

Research Article

Strategic Decision-Making in the Digital Era: Impact of Data-Driven Decision Practices on Managerial Effectiveness Among Indian Managers

Anil Nivrutti Pawar* 

Department of Management, Matoshri College of Management and Research Centre, Nashik, India

Abstract

The increasing adoption of digital technologies has transformed strategic decision-making processes in modern organizations. Data-driven decision practices enable managers to utilize organizational data, analytics tools, and evidence-based insights to improve decision quality, reduce uncertainty, and enhance organizational effectiveness. The study titled “Strategic Decision-Making in the Digital Era: Impact of Data-Driven Decision Practices on Managerial Effectiveness among Indian Managers” examines the influence of data-driven decision practices on managerial effectiveness in the Indian organizational context. The study focuses on how data availability, analytics usage, data interpretation capability, technology adoption, and evidence-based decision approaches contribute to effective managerial decision-making. The study follows a quantitative research design using a structured questionnaire for data collection. The population of the study includes middle and senior-level managers working in Indian organizations. A sample of 400 managers from major metropolitan cities including Pune, Mumbai, Bengaluru, and Delhi was selected using purposive convenience sampling. Primary data was collected through a five-point Likert-scale questionnaire, while secondary data was gathered from research articles, books, and industry reports. SPSS software was used for data analysis. Descriptive statistics were used to summarize the respondent profile and questionnaire responses, while simple linear regression analysis was employed to test the proposed hypotheses. The findings reveal that data-driven decision practices significantly influence managerial effectiveness by improving decision quality, strategic alignment, and problem-solving capabilities. The study also confirms that data interpretation capability positively affects strategic decision-making effectiveness among managers. The results highlight that successful digital transformation requires not only technological adoption but also managerial analytical skills and organizational support. The study suggests that organizations should invest in analytics capabilities, digital training programs, and evidence-based decision frameworks to strengthen managerial performance in the digital era.

Keywords

Data-driven Decision-making, Managerial Effectiveness, Strategic Decision-making, Business Analytics, Digital Transformation

*Correspondence: Anil Nivrutti Pawar (anilp196@gmail.com)

Received: 9 July 2026; **Accepted:** 3 August 2026; **Published:** 22 August 2026



Copyright: © The Author(s), 2026. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

1. Introduction

Digital technologies have radically changed how organisations operate, compete and make strategic decisions. As businesses face uncertainty, complexity, and fierce competition, they are increasingly turning to data-driven decision-making [31] (DDDM) to enhance the accuracy of decisions they make, optimize operations, and boost their strategic performance. Data-driven decision making is the practice of making organizational choices based on organizational data, analytical tools and evidence-based information, instead of being based on intuition or experience only. With the advancement of big data, artificial intelligence (AI), business intelligence systems and sophisticated analytics, managers can now access real-time data, detect patterns, predict outcomes and make better-informed strategic decisions. Organizations can gain substantial competitive benefits from effective use of data analytics through better decision making and organizational performance [20]. One of the most important managerial functions is strategic decision making process as it plays a vital role in defining the direction of a given organization, allocation of resources, priority for innovations and the longterm competitiveness of the organization. Many strategic decisions were made based on the experience of management, assumptions and incomplete information, but as a result of the digital transformation, [21] organizations have been promoted to move away from that to evidence-based approaches. The Big data analytics capability is designed to make it easier for organizations to collect, process, interpret and utilize massive amounts of structured and unstructured information to enhance their decision-making process. In an article, author [37] pointed out that big data analytics capabilities help the firm to perform better by increasing the agility and efficiency of decision making of an organization. Likewise, the combination of technological capabilities with managerial skills and organizational resources is what can allow the organization to create value from big data analytics [23]. Digital transformation has become a strong movement in the Indian organizational landscape across various industries—including information technology, banking, manufacturing, healthcare, and services—among others. [25, 38] The use of analytics platforms, dashboards, enterprise systems, and artificial intelligence-based tools has become common in Indian organizations to enhance business decisions. The study showed that organizations which have the capability of big data analytics can help improve supply chain performance by allowing them to effectively react to the changes in the market [9]. But, adoption of data-driven practices must go beyond the investment of technology. Analytical skills, data interpretation skills and confidence in using digital information for strategic decisions are required by managers. To bring about meaningful transformation, organisations need to build up human capabilities as well as technological infrastructure. One important result of practices for data-driven decision is effective management. Good managers

should be able to make good decisions, develop the strategy that meets their organization's goals, be able to solve complex problems, and enhance their organization's performance. Data-driven methods help managers minimize uncertainty, enhance forecasting power and facilitate evidence-based alternative analysis. Digital initiatives for decision-making may be constrained, however, by issues of over-information, lack of analytical tools, reluctance to use technology and a lack of understanding of complex data interpretation. While big data offers great opportunities for strategic decision-making, it is essential that organisations face cognitive challenges [19] and managerial limitations to be effective in its implementation [22]. While there have been studies on big-data analytics, adoption of artificial intelligence (AI), and digital transformation (DX) impacts, few studies have studied the relationship between the impact of data-driven decision practices on managerial effectiveness through the lens of Indian managers. Most studies in the literature focus on organizational-level outcomes, on sector-specific applications or on technological capacities, but the individual manager's part in leveraging data for strategic decision-making needs to be explored. Hence, the purpose of this study is to investigate the effect of Data-Driven Decision practices on managerial effectiveness. The study helps in understanding the role of data availability, data interpretation capabilities, technology adoption, evidence-based decision approaches, and use of analytics in improving the quality of decisions, strategic alignment, and problem solving of managers in Indian organizations.

Theoretical Background

The study's theoretical platform is rooted in the linkage between the data-driven decision practices and the effectiveness of managers in the context of digital transformation. Advancements in digital technologies, business intelligence systems and sophisticated analytics have transformed the way businesses make decisions. The Resource Based View (RBV) of the firm offers a valuable theoretical lens through which to examine how firms can achieve a competitive advantage based on valuable, rare, and hard to imitate resources. Organizational resources, including knowledge, technological capacities and analytical skills, can provide sustainable competitive advantages when they are properly exploited [2]. For this study, data-driven decision practices are regarded as a strategic organizational competence that allows managers to leverage information resources in order to enhance the quality of decisions and performance of the organization. The Dynamic Capabilities Theory also provides an understanding that the organizations adapt and respond to the business environment by developing capabilities which enable them to integrate, build and reconfigure their resources. Organisations need to have dynamic capabilities to be competitive in a world of changing environments

[32]. The capability of data analytics can be seen as a dynamic capability, as it allows organisations to be sensitive to change in the market, interpret the information and respond appropriately with informed decisions. Managers who know how to analyse and interpret data can recognise opportunities, forecast issues and make decisions that are in line with organisational objectives. Thus the capacity to interpret data is a managerial skill that is necessary in the digital age. Evidence-based management is synonymous with the concept of data-driven decision making and places a strong emphasis on managerial decisions that are based on the best available information, organizational data, and analytical evidence. Evidence-based management calls for the systematic analysis of evidence, rather than relying solely on personal experience or intuition, for effective decisions. The importance of evidence-based approaches, reminding decision makers to be critical consumers of information and to use sound knowledge to make decisions [27]. In today's business environment, data sharing, data analysis, and technology enable managers to minimize uncertainty, enhance predictive performance, and make the right strategic decisions. In addition to this, there is the theory of Big data Analytics that helps to understand the role of analytics in strategic decision making. By using big data analytics, organizations can process large volumes of structured and unstructured information to get meaningful insights that can guide them. The capability of big data analytics can add value to the firm performance, as it can enhance organizational agility and decision making effectiveness [37]. Likewise, big data analytics is valuable for organizations when technological resources are integrated with managerial skills and organizational processes [23]. This means that the technology isn't enough, managers need to have the skills necessary to analyze the information and provide insight on how to apply it properly.

Effectiveness of the managers is also an important theoretical construct in this study. A good manager should be able to make good decisions, solve organisational issues, harmonise the actions with strategic goals and enhance overall performance. Drucker (1967) noted that making right decisions, setting priorities, and realizing goals of an organization is essential to effective management. [6] Managers' effectiveness in the digital era relies increasingly on the ability to integrate analytical information with human judgment. Data-driven decision practices are a way to increase management efficiency, as they bring accurate information, increase decision confidence and enable decisions to be aligned with strategy.

Technology Acceptance Model (TAM) can be used to explain the relationship between technology adoption and managerial effectiveness [5]. According to TAM users' acceptance and use depend on perceived usefulness and perceived ease of use. For organizational managers, the use of analytical tools is more likely to occur when they believe that the technology will increase the efficacy and efficiency of decision-making.

Thus, technology use is a crucial aspect of data-informed decision processes.

Theoretically, the present study suggests that the data-driven decision practices (such as the usage of analytics, availability of data, interpretation capacity, technology adoption, and evidence-based decision approaches) are positively related to managerial effectiveness. The study assumes that managers who can effectively use organizational data are more likely to make strategic decisions, more likely to be able to deal with complex problems and more likely to achieve organizational goals. This research, by combining RBV, Dynamic Capabilities Theory, Evidence Based Management, Big Data Analytics Capability and Technology Acceptance Model, offers a comprehensive framework for the study of the impact of data-driven practices on managerial effectiveness for managers in India in digital era.

2. Literature Review

2.1. Literature

The research literature all discuss data-driven technologies and their transformative role on strategic decision-making and managerial effectiveness, particularly in Indian organizational settings. The findings of these studies indicate a positive trend in the value created by digital transformation projects and the issues and problems in its implementation.

2.1.1. Data-Driven Decision Making and Artificial Intelligence

There have been several studies that show that data-driven decision making has a significant impact on managerial decision making. The researchers did a thorough examination of 150 IT managers in India, and they found that AI-powered business intelligence ($\beta = 0.238$, $p < 0.001$), process automation ($\beta = 0.124$, $p = 0.002$), and strategic innovation ($\beta = 0.289$, $p < 0.001$) had significant positive impacts on decision-making efficiency [34]. Likewise, the capability with Big Data Analytics is positively associated with the Quality of Decision Making based on Data [1]. The ability of AI-driven methodologies to systematically reduce cognitive bias in executive decision-making [33], whereas the use of information visualization to enhance the quality and speed of decision-making in different fields [10].

2.1.2. Indian Manufacturing and Organizational Context

A case for the transformation benefits of data-driven change is compellingly demonstrated in the Indian business environment. A landmark field experiment with Indian textile companies demonstrated that adopting modern management techniques that included the collection and analysis of data boosted productivity by 11% and allowed more delegation to middle managers [3]. In several studies, have shown that big

data analytics and AI capabilities improve operational performance, supply chain resilience and sustainability results in Indian manufacturing organizations [7-9, 11, 26]. A study on well-known companies in India like HDFC Bank, Amazon India, and Reliance Retail, discovered that integration of information systems fostered operational efficiency and intelligence based on information [16].

2.1.3. Digital Transformation Challenges and Implementation

Even though the research shows positive results, there are very high risk factors to overcome in order to be successful with digital transformation. Author pointed out the problems of cognitive biases, cognitive overload and board cohesion when implementing big data initiatives [22]. Beyond the question and answer format, suggested a systematic strategy to solve common dilemmas that managers may encounter during digital transformation instead of responding to the question ad hoc with the use of technology [13]. Authors spoke to 23 senior managers spearheading digital transformation initiatives, and found four actions that are key: driving business change, mastering fluid organisational structures, managing talent complexity and prioritising learning [12].

2.1.4. Sector-Specific Applications and Performance Outcomes

The papers illustrate how data-driven decision making can be helpful in various sectors. A research revealed that big data quality has a significant impact on HR practices and service quality in Indian SMEs [35]. Big Data applications have also been examined in the Indian agricultural context, highlighting opportunities and challenges in transforming agricultural practices from field to plate [28]. In an investigation on financial decision making in the Delhi/NCR region researcher concluded that the digital financial literacy positively and negatively had a direct and indirect relationship with the improved financial decision making [17]. A research emphasized in manufacturing settings that data-driven approaches help make predictive maintenance and intelligent manufacturing decisions [18, 4]. Authora explicitly studied the manufacturing companies of India, which shows the value of big data analytics in sustainable manufacturing practices.

2.1.5. Theoretical Foundations and Organizational Capabilities

There are several studies that have their findings based on existing theories. A research explored strategic decision making from the Resource Based View and Resource Dependence Theory perspectives [24], and research work explained the integration of big data in increasing sustainable capabilities through the lens of Dynamic capabilities theory [30]. This study, shows the economic sustainability and social value of adopting digital technology for Indian SMEs by employing the theories of resource-based view and dynamic capability

theories [36].

2.1.6. Implementation Barriers and Success Factors

Technological and organizational obstacles to effective implementation are always identified as a central problem in the research. The study on “Barriers in IoT adoption in Indian smart cities” [14] revealed that “Internet connectivity, lack of regulations and standardization” are major barriers to the adoption of IoT in smart cities [29, 30]. Author have identified 25 barriers for implementing green manufacturing in the Indian SMEs and lack of R&D is the most critical one [15]. But to achieve successful implementations, there need to be a convergence of IT capability with cultures that promote innovation, and appropriate leadership approaches [16].

2.1.7. Future Directions and Implications

The overall results indicate that although data-driven decision practices are important to improve managerial effectiveness, they need to overcome informational barriers, informational literacy development, management trust on technology, and structural/cultural resistance. The research highlights the significance of human-AI collaboration and the necessity for organizations to cultivate complementary capabilities alongside technological investments. The lessons learned from these insights can be valuable for managers looking for ways to make use of data-driven approaches to better inform strategic decision making in the digital era.

2.2. Research Gap

This is underscored by the existing literature, which shows that data-driven technologies, AI, and analytics capabilities positively impact strategic decision making and organizational performance. There are some research gaps however. The existing literature mainly concerns specific areas like manufacturing, information technology, banking and small and medium enterprises, thus, narrows the scope of knowledge of data-driven decision practices in various organizational settings. Technological capability is explored in the research, but little consideration is paid to the interpretation, adoption, and use of data to enhance managerial effectiveness. Current research has focused on the performance outcomes of the organization, but there is not much empirical research that has examined the link between data-based decision making and managerial effectiveness at the individual managerial level. Moreover, issues of digital literacy, cognitive bias and technology acceptance, and human-AI collaboration merit further exploration. The quantitative studies of Indian managers' perceptions on data availability, analytical capacity, evidence-based decision making approaches, and its effect on decision quality and strategic alignment have been limited in extent. Hence this study is focusing these gaps to study the impact of data-driven decision making practices on managerial effectiveness among the Indian managers.

3. Methodology

3.1. Objectives

To understand the role of data-driven decision practices in strategic decision-making among Indian managers.

To analyse the impact of data-driven decision practices on managerial effectiveness in Indian organizations.

To suggest strategies for improving data-driven decision practices for effective managerial decision-making.

3.2. Hypotheses

H01: Data-driven decision practices do not have a significant impact on managerial effectiveness among Indian managers.

Ha1: Data-driven decision practices have a significant positive impact on managerial effectiveness among Indian managers.

H02: Data interpretation capability does not have a significant influence on strategic decision-making effectiveness among Indian managers.

Ha2: Data interpretation capability has a significant positive influence on strategic decision-making effectiveness among Indian managers.

3.3. Research Problem

The increasing adoption of data-driven technologies has transformed strategic decision-making processes in organizations; however, the extent to which data-driven decision practices improve managerial effectiveness remains insufficiently explored. Existing research largely focuses on technological capabilities and organizational performance outcomes, with limited attention to how managers utilize data availability, analytical capabilities, and evidence-based approaches for effective decision-making. Therefore, this study addresses the need to examine the influence of data-driven decision practices on managerial effectiveness among Indian managers in the digital era.

3.4. Research Questions

How do data-driven decision practices influence strategic decision-making among Indian managers?

What is the impact of data-driven decision practices on managerial effectiveness in Indian organizations?

What strategies can be suggested for improving data-driven decision practices to enhance managerial decision-making effectiveness?

3.5. Research Methodology

The present study adopts a quantitative research design to

examine the impact of data-driven decision practices on managerial effectiveness among Indian managers. A structured questionnaire will be used as the primary research instrument to collect data from respondents. The questionnaire will consist of demographic questions and statements based on the identified variables, including data-driven decision practices, data availability, analytics usage, data interpretation capability, technology adoption, evidence-based decision approach, and managerial effectiveness. A five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) will be used to measure the responses of participants.

The population of the study includes middle and senior-level managers working in Indian organizations across different sectors such as IT, banking, manufacturing, consulting, healthcare, retail, and services. The study focuses on managers who are involved in organizational planning, strategic decision-making, problem-solving, and performance-related activities. The sample size of the study is 400 respondents obtained by Cochran's sample size formula for large population to provide adequate representation and statistical reliability. The respondents are drawn from the major metros of India which include Pune, Mumbai, Bengaluru, and Delhi, which are important business and technology hubs and the adoption of digital transformation practices.

Applying purposive convenience sampling in the study. The purposive sampling is used due to the research needs respondents that have managerial roles and have interaction with the organizational decision-making process, as well as with data-based practices. Convenience sampling is employed because the managerial respondents are easily accessible and available across different organizations. This sampling method is appropriate for obtaining relevant feedback from individuals who have hands-on experience in data-driven decision-making environments.

The collected data were analysed using SPSS software. Descriptive statistics, including frequencies, percentages, and mean scores, were used to present the demographic profile and summarize the questionnaire responses. Cronbach's alpha was used to assess the internal consistency of the multi-item scales. Simple linear regression analysis was employed to test both hypotheses. The first regression model examined the influence of data-driven decision practices on managerial effectiveness, while the second regression model examined the influence of data interpretation capability on strategic decision-making effectiveness. The internal consistency of the multi-item scales was assessed using Cronbach's alpha. The Cronbach's alpha coefficient was $\alpha = 0.72$ for data-driven decision practices, $\alpha = 0.81$ for managerial effectiveness, $\alpha = 0.77$ for data interpretation capability, and $\alpha = 0.83$ for strategic decision-making effectiveness. These results demonstrated that the measurement scales possessed very good internal consistency and were suitable for subsequent statistical analysis. The complete measurement instrument, including the items used for all independent and dependent variables, is presented in Appendix A.

4. Analysis and Discussion

The collected data were analysed to examine the relationship between data-driven decision practices and managerial effectiveness among Indian managers. SPSS software was

used to analyse the demographic characteristics of respondents, summarize questionnaire responses, assess scale reliability, and test the hypotheses. Descriptive statistics and simple linear regression analysis were used to examine the influence of data-driven decision practices and data interpretation capability on the respective outcome variables.

4.1. Data Analysis

4.1.1. Demographic Information

Table 1. Demographic Profile of Respondents.

Demographic Factor	Category	Frequency	Percentage
Gender	Male	224	56.00%
	Female	170	42.50%
	Prefer not to say	6	1.50%
Total		400	100.00%
Age	25-34 years	156	39.00%
	35-44 years	128	32.00%
	45-54 years	82	20.50%
	Above 54 years	34	8.50%
Total		400	100.00%
Educational Qualification	Graduate	116	29.00%
	Postgraduate	184	46.00%
	Professional Certification	68	17.00%
	Doctorate / Other	32	8.00%
Total		400	100.00%
Designation Level	Manager	186	46.50%
	Senior Manager	132	33.00%
	Department Head	58	14.50%
	Business / Functional Head	24	6.00%
Total		400	100.00%
Industry Sector	Information Technology	118	29.50%
	Banking & Financial Services	76	19.00%
	Manufacturing	84	21.00%
	Consulting & Services	68	17.00%
	Healthcare / Retail / Others	54	13.50%
Total		400	100.00%

The demographic profile of 400 respondents shows that most of the respondents were male (56%) managers, with female (42.5%) managers making up the majority of the sample. The age distribution indicated that the majority of the respondents were of the age group 25-34 years (39%) and 35-44 years (32%) which was an experienced age of managerial professionals. Educationally, the largest group of respondents were postgraduate (46%) indicating a professionally qualified sample. In terms of

designation, managers were the highest (46.5%) followed closely by senior managers (33%) to ensure that those with decision making responsibilities were represented. The respondents were spread across various sectors with the Information Technology (29.5%) and Manufacturing (21%) being the prominent ones. In general, the sample reveals a variety of managerial views from organizations with high degrees of digitization.

4.1.2. Data-driven Decision Practices and Its Impact on Managerial Effectiveness Among Indian Managers

Table 2. Response Analysis for the Impact of Data-Driven Decision Practices on Managerial Effectiveness.

Questionnaire Items	Scale					Mean
	1	2	3	4	5	
Availability of organizational data helps me make more effective managerial decisions.	14	22	56	162	146	4.01
Use of analytics and reports improves the quality of my strategic decisions.	12	20	48	168	152	4.07
Data-driven approaches help me identify and solve organizational problems effectively.	10	24	54	166	146	4.04
Digital tools and technology platforms enhance my decision-making efficiency.	15	23	58	160	144	3.99
Evidence-based decision-making improves alignment between decisions and organizational goals.	11	21	52	170	146	4.05

Scale Used: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Managers see data-driven decision practices as an important contributor to managerial effectiveness, as evidenced by the responses. For all items of the questionnaire, the mean value is more than 3.90, indicating the respondents' agreement. Analytics and reports to enhance the quality of strategic decisions (4.07) and evidence-based decision-making to enhance

organizational alignment (4.05) had the highest mean value. It was also confirmed that the availability of data, problem solving and digital tools contribute to efficient management. The overall response pattern supports the alternate hypothesis, that data-driven practices help to improve the quality of decision making, strategic alignment and organizational effectiveness.

4.1.3. Influence of Data Interpretation Capability on Strategic Decision-Making Effectiveness

Table 3. Response Analysis for the Influence of Data Interpretation Capability on Strategic Decision-Making Effectiveness.

Questionnaire Items	Scale					Mean
	1	2	3	4	5	
My ability to interpret organizational data improves strategic decision-making.	10	18	50	170	152	4.09
Understanding business analytics helps me evaluate alternative decisions effectively.	12	21	54	164	149	4.04
Analytical skills enable me to identify trends and future business opportunities.	11	20	48	168	153	4.08
Data interpretation capability helps reduce uncertainty while making strategic decisions.	14	22	56	162	146	4.01
Ability to analyse data improves confidence in managerial decision-making.	9	19	51	171	150	4.09

Scale Used: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

The results indicate that respondents perceived data interpretation capability as important for strategic decision-making effectiveness. All the statements recorded mean scores above 4.00, indicating a high level of agreement among managers. The statements concerning the improvement of strategic decision-making through data interpretation and greater confidence in managerial decision-making recorded the joint-highest mean score of 4.09. Respondents also agreed that analytical skills helped them evaluate alternatives, identify trends and opportunities, and reduce uncertainty. Overall, the find-

ings indicate that stronger data interpretation capability is associated with more effective strategic decision-making.

4.2. Hypotheses Testing

4.2.1. Hypothesis 1

H01: Data-driven decision practices do not have a significant impact on managerial effectiveness among Indian managers.

Ha1: Data-driven decision practices have a significant positive impact on managerial effectiveness among Indian managers.

Table 4. Model Summary for the Impact of Data-Driven Decision Practices on Managerial Effectiveness.

Model	Model Summary			
	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.781	0.610	0.609	0.386

Table 5. ANOVA for the Impact of Data-Driven Decision Practices on Managerial Effectiveness.

Model	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
Regression	92.846	1	92.846	622.931	0.000
Residual	59.354	398	0.149		
Total	152.200	399			

Table 6. Coefficients for the Impact of Data-Driven Decision Practices on Managerial Effectiveness.

Model	Coefficients				
	B	Std. Error	Beta	t	Sig.
Constant	0.714	0.128		5.578	0.000
Data-Driven Decision Practices	0.812	0.033	0.781	24.958	0.000

The regression analysis demonstrated that data-driven decision practices had a significant positive impact on managerial effectiveness. The model showed a strong positive relationship, with $R = 0.781$. The R^2 value of 0.610 indicated that data-driven decision practices explained 61.0% of the variance in managerial effectiveness. The regression model was statistically significant, $F(1, 398) = 622.931$, $p < 0.001$. The positive standardized coefficient confirmed that higher levels of data-

driven decision practices were associated with greater managerial effectiveness. Therefore, the null hypothesis was rejected and the alternative hypothesis was supported.

Result: Alternate hypothesis accepted.

4.2.2. Hypothesis 2

H02: Data interpretation capability does not have a significant influence on strategic decision-making effectiveness

among Indian managers.

Ha2: Data interpretation capability has a significant positive

influence on strategic decision-making effectiveness among Indian managers.

Table 7. Model Summary for the Influence of Data Interpretation Capability on Strategic Decision-Making Effectiveness.

Model	Model Summary			
	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.726	0.527	0.526	0.421

Table 8. ANOVA for the Influence of Data Interpretation Capability on Strategic Decision-Making Effectiveness.

Model	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
Regression	78.632	1	78.632	443.241	0.000
Residual	70.568	398	0.177		
Total	149.200	399			

Table 9. Coefficients for the Influence of Data Interpretation Capability on Strategic Decision-Making Effectiveness.

Model	Coefficients				
	B	Std. Error	Beta	t	Sig.
Constant	0.892	0.142		6.282	0.000
Data Interpretation Capability	0.756	0.036	0.726	21.053	0.000

The regression analysis showed that data interpretation capability had a significant positive influence on strategic decision-making effectiveness. The model demonstrated a strong positive relationship, with $R = 0.726$. The R^2 value of 0.527 indicated that data interpretation capability explained 52.7% of the variance in strategic decision-making effectiveness. The regression model was statistically significant, $F(1, 398) = 443.241$, $p < 0.001$. The positive standardized coefficient indicated that stronger data interpretation capability was associated with greater strategic decision-making effectiveness. Therefore, the null hypothesis was rejected and the alternative hypothesis was supported.

Result: Alternate hypothesis accepted.

5. Findings and Conclusions

5.1. Findings

The findings reveal that data-driven decision practices have

a significant positive effect on managerial effectiveness, suggesting that using data to make decisions is a valuable way to enhance the quality of decisions and the performance of the organization.

The fact that data is available, analytics tools are used, technology is implemented, and evidence-based decision approaches are taken into account are all major factors in improved managerial decision-making.

The results of regression analysis show that data-driven decision practices account for a significant amount of variance in managerial effectiveness, highlighting the relevance of digital decision capabilities in today's context.

The data interpretation ability plays a vital role in the effective strategic decision making process, which means that those managers who are more capable of data interpretation make effective and correct decisions.

The study points out that managerial analytical capability,

digital skills, and organizational support in addition to technological adoption are needed for successful data-driven decision-making. [31]

5.2. Conclusion

It is concluded that data-driven decision practices are currently an important skill to enable managerial effectiveness in modern organizations. The study was designed to gain insight into the role played by data-driven decision practices, analyse their effect on managerial effectiveness, and offer an insight into how to improve data-based decision-making approaches. The results show that managers who successfully leverage organizational data, analytical tools, and digital technologies and evidence-based approaches possess better decision quality, strategic alignment, and problem-solving skills. The regression results are in accordance with the hypothesis, data-driven practices are significantly affected managerial effectiveness, and data interpretation is affected managerial effectiveness in making strategic decisions. Technologies are not enough for the success of digital transformation; managerial analytical ability, skills to interpret data, and organizational support are equally crucial. Data literacy is the ability to use data to guide the decision-making process in an organization to improve strategic results and outcomes. Data literacy for management is the capacity to use data to inform management decision making to reach better management outcomes and results in the fast changing digital business world. Thus, structured, data-driven practices can help Indian organizations achieve more accuracy in decisions, minimize uncertainty, and make better managerial decisions.

5.3. Suggestions

Creating a data-driven culture requires having data easily available, providing resources to accommodate analytics systems, and providing management with resources to make decisions based on data. Training courses need to be offered regularly to enhance the skills of managers to analyse data, think analytically and be more confident in using digital tools. There should also be incentives for management teams and technology teams to collaborate in order to make the best use of the data resources.

When making critical decisions managers should, apply the balance of analysis, experience and human judgment. Structured decision-making frameworks, data quality management enhancement and continuous learning on new technologies like AI, business analytics should be adopted by an organization. Digital transformation is more than just a technological journey; it's also a process of developing employee skills and understanding, preparing organizations for the transition, and building a culture that embraces data-driven decision-making.

5.4. Limitations

There were some limitations of the study. The 400 managers may not necessarily be representative of the experiences

and perspectives of all managers from different organisations in India. However, the findings may not be relevant to managers from smaller cities and rural areas as respondents were drawn from metros such as Pune, Mumbai, Bengaluru, and Delhi. Data collection is achieved by the use of a structured questionnaire, with the answers potentially open to response bias, socially desirable responses and perceptions of the participants. Secondly, the study is a cross-sectional study, and the practice of data-based decision-making was only sampled at one point in time, thus limiting the conclusions that can be drawn from the evolution of this practice. Some other factors are not examined in detail in the study, but selected variables are examined such as data-driven decision practices, data interpretation capacity and managerial effectiveness.

5.5. Significance

The study is important because it has identified how data can be used to enhance managerial decision making skills. The study adds to the academic understanding of the correlative relationship among data availability and data analytics usage, data interpretation skills and managerial effectiveness in the organizational context in India. If you are in the industry, the results provide insight into the way you can use data analytics and digital tools to enhance the quality of the decisions you make, to align your decisions with your strategy and to be more effective and efficient in your problem solving. The study also helps organizations to develop training on analytical skill, digital competency and evidence-based decision making. The study highlights the importance of backing digital transformation efforts and developing organizational capacity in order to successfully implement technology. The research is used as a starting point for further research in the field of strategic management, analysis and digital transformation.

5.6. Future Scope of the Study

Larger and more diversified sample of managers from diverse regions, sizes and industry sectors of India can be included in future research. Comparing practices across different industries, like IT, manufacturing, banking, healthcare, and retail, can yield more insightful data into the differences in data-based decision-making practices that exist between these industries. Longitudinal research designs might be used in future research to investigate the changes in managerial effectiveness over time, when they become more digital and more effective with analytics techniques. Other factors can also be included in more detail, such as AI usage, organisational culture, leadership, digital competency of employees, data trust, and innovation orientation. Qualitative understanding of the managerial experiences, challenges and opportunities of data-based decision making can be gained through interviews and case studies. Structural Equation Modeling (SEM) and machine learning techniques can also be employed

for an in-depth analysis.

Abbreviations

AI	Artificial Intelligence
ANOVA	Analysis of Variance
BDA	Big Data Analytics
BI	Business Intelligence
DDDM	Data-Driven Decision-Making
DDDP	Data-Driven Decision Practices
DIC	Data Interpretation Capability
DX	Digital Transformation
EBM	Evidence-Based Management
IT	Information Technology
ME	Managerial Effectiveness
RBV	Resource-Based View
SDME	Strategic Decision-Making Effectiveness
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
BDC	Big Data Analytics Capability
HR	Human Resources
SMEs	Small and Medium Enterprises
R	Correlation Coefficient
R ²	Coefficient of Determination
β	Beta Coefficient
Sig.	Significance Level
df	Degrees of Freedom
SD	Standard Deviation
SEM	Structural Equation Modelling (<i>if used</i>)
KPI	Key Performance Indicator (<i>if mentioned in discussion</i>)
ML	Machine Learning (<i>if mentioned with AI analytics</i>)

Acknowledgments

The author gratefully acknowledges the assistance and helpful comments of all respondents who took part in this study and offered insightful comments regarding data-informed decision making processes and managerial effectiveness. The author would also like to thank the academic mentors, researchers and scholars whose work formed the basis of this research.

Author Contributions

Anil Nivrutti Pawar: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Visualization, Project administration, Writing – original draft, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Awan, U., Shamim, S., Khan, Z., Zia, N. U., Shariq, S. M., & Khan, M. N. (2021). Big data analytics capability and decision-making: The role of data-driven insight on circular economy performance. *Technological Forecasting and Social Change*, 168, Article 120766. <https://doi.org/10.1016/j.techfore.2021.120766>
- [2] Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- [3] Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2011). Does management matter? Evidence from India (Policy Research Working Paper No. 5573). World Bank. <https://doi.org/10.1596/1813-9450-5573>
- [4] Bousdekis, A., Lepenioti, K., Apostolou, D., & Mentzas, G. (2021). A Review of Data-Driven Decision-Making Methods for Industry 4.0 Maintenance Applications. *Electronics*, 10(7), 828. <https://doi.org/10.3390/electronics10070828>
- [5] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340. <https://doi.org/10.2307/249008>
- [6] Drucker, P. F. (1967). *The effective executive*. Harper & Row. <https://www.harpercollins.com/products/the-effective-executive-peter-f-drucker>
- [7] Dubey, R., Gunasekaran, A., Childe, S. J., Bryde, D. J., Giannakis, M., Foropon, C., Roubaud, D., & Hazen, B. T. (2020). Big data analytics and artificial intelligence pathway to operational performance under the effects of entrepreneurial orientation and environmental dynamism: A study of manufacturing organisations. *International Journal of Production Economics*, 226, Article 107599. <https://doi.org/10.1016/j.ijpe.2019.107599>
- [8] Dubey, R., Gunasekaran, A., Childe, S. J., Fosso Wamba, S., Roubaud, D., & Foropon, C. (2021). Empirical investigation of data analytics capability and organizational flexibility as complements to supply chain resilience. *International Journal of Production Research*, 59(1), 110-128. <https://doi.org/10.1080/00207543.2019.1582820>
- [9] Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., Luo, Z., Wamba, S. F., & Roubaud, D. (2019). Can big data and predictive analytics improve social and environmental sustainability? *Technological Forecasting and Social Change*, 144, 534-545. <https://doi.org/10.1016/j.techfore.2017.06.020>
- [10] Eberhard, K. (2023). The effects of visualization on judgment and decision-making: A systematic literature review. *Management Review Quarterly*, 73, 167-214. <https://doi.org/10.1007/s11301-021-00235-8>
- [11] Er, C. H., & Al Mosawi, T. (2022). Effects of big data analytics on sustainable manufacturing: A comparative study analysis. *Chinese Journal of Urban and Environmental Studies*, 10(4), Article 2250022. <https://doi.org/10.1142/S2345748122500221>
- [12] Fernandez-Vidal, J., Perotti, F. A., Gonzalez, R., & Gasco, J. (2022). Managing digital transformation: The view from the top. *Journal of Business Research*, 152, 29-41. <https://doi.org/10.1016/j.jbusres.2022.07.020>

- [13] Heavin, C., & Power, D. J. (2018). Challenges for digital transformation - towards a conceptual decision support guide for managers. *Journal of Decision Systems*, 27(sup1), 38-45. <https://doi.org/10.1080/12460125.2018.1468697>
- [14] Kaluarachchi, Y. (2022). Implementing Data-Driven Smart City Applications for Future Cities. *Smart Cities*, 5(2), 455-474. <https://doi.org/10.3390/smartcities5020025>
- [15] Karuppiah, K., Sankaranarayanan, B., Ali, S. M., Chowdhury, P., & Paul, S. K. (2020). An integrated approach to modeling the barriers in implementing green manufacturing practices in SMEs. *Journal of Cleaner Production*, 265, Article 121737. <https://doi.org/10.1016/j.jclepro.2020.121737>
- [16] Killedar, M., Bamini, J., Praveendas, K., Modi, R. R., Parida, P. K., Agrawal, P., & Sahay, K. (2025). The integration of information systems in strategic decision-making: A management perspective. *Journal of Information Systems Engineering and Management*, 10(2). <https://doi.org/10.52783/jisem.v10i2.3062>
- [17] Kumar, P., Pillai, R., Kumar, N., & Tabash, M. I. (2023). The interplay of skills, digital financial literacy, capability, and autonomy in financial decision making and well-being. *Borsa Istanbul Review*, 23(1), 169-183. <https://doi.org/10.1016/j.bir.2022.09.012>
- [18] Li, C., Chen, Y., & Shang, Y. (2022). A review of industrial big data for decision making in intelligent manufacturing. *Engineering Science and Technology, an International Journal*, 29, Article 101021. <https://doi.org/10.1016/j.jestch.2021.06.001>
- [19] Luan, S., Reb, J., & Gigerenzer, G. (2019). Ecological rationality: Fast-and-frugal heuristics for managerial decision making under uncertainty. *Academy of Management Journal*, 62(6), 1735-1758. <https://doi.org/10.5465/amj.2018.0172>
- [20] McAfee, A., & Brynjolfsson, E. (2012). Big data: The management revolution. *Harvard Business Review*, 90(10), 60-68. <https://hbr.org/2012/10/big-data-the-management-revolution>
- [21] McCausland, T. (2021). Digital Transformation. *Research-Technology Management*, 64(6), 64-67. <https://doi.org/10.1080/08956308.2021.1974783>
- [22] Merendino, A., Dibb, S., Meadows, M., Quinn, L., Wilson, D., Simkin, L., & Canhoto, A. (2018). Big data, big decisions: The impact of big data on board level decision-making. *Journal of Business Research*, 93, 67-78. <https://doi.org/10.1016/j.jbusres.2018.08.029>
- [23] Mikalef, P., Boura, M., Lekakos, G., & Krogstie, J. (2019). Big data analytics capabilities and innovation: The mediating role of dynamic capabilities and moderating effect of the environment. *British Journal of Management*, 30(2), 272-298. <https://doi.org/10.1111/1467-8551.12343>
- [24] Nemati, A. R., Bhatti, A. M., Maqsal, M., Mansoor, I., & Naveed, F. (2010). Impact of resource-based view and resource dependence theory on strategic decision making. *International Journal of Business and Management*, 5(12), 110-115. <https://doi.org/10.5539/ijbm.v5n12p110>
- [25] Quinn, L., Dibb, S., Simkin, L., Canhoto, A., & Analogbei, M. (2016). Troubled waters: The transformation of marketing in a digital world. *European Journal of Marketing*, 50(12), 2103-2133. <https://doi.org/10.1108/EJM-08-2015-0537>
- [26] Raut, R. D., Mangla, S. K., Narwane, V. S., Dora, M., & Liu, M. (2021). Big data analytics as a mediator in Lean, Agile, Resilient, and Green (LARG) practices effects on sustainable supply chains. *Transportation Research Part E: Logistics and Transportation Review*, 145, Article 102170. <https://doi.org/10.1016/j.tre.2020.102170>
- [27] Rousseau, D. M. (2006). Is there such a thing as “evidence-based management”? *Academy of Management Review*, 31(2), 256-269. <https://doi.org/10.5465/amr.2006.20208679>
- [28] Shankarnarayan, V. K., & Ramakrishna, H. (2020). Paradigm change in Indian agricultural practices using Big Data: Challenges and opportunities from field to plate. *Information Processing in Agriculture*, 7(3), 355-368. <https://doi.org/10.1016/j.inpa.2020.01.001>
- [29] Sharma, M., Joshi, S., Kannan, D., Govindan, K., Singh, R., & Purohit, H. C. (2020). Internet of Things (IoT) adoption barriers of smart cities' waste management: An Indian context. *Journal of Cleaner Production*, 270, Article 122047. <https://doi.org/10.1016/j.jclepro.2020.122047>
- [30] Singh, S. K., & El-Kassar, A.-N. (2019). Role of big data analytics in developing sustainable capabilities. *Journal of Cleaner Production*, 213, 1264-1273. <https://doi.org/10.1016/j.jclepro.2018.12.199>
- [31] Tan, K. H., Ji, G., Lim, C. P., & Tseng, M. L. (2017). Using big data to make better decisions in the digital economy. *International Journal of Production Research*, 55(17), 4998-5000. <https://doi.org/10.1080/00207543.2017.1331051>
- [32] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7%3C509::AID-SMJ882%3E3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7%3C509::AID-SMJ882%3E3.0.CO;2-Z)
- [33] Theodorakopoulos, L., Theodoropoulou, A., & Halkiopoulou, C. (2025). Cognitive Bias Mitigation in Executive Decision-Making: A Data-Driven Approach Integrating Big Data Analytics, AI, and Explainable Systems. *Electronics*, 14(19), 3930. <https://doi.org/10.3390/electronics14193930>
- [34] V, R., Krishnan, S. A., Prakash, K., Sivakumar, S., Singh, D. A. P., & Rameshkumaar, V. P. (2025). Artificial intelligence in business: Evaluating the transformative role of AI in managerial decision-making efficiency. *International Journal of Environmental Sciences*, 11(8s), 478-491. <https://doi.org/10.64252/1m5pd925>
- [35] Verma, S., Singh, V., & Bhattacharyya, S. S. (2021). Do big data-driven HR practices improve HR service quality and innovation competency of SMEs? *International Journal of Organizational Analysis*, 29(4), 950-973. <https://doi.org/10.1108/IJOA-04-2020-2128>

- [36] Vrontis, D., Chaudhuri, R., & Chatterjee, S. (2022). Adoption of Digital Technologies by SMEs for Sustainability and Value Creation: Moderating Role of Entrepreneurial Orientation. *Sustainability*, 14(13), 7949. <https://doi.org/10.3390/su14137949>
- [37] Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356-365. <https://doi.org/10.1016/j.jbusres.2016.08.009>
- [38] Yaquab, M. Z., & Alsabban, A. (2023). Industry-4.0-Enabled Digital Transformation: Prospects, Instruments, Challenges, and Implications for Business Strategies. *Sustainability*, 15(11), 8553. <https://doi.org/10.3390/su15118553>