Application of Artificial Intelligence in Business Operations and its impact on Organisational Performance: An Empirical Study

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ABSTRACT:

Artificial Intelligence (AI) is transforming corporate operations, increasing productivity, and improving performance within organizations. Robotic process automation (RPA) and machine learning are examples of artificial intelligence (AI) technologies that reduce human error and operating expenses by streamlining repetitive activities. Artificial intelligence-driven chatbots and virtual assistants enhance client happiness and retention by offering prompt, customized assistance in the field of customer care. Businesses can make well-informed, strategic decisions by utilizing AI-driven data analytics, which provide insightful information about consumer behavior and market trends. Furthermore, by optimizing inventory levels and reducing disruptions, AI improves supply chain management through predictive analytics. AI algorithms are used in marketing to precisely target particular audience segments, hence improving campaign performance. Integrating AI increases competitiveness, inventiveness, and agility, which in turn increases profitability and market share. But for AI to be implemented successfully, ethical considerations, data security, and workforce impact must all be carefully considered. Sample of 214 people from different departments of business organization to explore application of artificial intelligence in business operations and its impact on organizational performance. The study concludes that there is significant impact of AI on organizational performance.

Keywords: Artificial Intelligence (AI), Corporate Operations, Productivity, Performance Improvement, Robotic Process Automation (RPA), Machine Learning, Data Analytics, Predictive Analytics.

1. Introduction

The use of artificial intelligence (AI) in corporate operations has had a major impact on organizational performance in India in recent years. In line with current trends, Saroha et al. (2023) examined how businesses used AI to reach maximum productivity and effectiveness. They observed that by automating repetitive jobs and lowering human error, AI technology optimized a number of commercial processes. Significant cost reductions and operational efficiencies resulted from this. For instance, AI-driven data analytics gave companies more comprehensive understanding of consumer behavior and industry trends, facilitating better strategic planning and decision-making. The skills of these systems were further improved by the integration of "machine learning" and "natural language processing," which allowed them to evaluate enormous volumes of data fast and precisely. Additionally, by providing immediate, individualized support, artificial intelligence (AI) applications in customer service—such as "chatbots" and "virtual assistants"—have greatly increased customer satisfaction and retention rates.

Moreover, Dubey et al. (2020) looked at how big data analytics and AI might improve operational performance in manufacturing companies. In order to optimize inventory levels

and reduce interruptions, they emphasized how businesses used AI to enhance supply chain management through "predictive analytics." Because AI can properly estimate demand, manufacturers can better plan their output and reduce waste by managing their resources more effectively. Furthermore, AI technologies improved quality control by instantly detecting flaws and inconsistencies, improving both product quality and customer happiness. They also discovered that the use of AI in marketing allowed businesses to precisely target particular audience segments, which improved the efficacy of their campaigns. Businesses were able to stay flexible and competitive in the market by strategically utilizing AI to assist them adapt to the changing business environment. Thus, the incorporation of AI into manufacturing operations led to increased productivity, decreased expenses, and improved overall performance, highlighting the noteworthy advantages of AI adoption in this industry.

Rana et al. (2022) examined the possible drawbacks of incorporating artificial intelligence (AI) into corporate analytics, with a particular emphasis on competitiveness and operational inefficiencies. They emphasized that although AI offered many advantages, there were also difficulties that businesses had to overcome in order to fully utilize its potential. Data security was a significant difficulty because the widespread usage of AI systems necessitated the implementation of strong security measures to guard sensitive data from online attacks. Furthermore, because individuals needed to acquire new skills in order to collaborate productively with these sophisticated systems, the adoption of AI technologies frequently required large investments in training and upskilling the workforce. The report stressed that in order to fully utilize AI, human expertise and automated procedures must be balanced. In spite of these obstacles, the introduction of AI into Indian corporate processes turned out to be revolutionary. Businesses who effectively overcame these challenges were able to use AI to significantly boost organizational performance and competitiveness. Artificial Intelligence (AI) has had a significant overall impact on corporate operations. It has optimized efficiency and effectiveness while also fostering growth and innovation, which ultimately benefits organizations and consumers.

2. Literature Review

According to Olan et al. (2022), artificial intelligence (AI) enabled "knowledge sharing," a crucial element that enhanced the performance of organizations. Companies used AI technologies to improve staff communication and information sharing, which enhanced decision-making and increased operational efficiency. The significant increases in productivity and competitiveness that resulted from its deployment show how much AI has affected overall performance and business operations. The elements impacting AI integration were highlighted in Shant Priya et al. (2023) exploration of the use of AI in Indian management institutes. They disclosed that enhancing resource management and educational administration was the primary driver behind the deployment of AI. Thanks to the individualized learning experiences that AI tools enabled, the institutes saw a significant improvement in "learning outcomes" as well as increased "efficiency" in handling administrative work. AI has the ability to revolutionize a wide range of industries, as demonstrated by this adoption, which not only improved performance but also streamlined operations at these educational institutions.

Dhanabalan and Sathish (2018) assessed on the "Industry 4.0" paradigm and its wider effects on robots and AI in Indian companies. They demonstrated how AI was essential to the automation of repetitive jobs, the decrease in human error, and the improvement of production procedures. Increased productivity and lower operating costs were the results of the shift in Indian industries toward more "intelligent" and adaptable production systems. The significance

of artificial intelligence (AI) in transforming conventional business processes and boosting organizational performance was highlighted by this technological change that improved the "competitiveness" of Indian companies on a global basis.

Bankar and Shukla (2023) examined a "futuristic conceptual framework" for "performance management" that included AI. They also discussed how businesses have used AI to improve "accuracy" and "efficiency" in their operations. Improvements in "decision-making capabilities," reduced processes, and enhanced performance management systems were the results of this integration. Companies used AI to "identify trends," "predict outcomes," and "automate routine tasks," all of which required a significant amount of human engagement in the past. As a result, this change gave businesses a competitive advantage in the market in addition to increasing operational efficiency.

According to Grover et al. (2022), Indian companies have adopted AI technology to streamline their "supply chain operations," cut expenses, and boost output. The use of AI technologies enabled "real-time data analysis," which allowed businesses to react quickly to shifts in the market and client needs. Through the promotion of "innovation" and an improvement in the general "agility" of enterprises, the use of AI in different aspects of operations management led to improved organizational performance. Indian businesses have reaped substantial benefits from AI applications, according to Enholm et al. (2022), including higher "profitability" and improved "customer satisfaction." Systems with AI capabilities provided improved "predictive maintenance," "resource allocation," and customized client experiences. As a result of these developments, organizations were eventually able to perform better because they could make better judgments and modify their plans to achieve particular goals. Thus, the use of AI in commercial processes was crucial to the success of Indian organizations.

As per Wamba (2022), the integration of AI improved "organizational agility" and "customer agility," which in turn affected the performance of the firm. Indian businesses have streamlined their operations with AI technologies, allowing for faster decision-making and more effective resource management. By using AI, businesses were able to react quickly to changes in the market and client needs, which improved overall performance. Furthermore, AI has been a major factor in advancing innovation and research in the Indian business environment. The use of AI in business was shown by Soni et al. (2020) to extend beyond "research and innovation" to include "market deployment." Significant investments were made by Indian companies in AI-driven research projects, which led to the creation of cutting-edge goods and services. Because of the development of new business models and tactics made possible by technology advancements, organizations have been able to obtain a competitive advantage in the market.

Business models will change in the future as a result of the use of AI in enterprises. The influence of artificial intelligence (AI) expanded beyond the research and innovation stages to include notable modifications in market deployment and future business model transformations, as shown by Soni et al. (2019). In order to include AI-driven solutions, Indian businesses had started to review and revamp their business models. Increased productivity, lower operating expenses, and improved client experiences have resulted from this change. The implementation of artificial intelligence (AI) has resulted in enhanced organizational performance by streamlining internal procedures and revolutionizing client interactions.

Rajagopal et al. (2022) talked about how the "AI-driven digital framework" for decision-making processes changed Indian company culture and improved accuracy and efficiency. Businesses have been using AI technologies to improve overall performance by streamlining

procedures, lowering human error, and making data-driven decisions. The applications of AI to improve company operations were emphasized by Tarafdar et al. (2019). Using AI techniques, Indian businesses have reportedly been able to automate repetitive processes, manage supply chains, and enhance customer service. Increased operational efficiency and considerable cost savings were the results of its implementation. Organizations in India were able to make more strategic decisions by using AI-powered analytics to obtain better insights into consumer preferences and industry trends. AI has also made predictive maintenance in manufacturing easier, which has decreased downtime and increased output.

According to Duangekanong (2022), AI has strategic applications in organizational management. Indian organizations have used AI to improve strategic planning and execution. In order to make more intelligent and sensible strategic judgments, artificial intelligence (AI) technologies have been used to analyze enormous volumes of data, spot trends, and forecast future events. The use of AI-driven management has led to enhanced organizational performance, as businesses have been able to better match their operations with their strategic objectives. Artificial Intelligence has had a significant impact on company operations in India, stimulating innovation and cultivating a continuous improvement culture.

Objective
1. To explore application of artificial intelligence in business operations and its impact on organizational performance.

3. Methodology

Sample of 214 people from different departments of business organization were surveyed with the help of a questionnaire to explore application of artificial intelligence in business operations and its impact on organizational performance. Convenient sampling method was used to collect the primary data and multiple linear regression was applied to get the results.

Findings

Table 1 shows that 60.3% of respondents are male and rest 39.7% are female in which are 31.3% are below 30 years of age, 44.9% are between 30-40 years of age and rest 23.8% are above 40 years of age. 18.2% are from human resource department, 19.2% from IT, 24.3% from sales, 17.3% of the respondents are from marketing department, 12.1% from finance and rest 8.9% are from other departments of business organization.

Table 1 General Details

Variable	Respondents	Percentage
Gender		
Male	129	60.3
Female	85	39.7
Total	**214**	**100**
Age		
Below 30 yrs	67	31.3
30-40 yrs	96	44.9
Above 40 yrs	51	23.8
Total	**214**	**100**
Department		
Human Resource	39	18.2

IT	41	19.2
Sales	52	24.3
Marketing	37	17.3
Finance	26	12.1
Others	19	8.9
Total	**214**	**100**

Table 2 Application of Artificial Intelligence and Its impact

S. No.	Application of Artificial Intelligence and Its impact
1.	*Automation of routine tasks* increase the efficiency and productivity of employees
2.	*AI-driven analytics* provide deeper insights and more accurate predictions for better decision-making
3.	*Personalized and timely customer interactions* enhance customer satisfaction
4.	*Automation and optimization of processes* reduce operational costs, leading to improved profit margins
5.	*AI enables the development of new products and services*, driving innovation and providing a competitive edge
6.	*Predictive analytics and anomaly detection* help in identifying and mitigating potential risks
7.	*Identifies and prevents fraudulent activities*
8.	*Monitors employee sentiment and provides insights* to improve workplace culture and productivity
DV	Overall impact of Artificial Intelligence on Organizational Performance

"Multiple Linear Regression"

Table 3 "Model Summary"

"Model"	"R"	"R Square"	"Adjusted R Square"	"Std. Error of the Estimate"
1	.782[a]	.611	.596	.58377
a. Predictors: (Constant), Automation of routine tasks, AI-driven analytics, Personalized and timely customer interactions, Automation and optimization of processes, development of new products and services, Predictive analytics and anomaly detection, Identifies and prevents fraudulent activities and Monitors employee sentiment				

The Value of adjusted R square is 0.596 and the model explains around 61% of the variation.

"Table 4 ANOVA"

"Model"		"Sum of Squares"	"df"	"Mean Square"	"F"	"Sig."
1	Regression	109.956	8	13.745	40.332	.000[b]
	Residual	69.862	205	.341		
	Total	179.818	213			
a. DV: Overall impact of Artificial Intelligence on Organizational Performance						
b. Predictors: (Constant), Automation of routine tasks, AI-driven analytics, Personalized and timely customer interactions, Automation and optimization of processes, development of new products and services, Predictive analytics and anomaly detection, Identifies and prevents fraudulent activities and Monitors employee sentiment						

The impact of independent variables on dependent has been explained in table 4 and the value in the significance column 0.000 shows that one or more variables are significant on dependent variable.

"Table 5 Coefficients"

"Model"	"Un standardized Coefficients"		"Standardized Coefficients"	"t"	"Sig."
	"B"	"Std. Error"	"Beta"		
(Constant)	-.983	.274		-3.593	.000
Automation of routine tasks	.110	.038	.135	2.859	.005
AI-driven analytics	.101	.049	.102	2.083	.038
Personalized and timely customer interactions	.120	.049	.124	2.462	.015
Automation and optimization of processes	.161	.044	.178	3.642	.000
Development of new products and services	.143	.069	.138	2.084	.038
Predictive analytics and anomaly detection	.180	.077	.161	2.351	.020
Identifies and prevents fraudulent activities	.258	.070	.232	3.668	.000
Monitors employee sentiment	.178	.047	.175	3.759	.000
a. Dependent Variable: Overall impact of Artificial Intelligence on Organizational Performance					

Table 5 shows that all the factors Automation of routine tasks, AI-driven analytics, Personalized and timely customer interactions, Automation and optimization of processes, development of new products and services, Predictive analytics and anomaly detection, Identifies and prevents fraudulent activities and Monitors employee sentiment are showing significant impact of Artificial Intelligence on Organizational Performance. Highest impact is shown by Identifies and prevents fraudulent activities with beta value .232 followed by Automation and optimization of processes (.178), Monitors employee sentiment (.175), Predictive analytics and anomaly detection (.161), Development of new products and services (.138), Automation of routine tasks (.135), Personalized and timely customer interactions (.124) and AI-driven analytics with beta value .102.

4. Conclusion

The performance of organizations is being greatly impacted by artificial intelligence (AI), which is revolutionizing commercial operations in India. More productivity, efficiency, and decision-making ability have resulted from the integration of AI technologies across multiple industries. AI technologies are boosting creativity and competitive advantage by automating repetitive operations and delivering insightful information through data analysis. AI-powered solutions enhance production procedures, cut downtime, and enhance quality control in industries like manufacturing. With optimized supply chain management and tailored recommendations, artificial intelligence (AI) improves customer experiences in retail. Fraud detection, risk assessment, and automated customer care are three areas where artificial intelligence (AI) helps the finance sector. Improved patient care, diagnosis, and operational

effectiveness are further benefits of AI in healthcare. AI significantly affects how well organizations function. Operational efficiency, cost savings, and revenue growth are significantly increased for businesses that use AI. With the use of AI, businesses can better match customer expectations, react swiftly to changes in the market, and make data-driven decisions. Furthermore, by spotting new company prospects and expediting research and development procedures, AI promotes creativity. Future developments in organizational performance are anticipated with the ongoing integration of AI in company operations. Businesses in India need to employ ethical AI practices, upskill their staff, and invest in AI skills as these technologies advance. They will assure long-term expansion, preserve their competitive advantage, and advance the nation's overall economic progress by doing this. There are countless opportunities for AI to improve organizational performance and spur economic growth, making its future in Indian company operations bright.

The study was conducted to explore application of artificial intelligence in business operations and its impact on organizational performance and found that Automation of routine tasks, AI-driven analytics, Personalized and timely customer interactions, Automation and optimization of processes, development of new products and services, Predictive analytics and anomaly detection, Identifies and prevents fraudulent activities and Monitors employee sentiment are different applications of AI in business organization. The study concludes that there is significant impact of AI on organizational performance.

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