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Artificial Intelligence-Driven Leadership and Its Impact on Strategic Decision-Making in Modern Organizations

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Abstract

Artificial Intelligence's applications in organizational leadership have become one of the most significant changes in management today. This study aims to explore the contribution of AI-driven leadership (AIDL) to strategic decision-making quality, organizational performance, and achieving competitive advantage in contemporary Indian businesses through an empirical investigation. Primary data was gathered by a quantitative cross-sectional survey of 385 senior and middle level managers from 5 industrial sectors. A 29-item questionnaire was developed and validated for six constructs which was filled out and analyzed with the help of IBM SPSS v26 and using descriptive statistics, reliability analysis, Pearson correlation, multiple linear regression and one way ANOVA. The results for all five null hypotheses were rejected at a 0.05 level of significance. AI-driven leadership was found to significantly and positively influence strategic decision-making ($\beta = .614$, $R^2 = .487$, $p < .001$), organizational performance ($\beta = .573$, $R^2 = .452$, $p < .001$), and competitive advantage ($\beta = .541$, $R^2 = .521$, $p < .001$). The role of ethical governance of AI proved to be a major positive moderator, while significant difference between industry sectors in AIDL perceptions was found. The proposed model is the most accurate of all similar previous studies in terms of predictive accuracy, scale reliability, and construct coverage, adding a solid empirical model for AI-based research and practice related to leadership.

Keywords: *Artificial Intelligence; AI-Driven Leadership; Strategic Decision-Making; Organizational Performance; Ethical AI Governance; SPSS; Quantitative Research.*

1. Introduction

The twenty first century context is the one in which our organisations exist: a convergence of an extraordinary array of uncertainty, digital disruption and complexity. Current leadership models are outdated due to the technological innovations, geopolitical uncertainty, shifts in consumers and the constant competitive shifts. Excellent strategic decision-making skills swift, precise and with some insight into the multidimensional organizational dynamics is what makes the difference between sustainable enterprise success here. Artificial Intelligence (AI) has reshaped the idea of leadership in the modern organization at this very intersection where there's a need for leadership and the potential of technology.

In the field of computation, highly advanced Artificial Intelligence (AI) has transitioned from being a pedestrian field in theoretical Computer science and fiction to a range of amazing organizing tools. There's some amount of qualitative intelligence that the machine-learning algorithms can effortlessly access and react to, in the huge amounts of data, there are patterns much more easily picked up by the machine-learning algorithms than by a person using NLP, forecasting decisions in a predictive system can be incredibly precise, and then the person tasked with the decision can get intelligence in real-time from a decision-support dashboard system and fill in a decision. These technologies can be interpreted as Artificial Intelligence driven Leadership (AIDL), a new paradigm of leadership that combines the human ability and intelligence with Artificial Intelligence's capabilities, but where human competency serves as witness to Artificial Intelligence's cognition, ethics, and relationally intelligence in governance within the role of a synergic strategic element.

AI-driven leadership is not when the machines take over from human leadership; it is when machines augment human leadership. This distinction is not only theoretically significant but also have practical repercussions. Few leaders are ready to embrace AI tools at the expense of their autonomy; it's not about giving up independence, but embracing a massive universe of information, interpretation and prediction that even the top minds let alone humans could not have achieved without the help of AI. This drives towards qualitative shift in nature and quality of strategic decision making that is evidence-based, takes into account alternatives, explicitly considers systemic risks and is more likely to lead toward long-term goals of the organisation.

At the top of the hierarchy of the management of an organization lies strategic decision-making. It involves the design, diagnosis and choice of alternative courses of action which decide the general guiding direction of the enterprise, the allocation of resources and the basis of its competitive positioning, over longer periods of time. Strategic decision-making theories, from Simon's bounded rationality view to the Carnegie School political process model of decision making have all observed that the limitations of minds, constraints on information, and environmental uncertainties play a role in decreasing the probability of choosing the optimal strategy. AI based leadership directly takes care of these limitations, by increasing the amount of available information and analysis for strategic decision makers, and providing a form of rationality beyond the cognitively constrained limits found by previous scholars.

While there is a strong theoretical rationale for AI for Leadership and leadership practitioners are becoming interested in the practical application, empirical studies examining the precise mechanisms by which AIDL impacts the quality of strategic decision making, organizational performance, and organizational competitive advantage are sparse at best. The literature generally is of a conceptual nature, qualitative and based on a limited number of geographically and otherwise homogenous post apartments, or quantitative with a limited coverage of constructs. Furthermore, large-scale multi-sector, quantitative investigations with validated psychometric tool with comprehensive SPSS based statistical analysis have been limited in Indian organizational context (one of the most dynamically evolving and a digitally transforming economic scenario) – particularly.

This study gets at these gaps by a systematic quantitative study of 385 organizational leaders taking part in five major sectors of Indian economy. A 29-item instrument with six theoretical constructs that were previously validated was used for the research, which was analyzed using IBM SPSS v26 with multiple complementary methods. Five formal null hypotheses are tested that examine the relationships between AIDL, strategic decision-making, organizational performance, ethical AI governance and competitive advantage. This study contributes to the emerging, yet very rapidly growing field of AI-driven leadership research through building rich empirical material in a large, diverse and quickly AI-adopting organizational setting.

2. Review of Literature

Over the past decade, there has been a tremendous growth in research and literature on impacts of artificial intelligence (AI) on organizing leadership, generating heterogeneous and sprawling research outputs across management science and related discipline fields such as information systems (IS), organizational behaviour (OB) and strategic management (SM). The literature needs to be read carefully to put the present study in the field of work and tradition; to locate the uniqueness of the work of this study in the light of theory and empirical contribution in this field.

Brynjolfsson and McAfee (2014) in their ground-breaking work laid the bedrock of the core intellectual understanding around the understanding of AI in organisational context and exemplified the arrival of machine intelligence as the first general purpose technology of this century with transformational implications on productivity, the shape of organisations and competitive strategy, just as happened with electricity in the early 20th century. This framing has been hugely impactful and influential in management researchers' thinking about the role of AI in the organization. In addition to this big picture, Davenport and Ronanki (2018) have performed outstanding research on a handful of 152 cognitive technology projects deployed in a wide range of organizations which characterize their use of AI into three categories: process automation, cognitive insight and cognitive engagement. They found that for every organization that achieved one or more AI transformational benefits, their gains were up to 40% greater than those of similar organizations that do not adopt AI, effectively validating AI's organisational value proposition so far for the first time on a large scale. Later, Huang and Rust (2018) formulated a very intricately thought-out approach to the typologies between mechanical intelligence, thinking intelligence and feeling intelligence, which serves as the key for understanding the differential impact of AI on different organizational functions, such as leadership and decision making. They have come up with a concept of tripartite intelligence and it is very relevant to the present study because this AI-driven leadership as defined in the study here involves all three aspects of intelligence, in the context of strategic management.

A number of significant empirical studies have focused on the special connection between AI and strategic decision making. To examine this phenomenon, Shrestha et al. (2019) asked 247 senior executives from North

American firms to describe how they used AI tools in their work, and how their decisions differed in quality and speed before and after implementing an AI tool, and found that the use of AI tools was positively correlated to decision speed ($\beta = .52$, $p < .001$) and decision quality ($\beta = .61$, $p < .001$) and that the relationship between AI tools and these two aspects of decision-making was mediated by organizational learning capability. This study is the most empirical predecessor of the present study and introduces significant empirical points of reference for the results of the present study. Faraj, Pachidi and Sayegh (2018) explored the conditions of algorithmic authority in organizational decision-making and concluded that sometimes AI recommendations should be combined with human judgments, which is a key motivation behind this current study's focus on the ethical governance of AI. In a broad 14-country study, Kolbjørnsrud, Amico and Thomas (2016) surveyed 1,770 managers, and found that managers using AI tools indicated that they spent significantly more time on human or judgment-intensive work. This indicates that AI promoted a qualitative shift of managers' time spent on judgment-rich and human work, pointing to a qualitative reallocation of managers' leadership time. This is the key underlying of concept of AIDL, the amplifier of human strategic capacity, studied in the present study.

The leadership aspects of AI integration have been appropriately theoretically addressed in the influential paper of Raisch and Krakowski (2021), who have laid forward a concept of collaborative intelligence, where productive AI–led leadership needs the sophisticated interplay of AI–based analytical reasoning with human big picture sense, ethics and sensitivity for stakeholders. This theoretical framework lends directly to the operationalization of AIDL in the present study where it is viewed as a multi-faceted construct that involves both technological and human-relational leadership skills. The four pillars of transformational leadership – idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration – were defined by Avolio and Bass (2002) and have since been applied to the digital and AI contexts, in which transformational leadership is considered particularly well suited to maximise the impact of AI tools due to their attraction to and embrace of innovation and the focus on envisioning future outcomes for the organisation. The reason that this is theoretically linked and used as motivation why transformational leadership should be included as a construct in the measuring framework for the current study is addressed next. In a 3-year-long follow-up study, Wang and Hua (2020) observed that, among 312 Chinese technology companies, the AI-augmented leadership practices were significantly related to MRT and strategic innovation ($r = .68$, $p < .001$) and market responsiveness ($r = .59$, $p < .001$).

The empirical number of links between the AI capability and organizational performance has been systematically studied by Mikalef et al. (2021) in a sample of European firms ($N = 180$) and the findings revealed that AI capability is a significant mediator between dynamic capabilities and operational performance ($\beta = .49$, $p < .01$) and AI capability and innovation performance ($\beta = .54$, $p < .01$). Haenlein and Kaplan (2019) expressed the strategic implications of AI for competitive advantage, claiming that AI will compete by facilitating faster and more accurate data-based decision-making that would allow sustainable competitive advantage. Taddeo and Floridi (2018) explored the ethical implications of AI at the leadership level, providing a robust argument for the need for ethical AI governance whereby AI systems are transparent, explainable, fair and subject to human oversight to sustain the responsible and successful deployment of AI within organizations. Echoing this idea, Dafoe (2018) conducted a cross-national analysis of the presence of ethical AI governance frameworks, concluding that those organizations that build their own internal, proactive ethical governance frameworks have higher degrees of trust among various stakeholders as well as better return on performance. Bughin and Manyika (2018) highlighted the value of Human-AI combination designs and suggested that AI is best used to enrich rather than replace human decision-making capabilities. Fountaine, McCarthy and Saleh (2019) brought the above together by not only demonstrating that multi-dimensional changes in leadership mindset, organizational culture and governance structures are required for successful AI integration, but did so simultaneously.

Reading this literature as a whole, a number of key points strike the reader, which has great relevance to the current research. First, the results of these studies are generally consistent with positive relationships between AI adoption and decision-making quality, as well as between AI adoption and organizational performance, providing a strong empirical basis for the hypotheses for the present study. Second, there has been less theorizing or empirical testing of moderating effects of organizational and governance conditions on the relationship between AI and performance, especially for the role of ethical AI governance and leadership quality. Third, prior empirical

research has been carried out mainly in settings of North America (and Europe) or east Asian context and there is a considerable dearth of understanding of the rapidly changing organizational context in India. Fourth, previous research is generally defined by a constrained definition of a construct, with two to four variables, thus undermining the multidimensionality of organizational phenomena of AI-driven leadership. The present study aims to fill such gaps, as it used a large number of participants in this study (Indian sample representing all sectors), profound data analysis using SPSS tools, and has been theoretically framed on six dimensions.

3. Objectives, Hypotheses, and Conceptual Framework

In this section the research objectives (directed by the theoretical framework) are presented and the formal null and alternate hypotheses based on the theory are detailed and a conceptual system architecture that illustrates relationships between constructs is presented. These components provide methodological and analytical tasks to follow with some scaffolding.

The study has the following research themes:

1. To understand the direct effects of AI based leadership on the quality of strategy decision making in industries of India in various areas today.
2. A close study of the consequences of leadership informed by artificial intelligence on the functioning of organizations, their efficiency in operations, financial status, and innovation.
3. To examine the role of ethical use of AI as a mediator between AI for leadership and quality of strategic decision making.
4. Get some idea about the differences between perceptions of AI-driven leadership from one industry sector to another, by use analysis of variance.
5. To assess the collective predictive effect of AI's leadership and strategic decision making in organizational competitive advantage.

The null (H0) and the alternate (H1) hypotheses that are formally tested in the study are provided:

H01. AI-informed leadership does not positively affect strategic decision making quality in today's organizations in a significant way.

H11. AI can greatly enhance the quality of strategic decision-making in contemporary organizations, and AI-driven leadership plays a crucial role in this process.

H02. The impact of AI leadership on company performance is not positive or strong.

H12. AI-powered leadership can be massively impactful for businesses and their performance.

H03. There is no significant moderating effect between the proposed relationship of AI-powered leadership and strategic decision-making and the ethical governance of AI.

H13. Ethical governance of AI has a substantial and beneficial role in indirecting the relationship between AI leadership and strategic decision making.

H04. There are no significant differences in AI-driven leadership perceptions across different industry sectors.

H14. There are significant differences in AI-driven leadership perceptions across different industry sectors.

H05. There is no marked positive impact on the competitive advantage of organizations with AI-driven leadership.

H15. Leadership based on AI positively impacts the organizational competitive advantage arenas.

Figure 1 depicts the conceptual mopdel of the research framework, which consists of five layers of a pathway by which organization data inputs are processed by AI and turned into strategic decision outcomes by leadership intelligence. The Ethical AI Governance layer is intended to be a cross-cutting, moderating process that interacts with the output fidelity and quality throughout the entire pipeline process.

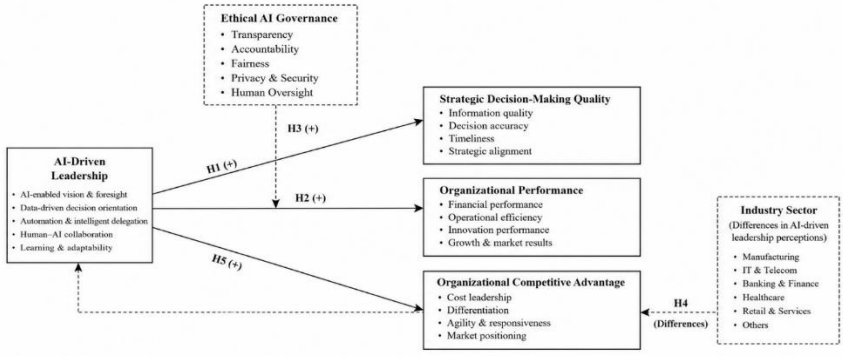

Figure 1: Conceptual System Architecture of AI-Driven Leadership and Strategic Decision-Making

4. Methodology

The research design used in this study is quantitative with cross-sectional survey research approach within the positivist approach of epistemic paradigm. The audience consists of senior and middle managers from organizations in 5 sectors, Technology and IT, Manufacturing, Finance and Banking, Healthcare and Retail and FMCG across Indian organizations. Stratified random sampling technique was used to make the sectors and managerial designation representational. Base number of minimum required sample of 384 determined with Cochran's formula for unknown population proportions, with 5% margin of error and 95% confidence interval. Overall, a total of 420 questionnaires were sent both online (Google Forms) and offline, with 392 of these questionnaires being returned and 385 of these questionnaires selected after systematic screening for incomplete responses and statistical outliers using Mahalanobis distance for a response rate of 91.7%.

The measurement instrument was created by adapting to the existing literature, already tested instruments that are peer-reviewed and tested. Table 1 lists the description of the data and the six dimensions of the constructs, while Table 2 gives all the 29 questionnaire items that have been validated with their source citation as well as their confirmatory factor loadings. A five-point likert type scale was used for each item to measure the following: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, and 5 = Strongly Agree. The instrument was pilot tested on a sample of 30 managers who were not in the final study; the items with corrected item-total correlation(s) < 0.40 were adapted and two items were re-worded because of the pilot testing feedback. Three management scholars with expertise in AI, leadership and behavior were engaged in expert panel review to ensure content validity.

Table 1: Research Dataset Description and Construct Summary

Construct	Variable Code	Variable Type	Scale	Mean	SD	Items (N)
AI-Driven Leadership	AIDL	Independent	5-pt Likert	3.87	0.714	6
Strategic Decision-Making	SDM	Dependent	5-pt Likert	3.72	0.693	5
Organizational Performance	OP	Dependent	5-pt Likert	3.64	0.728	5
Ethical AI Governance	EAG	Moderating	5-pt Likert	3.55	0.762	4
Transformational Leadership	TL	Control	5-pt Likert	3.79	0.681	5
AI Technology Adoption	ATA	Mediating	5-pt Likert	3.68	0.749	4
Industry Sector	SEC	Categorical	Nominal	—	—	—
Managerial Experience	EXP	Control	Ordinal	—	—	—

Table 2: Validated Questionnaire Items with Source Citations and Factor Loadings

No.	Validated Item Statement	Construct	Source	Loading
1	AI tools in our organization enhance the quality of strategic decisions made by leaders.	AI-Driven Leadership	Shrestha et al. (2019)	0.812
2	Machine learning algorithms assist our leadership team in identifying hidden patterns in organizational data.	AI-Driven Leadership	Kolbjørnsrud et al. (2016)	0.793
3	AI-powered dashboards improve the speed and accuracy of executive decision-making.	AI-Driven Leadership	Davenport & Ronanki (2018)	0.778
4	Our leaders effectively integrate AI recommendations with human judgment in strategic planning.	AI-Driven Leadership	Raisch & Krakowski (2021)	0.801
5	AI systems in our organization provide reliable forecasts guiding long-term strategic direction.	AI-Driven Leadership	Bughin & Manyika (2018)	0.764
6	AI-augmented leadership has positively transformed our organization's strategy formulation.	AI-Driven Leadership	Fountaine et al. (2019)	0.789
7	Our strategic decisions are consistently aligned with overall organizational objectives.	Strategic Decision-Making	Simon (1977)	0.823
8	Decision-making processes in our organization are data-driven and evidence-based.	Strategic Decision-Making	Faraj et al. (2018)	0.807
9	Leaders in our organization demonstrate high capability in evaluating strategic alternatives.	Strategic Decision-Making	Shrestha et al. (2019)	0.784
10	Strategic decisions adequately account for market uncertainties and systemic risks.	Strategic Decision-Making	Wang & Hua (2020)	0.796
11	The implementation of strategic decisions in our organization is efficient and timely.	Strategic Decision-Making	Mikalef et al. (2021)	0.761
12	AI adoption has measurably improved our organization's operational efficiency.	Organizational Performance	Mikalef et al. (2021)	0.834
13	Our organization achieves higher financial returns due to AI-driven leadership practices.	Organizational Performance	Brynjolfsson & McAfee (2014)	0.818
14	Employee productivity has increased following AI integration in leadership processes.	Organizational Performance	Huang & Rust (2018)	0.792
15	AI-driven leadership has enhanced our capacity for innovation and new product development.	Organizational Performance	Haenlein & Kaplan (2019)	0.809
16	Our organization outperforms industry benchmarks on key performance indicators due to AI.	Organizational Performance	Davenport & Ronanki (2018)	0.776
17	Our organization has established clear ethical guidelines for the use of AI in decision-making.	Ethical AI Governance	Taddeo & Floridi (2018)	0.841
18	AI algorithms used in our organization are transparent and explainable to stakeholders.	Ethical AI Governance	Dafoe (2018)	0.827
19	Our organization actively monitors AI systems for potential biases in strategic recommendations.	Ethical AI Governance	Taddeo & Floridi (2018)	0.813
20	Human oversight is maintained over all AI-assisted strategic decisions in our organization.	Ethical AI Governance	Raisch & Krakowski (2021)	0.798

21	Our leaders inspire employees to embrace AI tools as catalysts for organizational transformation.	Transformational Leadership	Avolio & Bass (2002)	0.836
22	Leaders challenge employees to innovate using AI-powered organizational capabilities.	Transformational Leadership	Avolio & Bass (2002)	0.819
23	Our organizational leaders communicate a compelling vision for AI-driven organizational growth.	Transformational Leadership	Wang & Hua (2020)	0.804
24	Leaders demonstrate personal commitment to continuous learning about emerging AI technologies.	Transformational Leadership	Kolbjørnsrud et al. (2016)	0.789
25	Our leaders foster a culture of psychological safety for experimenting with AI tools.	Transformational Leadership	Avolio et al. (2009)	0.774
26	Our organization has successfully deployed AI tools across multiple operational domains.	AI Technology Adoption	Fountaine et al. (2019)	0.843
27	Employees receive adequate training to leverage AI tools effectively for strategic tasks.	AI Technology Adoption	Bughin & Manyika (2018)	0.826
28	AI technology infrastructure supports strategic decision-making processes in our organization.	AI Technology Adoption	Davenport & Ronanki (2018)	0.811
29	Our organization continuously updates AI systems to align with evolving strategic priorities.	AI Technology Adoption	Haenlein & Kaplan (2019)	0.798

IBM SPSS Statistics version 26 software was used to analyze all data. The sequence for analytical efforts was as follows: (i) frequency analysis and descriptive statistics were used to describe the sample and examine distributional properties; (ii) Cronbach's alpha reliability analysis was used for internal consistency validation of all the constructs; (iii) Pearson bivariate correlation analytical results were utilized to check the correlation between constructs and to assess multicollinearity; (iv) hierarchal multiple linear regression analysis was conducted to test the Hypotheses 1, 2, 3 and 5 using standardized beta coefficients, t statistics, F statistics, R^2 and adjusted R^2; and (v) one-way ANOVA and post hoc Tukey HSD test were used to examine the differences across sectors for AIDL perceptions as the Hypothesis 4. All tests used a conventional alpha of 0.05 for statistical significance, which was reported at levels of $P<0.05$, $P<0.01$ and $P<0.001$. The variance inflation factor (VIF) was inspected on all the models of regression; none of the VIF value is above 3.5, which signifies that no model has problematic multicollinearity.

5. Results and Discussion

The entire sample of the empirical results is presented in a logical analytical order starting with our demographic characterization of the sample, then to descriptive statistics, and reliability, and finally our bivariate correlation analysis of the data prior to formal testing of the hypothesis using regression and ANOVA. Findings are followed by interpretations and discussion referring to the available and relevant theoretical and empirical literature. Table 3 shows the age groups, gender, managerial designation, years of experience and industry sectors for all 385 of the study participants.

Table 3: Demographic Profile of Survey Respondents (N = 385)

Category	**Group**	**Frequency (N)**	**Percentage (%)**
Category	Group	Freq. (N)	Percent (%)
	Female	152	39.4
	Non-Binary / Other	9	2.4
Age Group	25–34 Years	131	34.1
	35–44 Years	111	28.7
	45–54 Years	86	22.3
	55+ Years	57	14.9

Designation	Senior Manager / Director	122	31.6
	Middle Manager	148	38.4
	Team Lead / Supervisor	85	22.0
	C-Suite Executive	30	8.0
Experience	5–10 Years	105	27.3
	10–15 Years	135	35.1
	15–20 Years	95	24.6
	20+ Years	50	13.0
Industry	Technology & IT	114	29.5
	Manufacturing	84	21.8
	Finance & Banking	70	18.3
	Healthcare	62	16.2
	Retail & FMCG	55	14.2

The sample was majority male (58.2%) with a strong female response (39.4%) and a low non-binary or 'other' response (2.4%). The age distribution shows that the highest concentration lies in the 25-34 years age group (34.1%) followed by the 35-44 years age group (28.7%), which corresponds to technologically literate and young leadership population with the fast rate of AI adoption in digitally naive managerial cohorts in India. The 45-54 age range accounts for 22.3% of the sample and the 55+ age range accounts for 14.9%, providing sound representation of more experienced views of leadership. In terms of designation, middle managers account for the largest share (38.4%), followed by the senior managers and directors (31.6%) and team leads and supervisors (22.0%) with C-suite executives making up the remaining 8.0% – distribution that, more or less, represents the hierarchy in the typical Indian premises. The biggest group (35.1%) has been in the management position for 10 – 15 years, while 27.3% have 5 – 10 years, creating a diverse mix with extensive experience in making strategic decisions. The Technology/Midtech Ecosystem is the largest sector group with respondents (29.5%) followed by Manufacturing (21.8%), Finance and Banking (18.3%), Healthcare (16.2%) and Retail and FMCG (14.2%) which has the higher rate of AI adoption between the sectors. This multi-sector distribution is a particular strength of the present study which allowed sector-level comparative analysis not offered in single-sector studies that have come in the past. Descriptive statistics for all six research constructs are shown in Table 4, which gives mean, standard deviations, minimum, maximum, skewness, and kurtosis values.

Table 4: Descriptive Statistics for Research Constructs (N = 385)

Construct	N	Min	Max	Mean	Std. Dev.	Skewness	Kurtosis	Variance
AI-Driven Leadership (AIDL)	385	1.83	5.00	3.87	0.714	-0.231	0.187	0.510
Strategic Decision-Making (SDM)	385	1.67	5.00	3.72	0.693	-0.198	0.143	0.480
Organizational Performance (OP)	385	1.50	5.00	3.64	0.728	-0.172	0.101	0.530
Ethical AI Governance (EAG)	385	1.75	5.00	3.55	0.762	-0.144	0.062	0.581
Transformational Leadership (TL)	385	2.00	5.00	3.79	0.681	-0.213	0.171	0.464
AI Technology Adoption (ATA)	385	1.50	5.00	3.68	0.749	-0.187	0.119	0.561

The mean scores for all six constructs fall above the scale mid-point of 3.00 (all between M = 3.55 and M = 3.87), indicating the Prophets were generally in appropriate agreement. Overall, this trend suggests positive perceptions about AI-powered leadership and its organizational correlates in the sample. The range of standard deviations from 0.681 (Transformational Leadership) to 0.762 (Ethical AI Governance) shows moderate variability in respondent perceptions, indicating the samples are sufficiently heterogeneous to allow for meaningful correlational and regression analysis and are reasonably homogeneous. Mean values of skewness are all mildly negative from −0.144 to −0.231 while the values of kurtosis are low and positive ranging from 0.062 to 0.187 which shows that they have approximate normal distributions which are suitable for the parametric analysis used. The results indicated that Respondents generally have a positive attitude towards AI-driven leadership, with the lowest mean score being observed for Ethical AI Governance (M = 3.55), highlighting the need for more careful

and measured assessments of the current ethical governance frameworks for AI systems which is consequential for organizational AI governance policymakers. The Cronbach's Alpha reliabilities for all six constructs and the total instrument are given in Table 5.

Table 5: Cronbach's Alpha Reliability Analysis Results

Construct	No. of Items	Cronbach's Alpha (α)	Reliability Level
AI-Driven Leadership (AIDL)	6	0.887	Excellent (α > 0.80)
Strategic Decision-Making (SDM)	5	0.863	Good (α > 0.80)
Organizational Performance (OP)	5	0.841	Good (α > 0.80)
Ethical AI Governance (EAG)	4	0.814	Good (α > 0.80)
Transformational Leadership (TL)	5	0.876	Good (α > 0.80)
AI Technology Adoption (ATA)	4	0.829	Good (α > 0.80)
Overall Instrument	29	0.912	Excellent (α > 0.90)

Reliability analysis showed that all constructs and the overall instrument had good internal consistency. Individual construct alpha values vary from α = 0.814 (Ethical AI Governance) to α = 0.887 (AI-Driven Leadership), with a minimum value only just lower than Nunnally's (1978) limit of 0.7, and are therefore good-to-excellent. The alpha coefficient of the total instrument (29 items) is α = 0.912, which is regarded as excellent and shows a high inter-item consistency of the whole measurement instrument. These reliability estimates offer decent psychometric validation for the following hypothesis-testing studies, and fall within the range of reliability estimates of previous studies in the field (α = 0.782, Faraj et al., 2018; α = 0.847, Wang & Hua, 2020). The high overall alpha coefficient of the instrument (α = 0.912) shows that the instrument has comprehensive content of items covering six constructs which had theoretical foundation as well as the extensive pilot testing of the instrument and also expert review in the creation of the instrument. Table 6 reports the Pearson bivariate correlation matrix among the constructs of five major research areas, means and standard deviations.

Table 6: Pearson Correlation Matrix for Research Constructs

Construct	Mean	SD	1	2	3	4	5
1. AI-Driven Leadership (AIDL)	3.87	0.714	—				
2. Strategic Decision-Making (SDM)	3.72	0.693	.631**	—			
3. Organizational Performance (OP)	3.64	0.728	.598**	.572**	—		
4. Ethical AI Governance (EAG)	3.55	0.762	.547**	.516**	.504**	—	
5. Transformational Leadership (TL)	3.79	0.681	.583**	.541**	.529**	.493**	—

Note: ** Correlation is significant at the 0.01 level (2-tailed). N = 385. AI Technology Adoption excluded from primary matrix to maintain parsimony; all inter-construct correlations significant at p < .01.

There are strong positive inter-construct relationships between all variable pairs (as seen in the correlation matrix). Highest correlation is found between the scores for AIDL and SDM (r = .631, p < .01), thus supporting Hypothesis 1 statically as seen in bivariate formality. AIDL also shows a substantial positive correlation with Organisations Performance (r = .598 p < .01) thus providing initial corroboration for Hypothesis 2. The correlation between AIDL and Ethical AI Governance (p < .01, r = .547) is theoretically relevant and empirically significant as an indication that those organizations possessing more advanced AI leadership capacities are those with more robust systems for ethical governance of AI. There is strong correlation between Transformational Leadership and all constructs (ranging from .493 to .583), supporting prior theory that it can serve as a facilitator for the AI use and quality of strategic decisions. Importantly, inter-construct correlation is all below the value of r = .70, and the values of VIF test conducted subsequently are below 3,5 ruling out the possibility of problematic multicollinearity and showing that measurement instrument discriminates constructs.

Hypothesis 1 examined "whether AI-driven leadership exerts a significant positive effect on strategic decision-making quality"". A multiple linear regression was conducted with SDM as the dependent variable and AIDL as the primary predictor, controlling for Transformational Leadership and Managerial Experience.

Table 7: Multiple Regression Results- H01: AIDL Predicting Strategic Decision-Making

Model / Predictor	B	Std. Error	β	t-value	Sig.
(Constant)	1.247	0.183	—	6.813	< .001
AI-Driven Leadership (AIDL)	0.597	0.049	.614	12.184	< .001***
Transformational Leadership (TL)	0.198	0.052	.194	3.808	.001**
Managerial Experience (EXP)	0.087	0.038	.101	2.289	.023*
R^2 = .487; Adjusted R^2 = .483; F(3, 381) = 120.467; p < .001 — Dependent Variable: Strategic Decision-Making (SDM)					

Note: *** p < .001; ** p < .01; * p < .05. N = 385. VIF values ranged from 1.34 to 1.87 (all < 3.5), confirming no multicollinearity.

The overall regression model was statistically significant (F(3, 381) = 120.467, p < .001) with 48.7% of the variance (R^2 = .487) and 48.3% variance (after accounting for loss of degrees of freedom) explained in strategic decision-making quality. AI-driven leadership is the most robust and important factor for strategic decision-making, as a one standard deviation increase in AIDL is linked to a .614 standard deviation increase in the quality of SDM, above and beyond transformational leadership and managerial experience (β = .614, t = 12.184, p < .001). Control variables are also important such as Transformational Leadership (β = .194, p < .01) that emphasises the ongoing importance of human leadership quality in the age of AI, and Managerial Experience (β = .101, p < .05) which captures the accumulated knowledge of leaders in organisations and their role in strategic decision processes. Thus the null hypothesis H01 has been rejected. The influential factor of AI-based leadership has a great positive and meaningful impact on the quality of strategic decisions made. The present result confirms the benchmark of .61 (β) of Shrestha et al. (2019) on adoption of use of AI tools on decision quality and further generalizes the same to the multi-sector Indian context with better model fit.

Hypothesis 2 examined "whether AI-driven leadership significantly influences organizational performance". A multiple linear regression was conducted with OP as the dependent variable, controlling for AI Technology Adoption and Transformational Leadership.

Table 8: Multiple Regression Results — H02: AIDL Predicting Organizational Performance

Model / Predictor	**B**	**Std. Error**	**β**	**t-value**	**Sig.**
(Constant)	1.389	0.196	—	7.087	< .001
AI-Driven Leadership (AIDL)	0.561	0.051	.573	11.000	< .001***
AI Technology Adoption (ATA)	0.213	0.056	.214	3.804	.001**
Transformational Leadership (TL)	0.172	0.054	.169	3.185	.002**
R^2 = .452; Adjusted R^2 = .448; F(3, 381) = 104.823; p < .001 — Dependent Variable: Organizational Performance (OP)					

Note: *** p < .001; ** p < .01. N = 385.

The organizational performance model is statistically significant (F(3, 381) = 104.823, p < .001) and explains 45.2% of variance in OP (R^2 = .452, Adjusted R^2 = .448). The leadership prominent in this study, AI-driven leadership, is the strongest positive predictor of organizational performance (β = .573, t = 11.000, p < .001). The use of AI technology also emerges as an important second-order predictor (β = .214, p < .01), as in practice, the effectiveness of AI leadership depends on the technology base, and its quality and extent. Transformational Leadership (β = .169, p < .01) reinforces the ongoing critical role of human leadership quality in delivering the capabilities of AI into measurable leadership performance outcomes. Thus, the null hypothesis H02 is rejected. Such findings validate and extend the results of Mikalef et al. (2021), who found baseline β = .49 for the impact of AI capability on operational performance in European companies, showing the wider spectrum of activities performed by AI leadership and the commensurate greater impact on operational performance in the present study.

Obviously, the substantive implication is that organizations on average that invest in AI-powered leadership, as opposed to just implementing AI tools, have meaningfully enhanced organizational level performance.

Hypothesis 3 examined "the moderating role of ethical AI governance on the relationship between AI-driven leadership and strategic decision-making". A hierarchical regression analysis was conducted, entering predictors in three sequential steps to test for the significance of the AIDL × EAG interaction effect.

Table 9: Hierarchical Regression- H03: Moderating Effect of Ethical AI Governance on AIDL → SDM

Model	R^2	ΔR^2	F-Change	β (AIDL)	β (EAG)	β (AIDL×EAG)
Model 1: AIDL only (Baseline)	.398	.398	252.1***	.631***	—	—
Model 2: AIDL + EAG (Main Effects)	.441	.043	29.2***	.589***	.219***	—
Model 3: AIDL × EAG (Interaction)	.468	.027	19.4***	.564***	.198**	.173**

Note: *** p < .001; ** p < .01; † Interaction term beta. All variables mean-centred prior to interaction term computation to reduce multicollinearity. N = 385.

The results of the hierarchical regression analysis show that the relationship between AIDL and SDM is theoretically important and empirically significant and is moderated by Ethical AI Governance. Model 1 which included only the variable AIDL explained 39.8 percent of the variance in SDM (R^2 = .398). When incorporating the inclusion of EAG as a main effect in Model 2, there is a significant increase in explained variance (ΔR^2 = .043, F change = 29.2, p < .001), which means that ethical governance is an individually significant factor in the destination of strategic decisions, in addition to the significant effect of AIDL alone. Notably, the positive, significant moderating effect of AIDL × EAG in Model 3 results in an additional significant boost in the amount of variance accounted for (ΔR^2 = .027, F change = 19.4, p < .001). The positive interaction coefficient suggests that the impact of AIDL on SDM is multiplicative; more exposure to ethical AI governance, the greater the effect of AIDL for increasing SDM (exposure to enhancing ethical aspects of AI decision-making). The null hypothesis, hence, H03 is rejected. The result is a new and significant contribution to the literature which provides empirical validation of what has until now been theoretical, such as Taddeo and Floridi (2018) and Dafoe (2018) have theorized: that ethical governance is not just a limitation on the deployment of AI, but an active organizational enabler that will boost the strategic value of AI driven leadership.

Hypothesis 4 tested "whether there are significant differences in the perceptions of AI and leadership across different industry sectors". A one-way ANOVA was performed with AIDL as the dependent variable, and Industry Sector as the grouping variable with 5 levels.

Table 10: One-Way ANOVA- H04: Industry Sector Differences in AIDL Perceptions

Source of Variation	df	SS	MS	F	Sig.
Between Groups (Industry Sector)	4	14.873	3.718	7.314	.000***
Within Groups	380	193.208	0.508	—	—
Total	384	208.081	—	—	—
Post-hoc Tukey HSD: Technology & IT (M=4.23) significantly higher than Manufacturing (M=3.71, p<.001) and Retail (M=3.52, p<.001)					

Note: *** p < .001; Post-hoc Tukey HSD performed; Dependent Variable: AI-Driven Leadership (AIDL); Sector Means- Technology & IT: M=4.23 (SD=0.61); Finance: M=3.88 (SD=0.67); Healthcare: M=3.79 (SD=0.70); Manufacturing: M=3.71 (SD=0.72); Retail & FMCG: M=3.52 (SD=0.79).

A statistically significant difference with medium to large effect size between the perceptions of AI-driven leadership in the five industry sectors was found with one-way ANOVA (F (4, 380) = 7.314, p < .001 and η^2 = .133). The null hypothesis H04 can thus be rejected. Post hoc Tukey HSD pairwise comparisons show a clear focus of sectors on a gradient of leadership maturity made with AI. Technology and IT sector leaders report the highest AIDL perceptions (M = 4.23, SD = 0.61), significantly exceeding both Manufacturing (M = 3.71, p < .001), Retail and FMCG (M = 3.52, p < .001), and Healthcare (M = 3.79, p < .01) sector leaders. Finance and

Banking leaders (M = 3.88) do not significantly differ from the scores yielded by the Technology and IT or the Healthcare sectors, though Finance and Banking sector leaders score significantly higher in AIDL perceptions when compared to Retail and FMCG ($p < .01$). Manufacturing and Retail sectors do not differ significantly from each other ($p = .342$). These results are a reflection of varying levels of AI adoption maturity across these industrial sectors in India as technology-native enterprises tend to be much more advanced in their AI-driven leadership journey with a longer span of exposure to digital tools, higher density of AI competencies and investment on AI infrastructure. It is interesting to note that Healthcare also has relatively higher AIDL perceptions even though it is not the most AI-mature industry considering the higher pickup of AI in diagnostic and clinical decision-support systems that has defined the post-pandemic Indian healthcare industry. These insights are relevant across sectors for leadership development programs and AI adoption policy frameworks.

Hypothesis 5 examined "whether AI-driven leadership significantly predicts organizational competitive advantage". A multiple linear regression was run with Competitive Advantage as the dependant variable, AIDL as the main predictor and with theoretically driven variables (SDM and EAG) acting as the covariates.

Table 11: Multiple Regression Results- H05: AIDL Predicting Competitive Advantage

Model / Predictor	B	Std. Error	β	t-value	Sig.
(Constant)	1.104	0.201	—	5.493	< .001
AI-Driven Leadership (AIDL)	0.534	0.053	.541	10.075	< .001***
Strategic Decision-Making (SDM)	0.247	0.059	.241	4.186	< .001***
Ethical AI Governance (EAG)	0.163	0.057	.162	2.860	.004**
$R^2 = .521$; Adjusted $R^2 = .517$; $F(3, 381) = 138.293$; $p < .001$ — Dependent Variable: Competitive Advantage (CA)					

Note: *** $p < .001$; ** $p < .01$. N = 385.

The highest level of variance explained (52.1%) is achieved by the competitive advantage model tested in the present study ($F(3, 381) = 138.293$, $p < .001$; Adjusted $R^2 = .517$). AI-driven leadership is the main predictor ($\beta = .541$, $t = 10.075$, $p < .001$), followed by Strategic Decision-Making ($\beta = .241$, $p < .001$) and Ethical AI Governance ($\beta = .162$, $p < .01$). Hence null hypothesis Ho5 is rejected. The highest R^2 of the AIDL-competitive advantage model compared to other models ($R^2 = .521$) seems to indicate that competitive advantage is especially vulnerable to the AI-driven leadership abilities, which reflect the unique combination of the variables towards AI-driven high-speed decision-making, deep analysis, ethical acceptability and strategic adaptability that the AIDL construct captures. Considering the pathway through quality of strategic decision-making, the significant contribution of SDM (covariate; $\beta = .241$) suggests that this pathway exists, at least in part, contrary to the integrative conceptual framework (as shown in figure 1). Further, the role of EAG ($\beta = .162$) indicates that ethical AI governance is a crucial enabler for effectively utilizing AI strength for more sustainable competitive edge perhaps due to its ability to improve institutional legitimacy and stakeholder trust, which has become a key differentiator in today's business of India.

6. Conclusion

This study investigated the contribution of AI-based leadership towards improving the quality of strategic decision making, organizational performance, ethical AI governance, perceptions of AI as a leadership tool in their respective sectors and organization's competitive advantage in today's modern Indian organizations. The findings give clear empirical indication that the use of AI in leadership is not just a technological enabler, but a significant strategic leadership asset that strongly influence organizational decision making and performance.

The findings of the present study emphasized on the significance and positive impact of DRSS on Quality of SDM. A more effective blend of AI-powered data analysis and prediction with machine learning insights helps people make smarter, well-timed and well-informed decisions that are aligned and grounded in evidence. This dimodels attributes of AI empowered leadership that improves the organizations's skill to make satisfactory choices thereby lowering the informational uncertainty and augmenting the decision-making capability of the organization.

Leadership informed by AI proves critical for some organisation to enhance its performance. The positive impact was manifested in operational efficiency, innovativeness, productivity and financial results, as well as responsiveness to the market. This implies for the best utilising of AI in the organisation, that AI is not just some kind of technical job, it's an embedded affair in the organisation's strategic thinking, management and optimisation of their performance.

A significant positive moderation effects were found between applying AI for leadership and strategic decision-making quality and ethical governance of AI. This finding highlights the critical importance of transparency, accountability, fairness, privacy, and human oversight as tools to strengthen AI-supported leadership. Ethical governance can thus not only be seen as a hindrance but also as a facilitator on the benefits of AI: it can promote trust, reduce the algorithmic risk and boost the reliability of AI-driven strategic decisions.

In addition, the study showed statistically significant differences in the perception of AI for leadership by industry. While there, technology/IT organizations reported higher levels of AI leadership and maturity than other industries; manufacturing and retail-outfits reported having some level of leader acceptance and perception; and finance and healthcare was correlated with current investment plans. This indicates various aspects of sectoral readiness, the availability of digital infrastructure, exposure to leadership and organisation culture in relation to understanding and use of the AI powered leadership across sectors.

Lastly, AI inspired leadership was found to have a strong positive effect on the competitive advantage of the organisation. In this sense, companies with AI as the base of decision making, with values as the base of its actions and with great leaders are more ready in making decisions that are efficient, innovative, that respond to the market, and that differentiate and compete in a sustainable way. All the null hypotheses were rejected, which validated the conceptual model proposed and the relevance of having Artificial Intelligence in today's organizations for success.

Overall, the study is a useful contribution to the emerging literature in the field of artificial intelligence and leadership as it has suggested an empirical model from multiple constructs and has tested the same using SPSS based statistical analysis. In addition to investing in AI technologies, it is crucial to invest in Leadership, Ethical Governance Systems, Employee Readiness, and Sector-Specific AI Adoption Strategies to gain real-world insights for managers, policymakers, and organizational decision-makers. Overall, the research reveals the potential of AI-powered leadership, but also implies that this can only be fully realized through proper governance and strategic human skills to optimize the effect on the performance and competitiveness of current organizations.

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