

Paradigm of Artificial Intelligence in Business Management

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Abstract

Artificial intelligence stands out as a prominent trend in today's technological landscape, enabling machines to engage in human-like thinking, learning from experiences, adapting to new inputs, and making decisions. This capability facilitates rapid and error-free results, akin to human rational decision-making. In the contemporary business landscape, which is often regarded as a cornerstone for national development, artificial intelligence plays a pivotal role. Businesses, ranging from small-scale enterprises to medium-sized ones (SMBs), are reaping the benefits of AI by reducing costs, enhancing performance, bolstering security, and efficiently monitoring various business functions. These aspects are crucial for the establishment and sustenance of businesses within the economy. To deal with such issues, artificial intelligence can work as a catalyst. The main objective of this work is to attain competitive advantage and analyze the profit of adopting AI in business firms for their intensification and development. The rapid advancement of artificial intelligence is compelling strategists to reconfigure business models, leading to the widespread incorporation of AI into various business processes. This trend provides valuable insights into the deployment and consequences of AI for business leaders, managers, technology developers, and implementers. The exploration encompasses considerations of cultural heritage values and risk assessments for conservation and mitigation. Additionally, it delves into the evaluation of onshore and offshore technological capabilities, incorporating spatial equipment to address marketing and retail strategies, as well as applications in insurance and healthcare systems.

Keywords: Artificial intelligence, machines, business strategies, innovation, business

INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative technology, reshaping the operational landscape of companies. The term AI refers to the utilization of machine learning and algorithms to perform tasks that were traditionally carried out by humans. The development of hyper automation and hyper connection with further innovation of these technologies could usher in the Fourth Industrial Revolution, or Industry 4.0. A more inventive and intelligent world is emerging via the use of AI [1]. Google Maps' route and traffic mapping, Uber and Lyft's ride-price estimation, Facebook's friend tag suggestions, spam filters in our emails, online shopping recommendations, and cancer detection are just a few instances of how AI technology advancements are making our lives easier. Moreover, entrepreneurs, strategists, and researchers are finding inspiration in leveraging AI to formulate innovative strategies and generate fresh avenues of business value [2].

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Throughout history, innovation has been the primary driver of rising living standards. But because innovation renders old technology outdated, it may also be a very disruptive process.

The evolving technologies such as cloud computing, the Internet of Things (IoT), big data, data science, artificial intelligence (AI), and blockchain have the potential to create both worldwide leaders and those who may fall behind. While some of these technologies have been around for at least 25 years, they were not extensively embraced or feasible for private sector applications. However, in recent years, there has been a significant shift, and nowadays, nearly every industry incorporates one or more of these technologies. This is caused by a multitude of variables, such as the development of open-source software, high speed computing, grid computing, and cloud computing, as well as an increase in openness through code sharing via platforms like Bitbucket, GitHub, and GitLab. The widespread applications of these technologies in a variety of industries, including as healthcare, banking, gaming, environmental monitoring, sports, energy management, gaming, agriculture, and security, are currently altering how people work, play, and live. The advancement of hyper-automation and hyper-connectivity, driven by the continued expansion of these technologies, has the potential to bring about the Fourth Industrial Revolution, commonly referred to as Industry 4.0. At the heart of Industry 4.0's progression and the enhanced efficiency of all other technologies lies the development of AI [3]. There is enough data in the literature to demonstrate that artificial intelligence (AI) technology presents new possibilities that have the potential to significantly alter enterprises and the economy as a whole. AI has numerous advantages for businesses, like expedited analytics and visualization, better product design, timely pattern recognition in large data sets, precise insight delivery, and much more [4].

RESEARCH OBJECTIVES

1. How does AI relate to “intelligent” machines and services? Which of these can be used for business purposes?
2. Why are there so many intelligent applications in the real world? Which artificial intelligence algorithms are giving these systems intelligence?
3. How is the development of AI affecting every sector and industry in the world?
4. Is this growth disrupting conventional business process? How is this influence of AI in myriad sectors transforming the market and the future jobs?

STATE-OF-THE-ART OF AI: DATASETS, ALGORITHM, AND PRODUCTS

In 1956, John McCarthy, a Stanford University computer science professor emeritus, founded the field of “artificial intelligence” [5]. AI was founded by him, and he arranged the renowned Dartmouth conference at Dartmouth College in Hanover. He had the belief that there will be systems which will evolve intelligence of human order. In 1973, Firschein *et al.* postulated a list of 21 hypothetical products that would result from the advances of AI by the 1990s [6]. Included in Table 1 is a compilation of products that were anticipated and are currently accessible. An understanding of the development of AI over the past 48 years can be gained from Table 1.

Beneath the real-world applications outlined in Table 1, there exists an intelligent agent (IA). It engages in a cyclical sense-think-act pattern of interaction with its surroundings [7, 8]. It investigates the input data (big data) to find good depiction on several levels, learn correlations, extract features, and find similarities. Formerly, the development of AI was hampered by the lack of data and effective hardware. But in recent years, the availability of inexpensive, low-power sensors has led to an enormous amount of data being produced.

AI: RESHAPING THE INNOVATION PROCESS

AI has advanced to the point where it can make financial decisions in the real world, communicate with people, compete with them in games, and collaborate with them. There is an intelligent agent (IA) or AI-driven system underlying each of these practical uses [9–11]. It engages in a cyclical sense-think-act pattern of interaction with its surroundings. It gathers information from the surroundings, considers all of the available information and past experience before acting in a way that has an impact on the environment. This AI could be a software agent (chatbots, recommender systems) or a machine (autonomous vehicles, industrial and domestic robots). It receives data in the form of text, images, videos, sounds, and other formats; it uses AI algorithms to analyze the data and produces AI-powered solutions.

Table 1. AI technologies predicted in 1973 with definitions and today’s reality.

S.N.	Products postulated	Abilities proposed [6]	Today’s Reality
1	Automatic language translator	Language translating device capable of high-quality translation of text in one foreign language to another. (Both technical and commercial material).	Google Translator, Bing Microsoft Translator
2	Automatic identification system	System for automatically determining a person's identity by recognizing his voice, fingerprints, face, etc.”	Apple Face ID, Mastercard Identity Check with NuData Security.
3	Automatic diagnostician	A system capable of interactive and/or automatic medical diagnosis based on querying the patient, an examination of biological tests, etc.	Qualcomm Tricorder, Medtronic Sugar.IQ Cognitive App in collaboration with IBM Watson
4	Industrial robots	An autonomous industrial robot capable of product inspection and assembly in an automated factory, using both visual and manipulative skills.	Kiva warehouse robots, FANUC intelligent robots, Mitsubishi Robots
5	Robot chauffeur	Robot cars capable of operation on standard city streets and country highways, using visual sensors	Google Waymo, Mercedes Benz E-Class, Volvo XC60
6	Universal game player	A system capable of playing Chess, Checkers, Kalah, Go, Bridge, Scrabble, Monopoly, etc., at a controllable level of proficiency, from master level to novice.	AlphaGo, Deep Blue

GLOBAL MARKET ANALYSIS

Start-ups are regarded as the engines of innovation and economic growth in a knowledge-based society; examining them would provide important new perspectives on the investigation of the transformative effects of artificial intelligence on enterprises. Two lists of the top 100 AI start-ups are taken into consideration, which were compiled using the Mosaic algorithm from CB Insights. By analyzing various factors such as investor quality, financing history, business model, profile, and mosaic score, the algorithm determines which AI start-ups are the best. By using the Mosaic algorithm to look into more than 2000 global start-ups and more than 1650 of them, the lists were made available. The AI startups list for 2017 and 2018 is referred to as AI17 and AI18. These findings were partially presented at the international conference DIGITS 2018, which the University of Maryland and the Birla Institute of Management and Technology jointly organized [8]. The manuscript has been submitted in its expanded form to the Journal of Business Research, Elsevier, for publication as journal research.

SHAPING OF BUSINESS CONTEXTS WITH AI

The incorporation of artificial intelligence (AI) technology into organizations has resulted in the formation of business contexts, or elements that impact an organization's performance. As the third component of our three-dimensional analysis of AI's overall impact on businesses, we have identified the business contexts in which it has had an impact. In order to do this, we gathered information from a variety of sources, including research reports published by market intelligence companies (Gartner, Forrester, and IDC, among others), annual reports of the top companies, and business press releases. We used the inductive content analysis to analyze the preparation, organization, and reporting of the data gathered from multiple sources [12]. Based on the criteria, three business contexts were chosen where the transformation was clearly evident. We identified “themes” (letters, words, sentences, or sections of pages) in the preparation phase of the data, as defined by Elo and Kyngäs; these themes explain the widespread influence of AI on the global market (and society) as well as future projections. During the organization phase, we identified three business contexts by analyzing and categorizing the “themes” that we had collected [12].

FINDINGS

The conclusions of the study propose that artificial intelligence (AI) holds the potential to greatly improve corporate functions. Through the automation of tedious and repetitive tasks, employees can redirect their focus toward more high-value work with the assistance of AI. Additionally, by analyzing extensive data sets and identifying patterns and trends, AI can aid organizations in making more informed decisions. Nevertheless, there are also several challenges associated with the adoption of AI.

Security and privacy issues with data are among the biggest obstacles. Data breaches and cyberattacks are a risk that businesses face as they gather and examine more data. Another vital consideration is ethics, particularly in the context of utilizing AI for decision-making. If not carefully developed and implemented, AI has the capacity to perpetuate bias and discrimination. Ultimately, the prospect of job displacement is also a matter of concern, given that AI can automate numerous tasks that were traditionally carried out by humans.

CONCLUSION

We can see that artificial intelligence (AI) is real and has the power to revolutionize the world economy through scientific discoveries, technological advancements, and entrepreneurial endeavors. Two main reasons have contributed to the increasing expansion of automation and artificial intelligence over the past 10 years: the growing accessibility of large data and hardware accelerators (GPUs and TPUs). The world is entering the fourth industrial revolution as a result of these factors, which make artificial intelligence (AI) the fundamental technology enabling extreme automation and connection.

Another vital consideration is ethics, particularly in the context of utilizing AI for decision-making. If not carefully developed and implemented, AI has the capacity to perpetuate bias and discrimination. Ultimately, the prospect of job displacement is also a matter of concern, given that AI can automate numerous tasks that were traditionally carried out by humans. Companies need to take a cooperative stance, collaborating closely with legislators and other stakeholders to guarantee that AI's promise is addressed and that its advantages are realized. The analysis reveals that the use of AI technology is limited to a few areas of the globe. This is causing a "divide in AI".

Much like the digital divide, this division would broaden disparities and worsen inequalities in social, economic, and cultural domains. Additionally, AI is predominantly driven by software, and software is susceptible. The bedrock of artificial intelligence consists of various deep learning algorithms and methodologies, which need to undergo multiple stages for real-time application. There have been cases where deep learning algorithms yielded inconsistent results even after meeting these criteria. Some of the main factors considered during software assessment include identifiable systemic failure modes, repeatability, transparency, explainability, path tracing, and penetrability. These are a few key elements determined during the software evaluation process; nonetheless, instances of DL algorithms yielding inaccurate results do occur even after navigating these elements. In addition to this, issues with prejudice, trust, ethics, and the lack of skilled AI workers must be addressed for the commercial use of AI applications.

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