

## **Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) in Managerial Decision Making: An Empirical Study of Leading Business Organisation**

**Roopal Gangwar**

Research Scholar

Deptt of Operations & Information System

College of Agribusiness Management

Govind Ballabh Pant University of Agriculture & Technology, Pantnagar  
(U.S.Nagar), Uttarakhand -263145

**Dr. Bidya Dash**

Asst professor(MBA)

College of IT and Management Education, Bhubaneswar

**Dr.Amitabh Nanda**

Asst. Professor.(MBA)

College of IT and Management Education, Bhubaneswar

**Dr. Sheenam Ayyub**

Assistant Professor

Jamia Millia Islamia, New Delhi

### **Abstract**

Artificial Intelligence (AI)-powered Management Information Systems (MIS) have changed the way top Indian companies make decisions about employees. Advanced algorithms and data analytics are used by these systems to quickly and correctly handle huge amounts of data. MIS that uses AI to look at historical data, market trends, and customer behaviour can help managers make better strategic decisions. One big effect is that it makes things more efficient. AI takes over boring jobs, so managers can make important decisions instead. AI can also predict market trends and find possible risks, which helps people make smart decisions ahead of time. Also, AI-driven MIS make it easier to make decisions based on facts. These systems process big datasets in real time and give managers knowledge they can use. This lets them make decisions that help the business grow and be more competitive. AI-enabled MIS also encourages creativity by finding chances to improve processes and make new products. These systems constantly look at data to help managers find new market needs and change their business strategies to meet those needs. Study survey was conducted among 213 people from different business organizations to know the factors that determines the Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) on Managerial Decision Making and found that Predictive Analytics, Data Processing and Analysis, Automation of Routine Tasks and Risk Management are the factors that determines the Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) on Managerial Decision Making.

**Keywords:** Artificial Intelligence, Management Information Systems (MIS), Data Analytics, Strategic Decision Making, Efficiency, Predictive Analysis, Fact-based Decision Making, Creativity Encouragement.

### **Introduction**

Artificial intelligence (AI) has emerged as a disruptive force in business management, owing to its integration with Management Information Systems (MIS). AI-enabled MIS is transforming management decision-making processes in India's major organisations. These systems offer managers significant insights for strategic planning and execution by utilising powerful algorithms and data analytics. This sets the context for investigating the substantial influence of AI-enabled MIS on management decision-making within India's corporate landscape, highlighting their role in improving efficiency, promoting innovation, and enabling data-driven decision-making for long-term growth and competitiveness.

Chatterjee et al. (2021) assessed the impact of AI-enabled Management Information Systems (MIS) on managerial decision-making within leading business organisations in India, shedding light on the adoption of AI-integrated Customer Relationship Management (CRM) systems in agile Indian firms. They showed how such tools improved organisational agility by offering real-time information into customer behaviour and market trends. These MIS facilitated informed decision-making by utilising AI algorithms, allowing organisations to respond quickly to changing market dynamics and achieve a competitive advantage.

Venumuddala and Kamath (2023) assessed the dynamics of the Indian Information Technology (IT) business, specifically the functionality of work systems providing Artificial Intelligence (AI) solutions in the context of remote work issues. They emphasised the importance of AI-enabled Management Information Systems (MIS) in assuring the long-term productivity and collaborative efficacy of IT professionals working remotely. Despite the numerous problems associated with remote work, such as sporadic connectivity and increased security concerns, the incorporation of AI into MIS emerged as a critical component in enabling seamless operations and informed decision-making. The acknowledgment of AI-enabled MIS as drivers for organisational resilience in the rapidly changing landscape of remote labour. These solutions gave employees unrestricted access to critical data and insights, regardless of their physical location. AI-enabled MIS allows IT workers to rapidly handle complicated processes and generate actionable insights important for strategic decision-making by employing advanced algorithms and data analytics.

Priya et al. (2023) explored the elements that influence AI adoption in Indian management institutes. They emphasised the revolutionary power of AI-enabled MIS in academic settings, which improves teaching techniques and administrative operations. These technologies optimised resource allocation and student engagement through predictive analytics and personalised learning experiences, allowing educators to make data-driven decisions for curriculum development and institutional management that promote continuous improvement and innovation.

### **Literature Review**

Demigha (2021) emphasised the importance of "Decision Support Systems (DSS)" and "Management Information Systems (MIS)" in modern organisations. These technologies were critical for "managerial decision-making" because they provided executives with critical data and insights. The addition of "Artificial Intelligence (AI)" to MIS improved their functionality, allowing for more efficient data processing and analysis. In India's biggest business organisations, AI-enabled MIS has emerged as essential tools for executives, allowing them to make informed decisions based on real-time data and predictive analytics. Rana et al. (2022) examined the complex consequences of "AI-integrated business analytics," providing light on the potential negative aspects of these technologies. They emphasised how the use of AI in MIS could unintentionally lead to "operational inefficiencies" within organisations. Despite AI's potential to boost competitiveness through enhanced analytics, issues such as "data biases," "algorithmic errors," and "overreliance on automation" may impede organisational effectiveness. This emphasises the significance of carefully integrating AI into MIS frameworks, ensuring that its deployment is consistent with organisational goals and promotes operational effectiveness.

According to Chatterjee et al. (2022) the relationship between "digital transformation", "entrepreneurship processes", and the adoption of "AI-CRM capability" in "Small and Medium Enterprises (SMEs)" in India. They showed how the strategic integration of AI into CRM systems aided digital transformation activities and entrepreneurial endeavours in SMEs. By using AI-enabled MIS for customer relationship management, SMEs were better able to respond to changing market dynamics, increase customer engagement, and drive growth. This demonstrates AI-enabled MIS's transformative potential for empowering firms, particularly SMEs, to negotiate the complexity of India's current business ecosystem.

Al-Surmi et al. (2022) assessed the effectiveness of "AI-based decision-making" in improving operational performance. They looked into the combination of tactics for using Artificial Intelligence (AI) to improve decision-making processes. Organisations attempted to streamline operations and increase efficiency by incorporating AI into Management Information Systems (MIS). This strategic integration of AI into MIS frameworks enabled managers to make data-driven decisions, which improved operational performance in India's major corporate organisations. Gupta et al. (2021) explored the function of artificial intelligence (AI) in improving information system resilience during supply chain interruptions. They emphasised the need of using AI-enabled MIS to reduce the impact of supply chain interruptions on organisational

operations. Organisations want to improve their resilience and agility in responding to unexpected situations by leveraging AI algorithms for predictive analytics and risk management. This proactive strategy to integrating AI within MIS frameworks strengthened the resilience of India's major corporate organisations, allowing them to efficiently traverse supply chain shocks.

Kumar et al. (2018) showed the relationship between operations management and information system research. They emphasised the importance of incorporating AI into MIS to improve operational procedures and boost organisational performance. Managers in prominent Indian businesses were able to streamline processes, improve resource allocation, and increase overall efficiency by utilising AI-based decision-making tools within MIS. This strategic integration of AI into MIS frameworks aided informed decision-making, contributing to the success and competitiveness of corporate organisations in India's dynamic market environment. Cao et al. (2021) assessed managers' attitudes and behavioural intents regarding utilising "artificial intelligence" in "organisational decision-making." They give light on how AI is perceived in managerial circles and what it means for decision-making processes. Managers in India's major businesses struggled to integrate AI into Management Information Systems (MIS) for decision-making purposes. This detailed understanding of managers' views towards AI within MIS frameworks shed light on the complexity of integrating AI into organisational decision-making processes.

Saurabh et al. (2022) explored the concept of "AI-led ethical digital transformation" and its implications for management practice. Their framework emphasised the necessity of ethical issues while implementing AI in MIS for organisational transformation. Managers in India's top businesses faced ethical quandaries related to AI-driven decision-making, such as data privacy concerns and algorithmic biases. Despite AI's potential to drive digital transformation, managers addressed the ethical aspects of AI integration inside MIS to ensure openness, fairness, and accountability in decision-making processes. Furthermore, Olan et al. (2022) showed the role of "artificial intelligence" in "knowledge sharing" and how it affects organisational performance. They emphasised the role of AI-enabled MIS in encouraging information sharing among employees, thereby improving organisational performance. AI-driven knowledge exchange platforms within MIS promoted team cooperation and creativity in India's leading businesses. Organisations that used AI algorithms for data analysis and recommendation systems allowed the distribution of tacit knowledge and best practices, ultimately driving performance and competitiveness in the Indian corporate scene. Enholm et al. (2022) discussed the intersection of "artificial intelligence" with "business value." The investigation revealed the complex impact of AI on organisational performance and decision-making processes. The potential for significant business benefit drove the integration of AI within Management Information Systems (MIS) of India's leading businesses. Organisations hoped to improve efficiency, creativity, and competitiveness by implementing AI algorithms for data analysis, predictive modelling, and automation.

Sharma et al. (2022) assessed the factors driving retail customers' adoption of "artificial intelligence (AI)-based autonomous decision-making systems." They concentrated on studying the elements impacting consumer attitudes towards AI-powered decision-making tools in the retail sector. The implementation of AI-enabled MIS in retail settings was aimed at improving customer experiences and driving sales in India's major businesses. Prasad Agrawal (2023) explored the route to the adoption of "generative AI" in organisational settings. They concentrated on the ability of generative AI algorithms to generate unique solutions and insights, hence accelerating innovation and transformation. The implementation of generative AI into MIS frameworks in India's largest commercial organisations was intended to develop creativity and problem-solving ability.

### **Objective**

1. To know the factors that determines the Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) on Managerial Decision Making.

### **Methodology**

Study survey was conducted among 213 people from different business organizations to know the factors that determines the Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) on Managerial Decision Making. "Convenient sampling method" and "Factor Analysis" were used to collect and analyze the data.

**Findings**

Table below is sharing respondent's general details. Total 213 people were surveyed in which male are 65.3% and 34.7% are female. Among them 33.3% are below 30 years of age, 45.1% are between 30-45 years of age and rest 21.6% are above 45 years of age. 30.5% are from business organization (partnership), 39.4% from corporation, 33.8% from cooperatives and rest 3.7% are from other business organizations.

**Table 1 General Details**

Variables	Respondents	Percentage
<b>Gender</b>		
Male	139	65.3
Female	74	34.7
<b>Total</b>	<b>213</b>	<b>100</b>
<b>Age (years)</b>		
Below 30	71	33.3
30-45	96	45.1
Above 45	46	21.6
<b>Total</b>	<b>213</b>	<b>100</b>
<b>Business Organization</b>		
Partnership	65	30.5
Corporation	84	39.4
Cooperative	72	33.8
Others	8	3.7
<b>Total</b>	<b>213</b>	<b>100</b>

**Table 2 “KMO and Bartlett's Test”**

“Kaiser-Meyer-Olkin Measure of Sampling Adequacy”		.871
“Bartlett's Test of Sphericity”	Approx. Chi-Square	2326.440
	df	136
	Sig.	.000

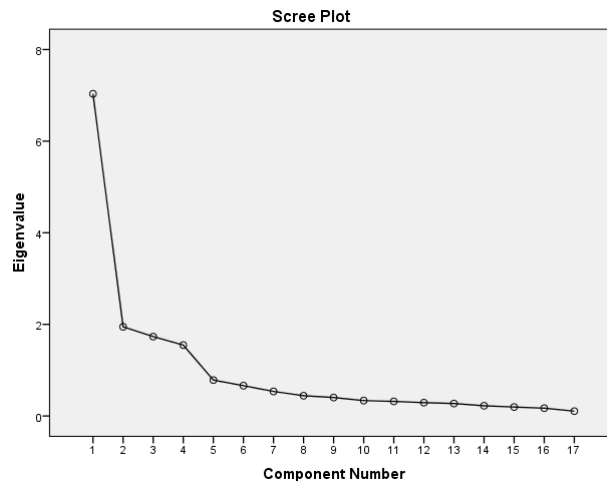
In the table above KMO value is 0.871 and the “Barlett’s Test of Sphericity” is significant.

**“Table 3 Total Variance Explained”**

“Component”	“Initial Eigen values”			“Rotation Sums of Squared Loadings”		
	“Total”	“% of Variance”	“Cumulative %”	“Total”	“% of Variance”	“Cumulative %”
1	7.033	41.373	41.373	3.503	<b>20.603</b>	20.603
2	1.947	11.452	52.825	3.281	<b>19.303</b>	39.906
3	1.733	10.192	63.017	3.168	<b>18.635</b>	58.541
4	1.548	9.106	72.124	2.309	<b>13.582</b>	<b>72.124</b>
5	.784	4.613	76.736			
6	.662	3.893	80.629			
7	.536	3.152	83.781			
8	.442	2.599	86.380			
9	.403	2.369	88.749			
10	.336	1.978	90.727			
11	.318	1.872	92.599			
12	.291	1.712	94.311			
13	.272	1.602	95.912			

14	.223	1.311	97.224			
15	.196	1.151	98.375			
16	.171	1.003	99.378			
17	.106	.622	100.000			

The “principal component analysis” method was applied to extract the factors and it was found that 17 variables form 4 Factors. The factors explained the variance of 20.603%, 19.303%, 18.635% and 13.582% respectively. The total variance explained is 72.124%.



The graph above depicts the Eigen values generated from the "Total Variance Explained table" for an elbow with 4 components.

**“Table 4 Rotated Component Matrix”**

“S. No.”	“Statements”	“Factor Loading”	“Factor Reliability”
	<b>Predictive Analytics</b>		<b>.897</b>
1	AI enabled MIS Provide managers with deeper insights into customer behavior, market dynamics, and operational performance	.846	
2	Empowers managers to anticipate market trends, demand fluctuations, and potential risks	.819	
3	Generate more accurate forecasts of sales trends, customer demand, or financial performance	.797	
4	Enables managers to make agile decisions in response to rapidly changing market conditions	.793	
5	Enables to implement proactive risk mitigation strategies and contingency plans	.703	
	<b>Data Processing and Analysis</b>		<b>.908</b>
6	Help to process vast amount of data from various sources	.885	
7	Allowed to make decisions on comprehensive and real-time understanding of the business environment	.858	
8	Enhance data quality by automating data cleansing, normalization, and validation processes	.831	
9	Allows managers to focus on the most relevant information and metrics	.743	
	<b>Automation of Routine Tasks</b>		<b>.902</b>

10	Automates repetitive tasks such as data entry, report generation, and basic analysis	.866	
11	Increases operational efficiency and productivity across the organization	.841	
12	Ensures consistency and standardization in routine tasks	.827	
13	Automation flexibly adjusts to accommodate increased demands without requiring additional resources	.802	
	<b>Risk Management</b>		<b>.745</b>
14	AI algorithms identify potential risks and vulnerabilities in real-time	.768	
15	Identify risk indicators and alert managers promptly, allowing for timely intervention	.707	
16	Enables managers to prioritize risks based on their potential impact on business objectives	.701	
17	AI-enabled MIS helps prevent fraud and financial losses before they escalate	.681	

Table 4 is showing different factors that determines the Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) on Managerial Decision Making. First factor is Predictive Analytics which includes the variables like AI enables MIS provide managers with deeper insights into customer behavior, market dynamics, and operational performance, Empowers managers to anticipate market trends, demand fluctuations, and potential risks, Generate more accurate forecasts of sales trends, customer demand, or financial performance, Enables managers to make agile decisions in response to rapidly changing market conditions and Enables to implement proactive risk mitigation strategies and contingency plans. Second factor is Data Processing and Analysis and its associated variables are Help to process vast amount of data from various sources, Allowed to make decisions on comprehensive and real-time understanding of the business environment, Enhance data quality by automating data cleansing, normalization, and validation processes and Allows managers to focus on the most relevant information and metrics. Third factor is Automation of Routine Tasks which includes the variables like Automates repetitive tasks such as data entry, report generation, and basic analysis, increases operational efficiency and productivity across the organization, ensures consistency and standardization in routine tasks and Automation flexibly adjusts to accommodate increased demands without requiring additional resources. Fourth factor is Risk Management which includes the variables like AI algorithms identify potential risks and vulnerabilities in real-time, identify risk indicators and alert managers promptly, allowing for timely intervention, enables managers to prioritize risks based on their potential impact on business objectives and AI-enabled MIS helps prevent fraud and financial losses before they escalate

**“Table 5 Reliability Statistics”**

“Cronbach's Alpha”	“N of Items”
.908	17

The reliability for 4 constructs with total of seventeen elements is 0.908.

## Conclusion

The implementation of AI-enabled Management Information Systems (MIS) has resulted in a paradigm shift in managerial decision-making processes inside India's leading corporate organisations. These modern MIS solutions use AI algorithms to process massive volumes of data, extract actionable insights, and assist executives in making sound decisions. One notable benefit is an increase in decision-making speed and accuracy. AI-enabled MIS systems can analyse data at unprecedented speeds, offering real-time insights into market trends, customer behaviour, and operational efficiency. This agility allows managers to respond quickly to changing company situations, giving them a competitive advantage in volatile marketplaces. Furthermore, AI provides managers with predictive analytics skills, allowing them to predict future events based on past data trends. This foresight allows for proactive decision-making, such as optimising manufacturing schedules, forecasting customer demand, or limiting potential dangers. Furthermore, AI-powered MIS systems make data-driven

decision-making easier by presenting complicated information in simple ways. Managers can immediately comprehend critical indicators and trends using intuitive dashboards and visualisations, allowing them to make well-informed decisions that are aligned with organisational goals. Furthermore, AI improves decision-making through automation and optimisation. Managers can devote more time and expertise to strategic projects and problem-solving activities if regular tasks and processes are automated. AI algorithms can also optimise resource allocation and operational efficiency, hence increasing production and cost effectiveness. To summarise, the use of AI into MIS systems has transformed managerial decision-making in leading Indian organisations. AI enables managers to confidently traverse the intricacies of modern marketplaces, creating sustainable development and competitive advantage.

Study was conducted to know the factors that determines the Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) on Managerial Decision Making and found that Predictive Analytics, Data Processing and Analysis, Automation of Routine Tasks and Risk Management are the factors that determines the Impact of Artificial Intelligence (AI) Enabled Management Information System (MIS) on Managerial Decision Making.

### References

1. Chatterjee, S., Chaudhuri, R., Vrontis, D., Thrassou, A., & Ghosh, S. K. (2021). Adoption of artificial intelligence-integrated CRM systems in agile organizations in India. *Technological Forecasting and Social Change*, 168, 120783.
2. Venumuddala, V. R., & Kamath, R. (2023). Work systems in the indian information technology (IT) industry delivering artificial intelligence (AI) solutions and the challenges of work from home. *Information Systems Frontiers*, 25(4), 1375-1399.
3. Shant Priya, S., Jain, V., Priya, M. S., Dixit, S. K., & Joshi, G. (2023). Modelling the factors in the adoption of artificial intelligence in Indian management institutes. *foresight*, 25(1), 20-40.
4. Demigha, S. (2021, June). Decision Support Systems (DSS) and Management Information Systems (MIS) in Today's Organizations. In *European Conference on Research Methodology for Business and Management Studies* (pp. 92-IX). Academic Conferences International Limited.
5. Rana, N. P., Chatterjee, S., Dwivedi, Y. K., & Akter, S. (2022). Understanding dark side of artificial intelligence (AI) integrated business analytics: assessing firm's operational inefficiency and competitiveness. *European Journal of Information Systems*, 31(3), 364-387.
6. Chatterjee, S., Chaudhuri, R., Vrontis, D., & Basile, G. (2022). Digital transformation and entrepreneurship process in SMEs of India: a moderating role of adoption of AI-CRM capability and strategic planning. *Journal of Strategy and Management*, 15(3), 416-433.
7. Al-Surmi, A., Bashiri, M., & Koliouisis, I. (2022). AI based decision making: combining strategies to improve operational performance. *International Journal of Production Research*, 60(14), 4464-4486.
8. Gupta, S., Modgil, S., Meissonier, R., & Dwivedi, Y. K. (2021). Artificial intelligence and information system resilience to cope with supply chain disruption. *IEEE Transactions on Engineering Management*.
9. Kumar, S., Mookerjee, V., & Shubham, A. (2018). Research in operations management and information systems interface. *Production and Operations Management*, 27(11), 1893-1905.
10. Cao, G., Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2021). Understanding managers' attitudes and behavioral intentions towards using artificial intelligence for organizational decision-making. *Technovation*, 106, 102312.
11. Saurabh, K., Arora, R., Rani, N., Mishra, D., & Ramkumar, M. (2022). AI led ethical digital transformation: Framework, research and managerial implications. *Journal of Information, Communication and Ethics in Society*, 20(2), 229-256.
12. Olan, F., Arakpogun, E. O., Suklan, J., Nakpodia, F., Damij, N., & Jayawickrama, U. (2022). Artificial intelligence and knowledge sharing: Contributing factors to organizational performance. *Journal of Business Research*, 145, 605-615.
13. Enholm, I. M., Papagiannidis, E., Mikalef, P., & Krogstie, J. (2022). Artificial intelligence and business value: A literature review. *Information Systems Frontiers*, 24(5), 1709-1734.
14. Sharma, S., Islam, N., Singh, G., & Dhir, A. (2022). Why do retail customers adopt artificial intelligence (AI) based autonomous decision-making systems?. *IEEE Transactions on Engineering Management*.
15. Prasad Agrawal, K. (2023). Towards adoption of generative AI in organizational settings. *Journal of Computer Information Systems*, 1-16.