

Role and Application of Artificial Intelligence in Business Analytics: A Critical Evaluation

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Abstract

The commercial adoption of artificial intelligence in business analytics tools across multiple industries is being driven by the rising volume and complexity of company data. Business organizations are being helped by the widespread application of artificial intelligence and machine learning in business intelligence to glean meaningful insights from sizable and complicated datasets and provide business recommendations that are clear to any business user. Within the industry of information technology, the business analytics is used to refer the usage of computing to gain the insights from data. Such data can be acquired from the internal sources of company like from its enterprise resource planning application, warehouse and mart data, providers of third-party data, or from other public sources. Sample of 198 respondents from different business sectors were to know the role, application and impact of artificial intelligence in business analytics. It is found that there is a significant role of artificial intelligence in business analytics. This paper provides a rigorous examination of the literature in an effort to illustrate the value-creating procedures and to elucidate how organizations may employ AI technologies in their operations. In this study, the forms of AI use in the organizational setting, first- and second-order impacts, and usage typologies are highlighted along with the significant enablers and inhibitors of AI adoption and use. Our analysis synthesizes the current literature.

Keywords: Artificial Intelligence, Business Intelligence, Machine learning, Business analytics

Introduction

Artificial Intelligence is a complicated thing. There are various definitions and many

interpretations of what comprises Artificial Intelligence. The risks related to Artificial Intelligence are diversified. The basic

program of artificial intelligence or automation has a different risk than a program, which is mindful. The advantages of AI overshadow the risks associated with it, particularly in business applications. The applications of Artificial Intelligence are already being used by many business organizations, and it is expected to grow in the coming future. AI would become more established in the process of business and that would need society to make adjustments. Artificial Intelligence means various things to humans. At present, Artificial Intelligence is being used by humans and business for automation and information. Still, we are far away from being fully aware of Artificial Intelligence programs. Every level of Artificial Intelligence carries some kind of risk. The primary level of Artificial Intelligence has risks to skilled laborers. Higher level of Artificial Intelligence could hold risks for humanity. The advantages of Artificial Intelligence would keep growing and that means the technology will be here to stay. Society and businesses need to learn the usage of new technology and make adjustments according to it. Artificial Intelligence needs to be incorporated by companies to remain competitive, along with the workers who need to learn new techniques and skills to retain their employment in companies. Since Artificial

Intelligence technologies keep evolving the queries regarding the issues related to it like legal liabilities would keep continuing (Geisel, 2018). Eminent Artificial Intelligence start-ups are developing technological innovations that are process-oriented generating efficacy gains and better opportunities for business in future. The system driven by Artificial Intelligence are showing progressive growth and deployment of Artificial Intelligence is accredited by two main factors: the big data and fast processing units. However, it is found that the technology of Artificial Intelligence is restrained only in some countries of the world, which is creating an “Artificial Intelligence divide.” Such divide such as digital divide is strengthening the social, cultural, and economic disparities that would create a rift. Furthermore, the software of Artificial Intelligence is dominant and the software is known to be susceptible. The backbone of Artificial Intelligence is some of the deep learning methods and algorithms, and they need to pass through various tests and factors before being used for real-time applications. Some of the factors like repeatability, Identifiable systemic failure modes, explainable, transparency, path tracing, penetrability, etc. are established for the assessment of the software, but even after passing these tests there exists risks and

unreliable outcomes (Soni, Sharma, Singh, & Kapoor, 2020).

With the development of the industry and the requirement of effectiveness and efficiency of the business there is a need to develop new systems based on Artificial Intelligence. This as an outcome has transformed the model of doing a business as the application of these system in considerable manner have made a significant influence on the functioning of the business. Additionally, by application of the automatic system the complications of the organizations have increased. While other human abilities are constrained, there is a control in the administration of complex systems that can enhance the use of artificial intelligence. Artificial intelligence systems must be implemented in certain organisational processes and can be employed in a variety of organisational departments. It can be applied to marketing, risk management, customer relationship management, and other areas. It has become imperative to emphasise how crucial it is to uphold ethics when using artificial intelligence because there is a chance that it may be misapplied and pose threats to all humans. (Buntak, Kovacic, & Mutavdzija, 2020).

The automation of "knowledge labour," which is defined as duties whose primary value comes from knowledge, original

thought, and non-repetitive problem solving, will require business executives to make crucial decisions. In contrast, standard business analytics don't work like this. The vast majority of knowledge worker jobs are prepared for some kind of automation, although "augmentation" may be a more likely outcome. (Davenport & Kirby, 2016). Figure 1 depicts the four stages of analytics along with important traits for each step. The leading tail of Analytics 4.0 implies the possibility of testing and entering AI from various phases, given the complexity and promise of AI.

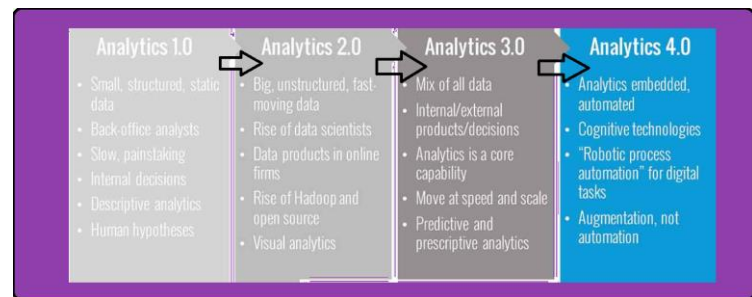


Fig 1.

Literature Review

Palanivelu & Vasanthi (2020) studied about Artificial Intelligence which is considered to be the fastest growing industry and is gaining attention from the business world. AI has already been applied in many fields like daily and business lives. Application of AI system in business field would make the industry to be a faster, less costly, and more accurate

model of marketing. Using Artificial Intelligence in marketing would benefit entrepreneur with higher returns and response from customers and make them achieve strong competition in the market. Other than marketing it can renovate the business with invention and attractive ideas. AI can give solutions to complicated tasks and help in growing the business. The implementation of AI ranges from identifying the trends in data to lessen the risk of market, enhancement in customer service by personal assistance virtually, and examining millions of documents across the server of company to identify the failures.

Kitsios & Kamariotou (2021) reveals the great potentials offered by the technology of Artificial Intelligence that can resolves various difficulties, challenges remain concerned in practical application and lack of knowledge in strategic usage of Artificial Intelligence in developing business value. It is found that the strategic application of Artificial Intelligence tools for consumers and for the engagement of employees has not been successfully executed. Competitive advantage is built by the tools of Artificial Intelligence by the enhancement in experiences and interaction with consumers through applications based and developed on digital strategy. New series will be delivered through deeper innovation in organizations

with the development of new products based on the intellectual potential of the new age of Artificial Intelligence.

Madhavi (2021) explained the efforts that corporates are making to acknowledge the modern technology driven by Artificial Intelligence to make their business more efficient. The tools of Artificial Intelligence can be used to train models from unstructured data that would allow human to generate more accurate predictions, making wise decisions, and alteration of corporate processes. To increase operating performances the organizations can exploit the tools of AI, to make better judgments, generating goods and services in a quick manner. Today, everyone is aware of the benefits of Artificial Intelligence in business.

Jain (2019) found a perceptive influence made by Artificial Intelligence on society, government, and humans. Artificial Intelligence is considered essential for businesses houses as it predicts choices of the customer, and helps in expansion of sales through data analysis and automation. Even after a wide acceptance of Artificial Intelligence there is still a lack of skilled talent, there are various opportunities available where the solutions based on Artificial Intelligence can transform the workplace. It is believed that humans are more prone to errors as compared to the

system of Artificial Intelligence, and the developers of such system are at fault at the time when they fail or glitch. This is of significance in autonomous implementation of Artificial Intelligence, where the response time and the speed are critical factors and the system of AI can behave in intelligent manner as they are developed to do so. It can be concluded that a considerable influence is made by Artificial Intelligence on the economic growth of the business, on the privacy and security of cyber, and also in brining income equality.

Paliwal, Patel, Kandale, & Anute (2021) explains the introduction of AI in the operations of business that allows companies in operating their business, acquire opportunities quickly, reduce errors, increasing transparency, boosting revenue, etc. It is predicted by the experts that AI is doing all the things that a human can do in a more accurate way. A simple example can be a computer chess beating a chess champion who is a human. The dream of finding a survival on another planet than the earth can be achieved through modern technology. However, it is a hypothetical thought.

Mesir (2019) found that a weight is gained by Artificial Intelligence in increasing the efficiency and the quality of decisions and increasing the efficiency of search operations among various solutions available. The

system of experts helps in shaping the models of decision-making under ambiguity and poor available information. It helps in shifting the expertise of specialists to deal with the issues related to the support system. Intelligent Agent technology has been produced by the internet technology that helps in taking the decisions, in doing routine work as per the style and behavior of the decision makers at their work.

Pallathadka et al. (2021) stated that in the industry of finance and e-commerce, Artificial Intelligence has been used for the achievement of better customer experience, effective management of supply change, improved efficiency of operation of business, reduction in mate size having the main aim of designing standards, consistent and dependable methods of product quality control, and searching new methods of serving and reaching customers at low maintenance costs. The two most popular techniques of Artificial Intelligence are deep learning and machine learning.

Razauddin & Sabir (2019) stated that the framework of Artificial Intelligence provides organization with a wide range of benefits that includes customized marketing and advertising, administration of client, computerization of operations, administration of stocks, and enrollment. Artificial Intelligence organizations

accumulate bundles and arrange programming that adjusts to the industry and their goals. The businesses that are outside the innovative business for them this indicates the product answer for the Artificial Intelligence that handle most of the information science and its implementation that enables businesses to concentrate in their field in which they have expertise. As now most the business houses are growing with the advanced Artificial Intelligence tools, it has become essential to upgrade the organization by using up to date and advanced tools AI. Such AI applications serve to computerized form that took many hours of workers. Undeveloped organizations think that it is difficult to stay aware of the competition in the efficacy and profitability of their business.

Enholm, Papagiannidis, Mikalef, & Krogstie (2021) show the diversity of AI technologies that were available, each of which held out the promise of a number of benefits for the corporate organisation in terms of increased economic value. Businesses have turned to artificial intelligence in recent years to obtain a competitive edge because data is now readily available and computer power has increased. A competitive edge and income generation are increasingly both dependent on artificial intelligence for organisations. Numerous AI

programmes, however, have been a failure despite considerable investment in terms of time, money, and labour. It is yet unclear how much value and potential benefits artificial intelligence products could provide for businesses.

Balapriya & Srinivasan (2022) opined that AI is a grab solution for various difficulties related to efficiency by majority of digital system of commerce. Understanding the fact that Artificial Intelligence provides accurate, competent evaluation, and effective exploitation of customer data that helps in successful process of managerial decision making along with the happiness and retention of customers. Although, it is at the heart of business engagement ways to boost the quality and profits in the industry of e-commerce. The functionality of e-commerce is usually additional or complimentary to the developed infrastructure for the optimization of the performance.

Bencsik (2021) stated about the interlinking of knowledge management and AI in no longer a surprise. The outcome of the research is a model to forecast the successful invention, which is supported by AI in the knowledge development step providing the basis for the correct decisions related to the management ensuring the achievement of

goals. In everyday life of companies, the practical implications support the managerial forethoughts, the decisions related to innovative investments that influences the success of the business organization.

of the population is under the age of 36, 41.9% is between the ages of 36 and 43, and 22.2% is over the age of 43. 31.3% of respondents work in the healthcare industry, followed by 28.8% in retail and business, 30.0% in banking and finance, and 9.6% in other industries where business analytics employ artificial intelligence.

Aim of the study

1. To be familiar with "artificial intelligence's" function and applications in business analytics.
2. To know the impact of “artificial intelligence” on business analytics.

Research methodology

To learn about the function, applications, and effects of artificial intelligence in business analytics, 198 respondents from various business sectors were randomly selected. A structured questionnaire was created to gather the primary data for the study, which is a critical review. The data were gathered using a random sampling technique. To analyze and assess the data and obtain the results, statistical methods like the mean and t-test were used.

Findings of the study

According to Table 1, which shows the respondents' demographic information, there are 198 respondents overall, with 57.1% being men and 42.9% being women. 35.9%

Table 1 Demographic details

Variables	Respondents	Percentage
Gender		
Male	113	57.1
Female	85	42.9
Total	198	100
Age		
Below 36 years	71	35.9
36-43 years	83	41.9
Above 43 years	44	22.2
Total	198	100
Working Area		
Health care sector	62	31.3
Retail & Commerce	57	28.8
Banking & Finance	60	30.3
Others	19	9.6
Total	198	100

Table 2 Role and Application of Artificial Intelligence in Business Analytics

S. No.	Statements	Mean score	t value	Sig
1	AI make business fast, less costly, and an accurate marketing model	3.72	3.150	0.001
2	AI help the entrepreneur with high returns and better customer response	3.96	6.628	0.000
3	AI make the business to achieve strong competition in the market	3.70	2.928	0.002
4	AI give solutions to complicated tasks and help to grow the business	3.88	5.451	0.000
5	AI train unstructured data models to get accurate predictions, better decisions, and altered corporate processes	3.66	2.333	0.010
6	AI increases productivity, reduce costs and time and human errors in business	3.30	2.867	0.002
7	AI increase the economic growth, looks after the privacy and security of cyber, and brings in income equality in business	3.91	5.932	0.000
8	AI increase the efficiency and the quality of decisions and search operations for different solutions	3.85	5.087	0.000
9	AI helps to achieve "better customer experience", effective "supply chain management of supply change" and "improved business operations"	3.90	5.743	0.000
1	AI help to customize marketing and advertising, client and stock administration and computerization of operations	4.01	7.451	0.000

Table 2 displays the function of artificial intelligence and its applications in business analytics. The table shows that, with a mean score of 4.01, AI helps to customize marketing and advertising, client and stock administration, and computerization of operations. With a mean score of 3.96, AI assists the entrepreneur in generating high returns and improving consumer reaction. The respondent claims that AI, with a mean score of 3.91, contributes to economic growth, protects cyber privacy and security, promotes income equality in business, and aids in achieving "better customer experience," "effective supply chain management of supply change," and "improved business operations." AI provides answers to challenging jobs, aids in corporate growth (mean score: 3.88), boosts productivity, and the average score for the effectiveness of judgments and search activities for various solutions is 3.85. Additionally, the respondent claims that AI makes company efficient, less expensive, and accurate marketing models with a mean score of 3.72 and makes the business achieve fierce market rivalry with a mean score of 3.70. With a mean score of 3.66, AI trains unstructured data models to make more accurate predictions, smarter decisions, and changes to corporate processes. With a mean score of 3.30, AI boosts productivity while

cutting costs, time, and human errors in the workplace. Further t-test was used to determine the significance of the assertions, and it was discovered that all of the statements have significance values below 0.05.

Conclusion

The study looked more closely at both the advantages and disadvantages of "Artificial Intelligence (AI)" and its broad range of significance. The advancement of information technology and the mistrust surrounding it are decreasing as its applications grow. Use of artificial intelligence specifically for business management of complex systems and to assist humans in various activities Businesses with little learning capacity utilise a basic kind of artificial intelligence. Artificial intelligence development and use expenses range from potential employment losses to potential loss of human life. There could be glimpses of more advanced technologies that haven't yet been researched. The potential for artificial intelligence to create a better world is great. It will develop in the future in a better way and change the commercial world. By using technology and making the necessary movements for a successful corporate future,

organizations and individuals must be ready for the future.

The study finds that artificial intelligence (AI) is used in business analytics in a variety of roles and applications, including customizing marketing and advertising, client and stock administration, and computerizing operations. These roles and applications help to increase economic growth, protect online privacy and security, promote income equality, and achieve better customer experiences as well as effective supply chain management. It is also found that there is a significant role of artificial intelligence in business analytics.

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