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Artificial Intelligence for Business: A Conceptual Review

Isaac Onyeyirichukwu Chukwuma[1], Fidelis Odinakachukwu Alaefule[2], Ifeanyi Leo Madu[3], Anthonia Nneka Egbosionu[4], Matthew Arinze Okeke[5], Patrick Chukwunwike Chukwuma[6]

[1]University of Port Harcourt
[2,4]University of Nigeria
[3]Gregory University
[5]Madonna University
[6]University of Illinois

Abstract
This conceptual review examined the dynamics of artificial intelligence (AI) in the business landscape. As businesses traverse an increasingly complex industrial landscape, AI provides a strategic tool for improving effectiveness, innovation, and decision-making. This study aimed to examine and provide a comprehensive view of AI's influence on business. This paper deployed a qualitative research approach; utilising a narrative literature review methodology to examine existing literature which provided a relevant comprehensive perspective of AI in businesses. The study specifically examined themes on the antecedents of AI for business, challenges of AI for business, dual role (necessity or advantage) of AI in organization operations, AI effect on business/organizational interest, and the resource-based view (RBV) theory perspective on AI for business. The study is of the position that businesses can position themselves for success in the rapidly evolving AI-driven environment by optimizing AI integration and deployment as a strategic approach to future market relevance.

Keywords: Artificial Intelligence, Resource-based view theory

Introduction

A machine's ability to replicate and model human intellect, and engage such competence to strategically proffer solutions or insight to encoded and assigned roles connotes artificial intelligence (AI). AI structures are framed to execute roles which involve speech recognition, visual sensitivity, decision-making, and language translation (Russell & Norvig, 2020). The trajectory of AI from an experimental and specialised phase to a strategic industrial asset has revolutionised diverse industries and businesses.

AI technologies having evolved from machine learning, robotics, and natural language processing (NLP), have significantly influenced the operations and strategies of business engagement. The optimization of virtual assistants and chatbots aimed at improving customer engagement is a function of AI natural language processors (Huang et al. 2019). Businesses in harnessing the virtue of decision-making derive strategic insights and patterns from machine learning algorithms that assess large datasets (Jordan & Mitchell, 2015). Enhanced productivity via AI technologies is attained via restructuring and utilising robotics and automation (Bessen, 2018).

The growing interest in AI integration in the operations and functioning of business is anchored on the evolution of innovative algorithms, the availability and accessibility of massive datasets, and the development of computer power. AI is being used by businesses to improve consumer experiences, gain a competitive edge, and streamline processes. By extracting strategic insights from vast amounts of data, AI-powered analytics algorithms empower businesses to make data-driven decisions (Davenport, 2018). Additionally, AI technologies enable customization, which enables businesses to better adapt services and goods to the unique preferences of each client and increase client happiness and loyalty (Manyika et al., 2011).

Moreover, AI executions in business are not restricted to customer-based activities; AI-based automation in logistics, manufacturing, and supply-chain management has resulted in substantial efficiency improvements and cost savings. Predictive maintenance enabled by AI decreases downtime and enhances equipment lifespan, while AI-driven stock management systems optimize inventory levels and decrease waste (Chui et al., 2018). Despite its benefits, the integration of AI in business presents diverse challenges that require attention. I.e. ethical issues (AI algorithms biases and their effect on decision-making), security concerns and data privacy require a critical assessment, the high cost of executing AI technologies, and the necessity for specialized skills (O'Neil, 2016; Chui et al., 2018; Budhwar et al., 2022).

The comprehension of AI dynamics and its strategic functions and risk in businesses is essential for organizations that are invested in remaining relevant in their industries. This study aims to examine and provide a comprehensive view of AI's influence on business. By scrutinizing extant literature, this paper plans to advance topical insight into AI's influence on business functions and operations and trigger an empirical debate on its dynamic nature.

The remaining segments of this study will be discoursed under the following heading; methodology, antecedents of AI for business, challenges of AI for business, dual role (necessity or advantage) of AI in organization operations, AI effect on business/organizational interest, resource-based view (RBV) theory perspective on AI for business, and conclusion.

Methodology

This paper deployed a qualitative research approach; utilising a narrative literature review methodology to examine existing literature which provided a relevant comprehensive perspective of AI in business. The synthesis of this paper aims to explore a balanced view of AI's limitations and potential in an organizational context.

Antecedents of Artificial Intelligence for Business

The proliferation and trajectory of AI in business functioning can be attributed to diverse factors which involve technological advancements, data availability, research and development, and industry demand and competitive pressure.

The advancement of algorithm configuration, development of computational power, and data availability and accessibility increase are anchored on the domain of technological advancements. The trajectory of algorithms has advanced AI's development via innovations in machine learning (ML) algorithms, the development of convolutional neural networks (CNNs), and the advancements in natural language processing (NLP) algorithms (Krizhevsky, Sutskever, & Hinton, 2012; Jarrahi, et al., 2018). Business deployment of advancement in computing power, hardware, software, modern processors, and cloud computing has enabled them to examine and strategically process data and enhance their operations (Brynjolfsson & McAfee, 2014; LeCun, Bengio, & Hinton, 2015).

Another antecedent to the incorporation of AI in businesses is the availability and accessibility of large datasets. To gain strategic market advantage, businesses utilise AI analytics to identify market projections, this is attained via the availability and accessibility of large datasets which may be sourced via data banks, internet devices, e-commerce platforms, and social media (Mayer-Schönberger & Cukier, 2014). The increase in data provides the critical elements for optimising AI models and generating insights (Davenport et al., 2010). The advancement of data-sharing programs and data repositories has improved AI research and application; this has made AI technologies more advanced by providing businesses with useful resources (Russakovsky et al., 2015).

The increased execution and funding via research and development (R&D) in AI technologies, has enabled the increased deployment of AI for business. The public and private sector recognition of AI potential has triggered their commitment to funding R&D in AI development and expansion. Big IT firms have established AI research centres and made significant investments in AI-related technologies, including

Google, IBM, and Microsoft (Cockburn, Henderson, & Stern, 2018). The technological advancements in AI and its use in business settings are the outcome of these investments. According to the European Commission (2018), government funding programs and initiatives also promote AI research; these commitments create an environment that fosters innovation and improves the application of research discoveries to workable business solutions.

The increasing need for AI solutions from organizations and the industrial pressure from rivals to adopt cutting-edge technologies have made AI development necessary. The business quest for developing strategies to assert market dominance in different industries has led to the adoption of AI technologies to attain market-relevant outputs, strategic innovation, enhance customer engagement, and earn a competitive edge (Cockburn, Henderson, & Stern, 2018). The application of AI is further enhanced by specific industry constraints, such as the requirement for personalized customer service in retail or predictive maintenance, businesses are using AI to overcome these obstacles and achieve their strategic goals (Manyika et al., 2017).

Challenges of Artificial Intelligence for Business

Challenges are not aligned to AI adoption, businesses utilising AI are challenged based on problems with algorithmic bias, data security and privacy, ethical concerns, implementation and integration challenges, legal and regulatory challenges, and intellectual property issues.

In AI adoption, data security and protection is a major challenge for businesses. The processing of large datasets with attributes of transaction histories, behavioural/personality patterns, and distinct identities are significant privacy security risks that businesses need to properly manage (Budhwar et al., 2020). To mitigate the level of risk accrued to significant privacy security risks, businesses need to adhere to standard data acquisition, processing, storage and utilization guidelines (Voigt & Von dem Bussche, 2017), organizations inability to adhere to these standards could trigger litigation and loss of market share.

Beyond privacy, data security is an essential issue for AI systems. AI systems usually encounter several security issues, including competitor attacks, cyber-attacks, and data breaches that try to change or distort the data utilized by AI models (Szegedy et al., 2013; Goodfellow et al., 2015). Protecting AI system integrity involves the alignment of AI protocols to standard integrity AI data security engagement standards.

Bias algorithms are reflected in AI output; algorithmic bias connotes skewed or faulty algorithms which results in AI systems producing distorted or biased results (O'Neil, 2016). To resolve algorithmic bias, businesses must deploy unbiased algorithms that have undergone robust testing with a diversified and adequate dataset, which will invariably generate objective outputs (O'Neil, 2016).

The deployment of AI programs in diverse organizational activities, i.e., recruitment, task allocation, and decision-making raises ethical concerns; this is further reinforced by the opaqueness of AI processes in arriving at its outputs, and this opaqueness is captured as the “black-box problem” (Lipton, 2016; Resnik & Hosseini, 2024). Hence, businesses in being socially responsible must evaluate the social implication of AI integration especially with regard to job automation which may possess the potential to displace jobs (Brynjolfsson & McAfee, 2014).

The complex and expensive AI integration process for businesses is another challenge for organizations. The integration of AI requires the deployment, utilisation, upgrading and maintenance demands expensive capital investment in acquiring and maintaining competent personnel, hardware, and software (Chui et al., 2018; Davenport, 2018). The investment in recruiting and sustaining competent personnel is critical, as the evolving nature of AI technologies may make it challenging to get or retain competent personnel with current relevant expertise on AI integration and adoption; beyond that, the paucity of trained expertise on business AI integration and adoption also challenges the development and utilisation of AI (Bessen, 2018). This is because the abilities needed to employ AI as efficiently as possible are ever-evolving. Hence, to acquire strategic knowledge and resources, organizations must make collaborations and investments in training and development programs (Jarrahi, 2018).

A growing number of guidelines and criteria apply to AI systems to ensure their proper use. The growing number of regulatory protocols and institutions on issues of industrial safety practices, data security legislation, and evolving AI governance structure must be properly navigated by businesses to sustain their AI-enabled market advantages (Floridi et al., 2018). Organisation's ability to successfully align to these regulations guarantees them legitimacy and security in their industry.

The proprietary and intellectual claim to AI systems and technologies raises concern, especially with the increased industrial advancement in AI progressions and deployment. AI algorithms and inventions typically involve new and complicated technology that may be challenging to patent (Cockburn, Henderson, & Stern, 2018). To protect their inventions and reduce the likelihood of legal issues, businesses need to create explicit policy frameworks regarding intellectual property rights and engage legal specialists (Budhwar et al., 2022).

Dual Role (Necessity or Advantage) of AI in Organization Operations

AI has emerged as a fundamental need for many businesses looking to increase production and performance. AI has progressed from a tool for experimentation to a vital resource for many businesses. The ability of AI to enable businesses to optimise effectiveness in operations, automate tasks, and produce evidence-based outputs has necessitated AI adoptions and deployment in businesses (Brynjolfsson & McAfee, 2014; Davenport, 2018). This operational effectiveness is associated with decreased operational cost, minimize waste, and increased production processes and outputs. For businesses operating in competitive industries, artificial intelligence's ability to improve evidence-driven decision-making and produce workable solutions is becoming increasingly essential (Mayer-Schönberger & Cukier, 2014). With the use of data patterns rather than instinct, organizations may now make informed decisions. Predictive analytics solutions, for example, give organizations a significant competitive advantage by allowing them to customize marketing strategies to client preferences, optimize stock levels, and foresee market patterns (Davenport et al., 2012). AI is an essential component for organizations looking to explore innovations in technology to serve market demands to survive and flourish.

AI advances competitive product differentiation and innovation, which makes it a strategic advantage even though it may be considered a necessity for operational efficiency. Businesses that use AI systems can create specialized services, models, and products, enhance customer interactions, successfully enter new markets, and disrupt traditional industrial market opportunities (Chui et al., 2018; Cockburn, Henderson, & Stern, 2018).

AI possesses the capability of being both a necessity and an advantage, and this is anchored in how businesses harness and optimise it. The essentiality of AI for operational optimisation makes AI necessary, and the extent of its heightened engagement to trigger innovation and competitive edge is an advantage (Manyika et al., 2017). To advance AI strategic positioning, businesses must align their AI engagement to their strategic vision, mission, and peculiarities of their market space, and also establish equilibrium with AI short and long-term expectations.

Artificial Intelligence Effect on Business/Organizational Interest

AI integration in business affairs has enhanced operations, which has facilitated the attainment of business goals (Davenport, 2018). Businesses can utilise AI systems streamlined in data input, supply-chain management, and customer service engagement management to optimise processes, decrease operating costs, and reduce waste and human errors (Brynjolfsson & McAfee, 2014). Business process automation increases output and facilitates efficient resource allocation, hence conforming operations to corporate objectives.

A key element in achieving organizational interest is the impact of AI on decision-making skills. Businesses can now examine vast amounts of data, spot trends, and generate predictive insights via advanced machine-learning models and analytics (Mayer-Schönberger & Cukier, 2014). Strategic planning and competitive market positioning require prompt and well-informed decision-making, which is made possible by an AI data-driven approach (Davenport et al., 2010).

AI is essential for fostering innovation, which is important for achieving organizational interest and competitiveness. By utilizing data-based modelling approaches and insights, AI systems allow businesses to create new services and products (Cockburn, Henderson, & Stern, 2018). AI deployment in strategic functional areas in businesses has been reported to improve customer engagement and satisfaction, as well as enhance organizational market conditions (Chui et al., 2018). AI for businesses further attains competitive advantages, by harnessing its potential on market segmentation analysis, customised marketing, and market-focused strategies to serve distinct value offerings, strategic position in the market landscape, and promote organizational brand (Manyika et al., 2011).

AI facilitates customised customer interactions and services, which invariably improves customer engagement; this is supported by the postulation of Huang et al. (2019), which assert that the provisions of customerised engagement and experience are advanced y AI technologies like chatbots, virtual assistants, and customer analysis tools. Hence, AI via customization capabilities enhances customer retention, engagement, and dedication (Pang & Lee, 2008; Manyika et al., 2011).

The successful integration of AI into business operations requires alignment with the long-term objectives of the business to increase operational effectiveness, boost consumer engagement, and spur innovation (Manyika et al., 2017). Strategic alignment of AI is the process of aligning specific objectives for AI implementation, performance evaluation, and strategy adaptation to fit shifting business interests (Davenport et al., 2010; Davenport, 2018).

Resource-Based View (RBV) Theory Perspective on Artificial Intelligence for Business

The RBV hypothesis provides a framework for understanding how firms can gain and sustain a competitive advantage through planned and optimal resource management. According to RBV, resources that are valuable, rare, inimitable, and non-substitutable are essential to an organization's maximum performance and posterity (Barney, 1991). The deployment and focus on unique resources and competencies by businesses to offer values distinguish them from competitors. This AI insight from the RBV perspective offers insight into how AI may be strategically used to improve organizational performance and sustainability.

The RBV paradigm views AI systems as valuable resources because of their ability to trigger innovation, increase operational effectiveness, and facilitate better decision-making. AI enables organizations to analyse massive amounts of data, identify patterns, and streamline operations, which lowers costs and highs productivity (Mayer-Schönberger & Cukier, 2014).

Hence, AI's offering of evidence-based solutions is aligned with RBV’s assumption that optimised resource deployment is capable of creating sustainable business advantages (Davenport, 2018).

The rarity of AI is anchored on its potential to be distinctively or uniquely applied to business interests and industry. While AI systems engagements are increasing, specialized knowledge is needed for their optimal implementation and integration. Organizations with advanced AI proprietary capabilities gain a competitive edge by offering unique services and products or by streamlining difficult-to-replicate processes (Cockburn, Henderson, & Stern, 2018). Strategic competitive advantage via RBV’s assumption can be attained via the deployment of rare resource capabilities.

The inimitability of AI systems is a function of their complexity and the organisational climate in which its deployed. The difficulty in duplicating the inimitable characteristics of AI engagement in organizations is anchored on the organisation’s culture, procedures and strategic intent (Barney, 1991). Beyond these variables, an organization’s AI inimitability is also a function of accessible and available datasets and personnel competence, which if optimised can mitigate the duplication of their competitive edge (Barney, 1991).

The non-substitutability of AI competence and capabilities is reinforced by the difficulty in its replication. This AI non-substitutability status is capable of strategic forecasting, optimised customer engagement, and difficult for competitors with traditional techniques to substitute (Teece, Pisano & Shuen, 1997).

Conclusively, the RBV theory examines the dynamics of AI in businesses and explores its capabilities as a strategic resource with RBV's attributes. The attributes of RBV's assumption include value, rarity, inimitability, and non-substitutability, which if optimised is capable of attaining strategic advantages. The RBV's spectrum reveals the possibilities for AI engagement to earn businesses a competitive edge. Businesses that proactively integrate AI into their operations, and exploit its distinct capabilities are strategically positioned to achieve maximum performance and maintain a competitive relevance and advantage in the market landscape.

Conclusion

Dynamic technology developments, the creation of market models, and escalating regulatory and ethical concerns will define the future of AI in businesses. As AI develops, it will lead to major improvements and innovations across industries, hence, creating innovative opportunities for development and competitive edge. Businesses should manage regulatory and ethical obstacles, invest in personnel and infrastructure, and foster an innovative culture to fully realize the potential of AI. Organizations can position themselves for success in the rapidly evolving AI-driven environment by optimizing AI integration, deployment and engagement as a strategic approach to future market relevance.

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