or AI systems (Oladipupo & Adegbite, 2021).

Process-based application: The adoption of AI in business processes, draws on formal conditions and management buy-in. This follows the integration of AI in inter-functional activities and internal interactions across the organisation. In this vein, AI contributes to features such as functional linkage, hierarchical and vertical communication, information or knowledge sharing, cyber security, data management and analysis. AI is adopted in strengthening the flow of activities and the monitoring of such activities. The process-based application of AI, structures the interface between functions and activities, streamlining actions for efficiency, and acting on feedback for quality and control of outcomes (Gatla, 2024).

Operational-based application: Operations entail a variety of processes and involve the overall engagement of the organisation within its environment. In this regard, mechanisms and structures are put in place to address the concerns of the organisation; delivering services and offering value, and advancing the organisations objectives and goals. The focus of AI at this level is such that furnishes the organisation with the required framework for monitoring and managing its people, resources and assets. It greases the organisations interaction with its environment, reinforcing its learning capacity and that way, enhancing its ability to adapt and cope with the emerging realities (Oladipupo & Adegbite, 2021).

Business Transformation and its Imperatives

In Nigeria, while the economic climate can be viewed as supportive, diverse and accommodating of various enterprises and cultures, such is not without its concerns. These range from the growing spate of insecurity in the country, crippling energy poverty, the lack of infrastructure, corruption and the growth of cybercrime and internet fraud, popularly referred to as "yahoo" (Nkem & Akuijinma, 2017; Adebayo & Aliyu, 2023). These have contributed to the volatility of the environment, amplifying its turbulence and unpredictability and impacting the operations and decisions of businesses and potential investors in the country. To survive, perform and compete effectively, businesses must first understand the underlying factors that drive their environment and the nature of the interactions between these factors. Their choice or focus on the direction of business or resource development, infrastructure reinforcement and strategic focus, must emerge from the related knowledge; hence a base or premise for effective business transformation and success (Ozili, 2023).

Kilaru (2024) asserts that business transformation revolves around ideas such as competitiveness, relevance, service quality, excellence, efficiency and effectiveness. Businesses transform so they can be better versions of themselves through improve functionality and engagement with their markets or customers. Transformations are in this vein a necessity for business survival and continuity within complex economic environment. For this reason, businesses have emphasized learning and predictive analysis through data algorithms that fundamentally identify patterns and

encode such within the organisations system of behaviour (Lam, 2025; Jain et al., 2023). Unfortunately, in the face of environmental inconsistencies linked to war, disease, politics and other disruptive social and economic elements, predictive analysis alone does not suffice; businesses need to be able to adapt and respond in real-time to their contexts, hence the need for adaptive AI and its adoption and development for businesses (Kou & Lu, 2025; Hidayat et al., 2024; Umar & Sun, 2021).

The role of AI in Business Transformation

Records (Eryk, 2020; World bank, 2022; McKinsey & Company, 2024) indicate a high AI adoption and integration rate of 93% where businesses in Nigeria were reported to apply AI in their customer service, data analysis, and over all workflow. Compared to the global adoption rate of 74%, The Nigerian scenario further cements the significance of AI to business functionality and performance. This shift toward AI, especially in a country like Nigeria, affirms to the noted gaps in service, security and control that AI addresses. A good example traces to the heavy reliance of Fintech firms like OPAY and Moneywise on AI systems for transaction processing, scaling of operations, smart security and for the leveraging of real-time response to fraud related actions or activities. Not only has this boosted public trust and confidence in these firms, it has also led to a growing preference for their services over traditional banking organisations (Kagan, 2024; Siau et al., 2022; Ozili, 2024). Thus, AI is key in the transformation of business systems and features, enhancing response speed and creating more stable, secured and reliable systems that are more attuned to the concerns of customers.

The Nigerian financial sector, offers proof of the transformational role of AI. Its adoption by financial institutions, particularly fintech firms, and the extent to which it spurs their operations attest to its viability and imperative for sustained competitiveness and relevance. The internationalization of Nigerian banking and other financial services, not only exposed its vulnerabilities in terms of network lapses and service inconsistencies, but it also advanced opportunities for improvement through international partnerships, technology development and business growth (Eryk, 2020). Adebayo et al., (2021) affirmed that such international exposure and expansion of business interests globally, have increased the pressure for enhanced performance and the effectiveness of financial services. Such imperatives have occasioned the emergence of fintech firms that have fundamentally, anchored their value on the observed gaps and limitations of existing traditional banks or investment firms.

CONCLUSION

Business transformation is critical to the survival and competitiveness of businesses within dynamic contexts such as that of the Nigerian financial sector. Business transformation is examined through the lens of adaptive AI, with the discussion, bordering on the role of adaptive AI in the outcome of business responsiveness and competitiveness. The relationship between the variables, is reviewed, drawing on the theoretical premise of the knowledge-based view (KBV) theory. The KBV theory offered clarity in understanding the significance of knowledge and the use of adaptive AI as a learning and change tool in effectively engaging the environment of the business and navigating its various change imperatives. This paper concludes as it affirms to the role of adaptive AI as integral in advancing the required level of responsiveness and proactiveness for businesses, particularly such in the Nigerian financial sector. In this vein, the adaptive AI equips the business with the required capacity to transform and address the shifts in its environment. Within the Nigerian financial sector, adaptive AI can therefore be viewed as fundamental to the success of businesses.

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