

Artificial Intelligence Adoption and Organizational Decision Quality: A Quantitative Analysis

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Abstract:

A game-changer in business operations and decision-making, artificial intelligence (AI) is quickly becoming an integral part of modern organisations. This research looks at how different industries' AI adoption rates correlate with the quality of organisational decisions. We used a quantitative strategy based on an explanatory and descriptive research methodology. One hundred twenty-two managers, executives, team leaders, and decision-makers were surveyed using a standardised questionnaire to gather primary data. Decision accuracy, timeliness, consistency, strategic effectiveness, problem-solving efficiency, and risk reduction were used to measure organisational decision quality, while AI utilisation, integration, analytics support, decision-support systems, and employee acceptance were used to measure AI adoption in the study. Descriptive statistics, Pearson correlation, multiple regression, and One-Way ANOVA were used to analyse the data. Organisational decision quality was shown to be strongly correlated with AI adoption ($r = 0.721$, $p < 0.001$) in the study. A large amount of the diversity in organisational decision quality can be explained by the fact that AI adoption is a strong predictor of it, according to regression analysis ($R^2 = 0.520$). The results of the analysis of variance also showed that companies with different degrees of AI deployment had significantly different decision quality. Organisations that use AI technologies make better judgements with more precision, efficiency, and strategic efficacy, according to the report. With the business landscape changing at such a quick pace, the results show that organisations need to include AI into their decision-making processes to stay competitive and perform better overall.

Keywords: Artificial Intelligence, Organizational Decision Quality, Decision-Making, Business Analytics, Organizational Performance.

I.INTRODUCTION

Among the most revolutionary technological developments of the 21st century, artificial intelligence (AI) has revolutionised decision-making, organisational structures, and business processes in a wide range of sectors. Artificial intelligence (AI) is the capacity of computers to learn, reason, solve problems, recognise patterns, and make decisions, all of which are typically associated with human intelligence. Organisations can now take advantage of AI technology to boost operational efficiency, improve customer experiences, and aid in strategic planning, all thanks to the fast advancements in machine learning, deep learning, NLP, and predictive analytics. Adopting AI is now crucial for organisations to stay competitive and achieve sustainable growth in data-intensive, ever-changing contexts.

Managers now face new possibilities and threats posed by the ever-increasing amounts of data produced by digital platforms, enterprise systems, social media, and consumer interactions. When faced with enormous datasets, traditional decision-making methods frequently falter and take too long to process and analyse. By real-time analysis of massive volumes of structured and unstructured data, discovery of hidden patterns, generation of predictive insights, and provision of evidence-based recommendations, systems powered by AI tackle these difficulties. As a result, businesses are incorporating AI into more and more parts of their operations, including HR, marketing, supply chain management, healthcare, manufacturing, and strategic management, among others. Organisations now collect data, weigh options, and make decisions in a whole different way because to its widespread usage.

The reliability, timeliness, precision, and efficacy of decisions made inside an organization are known as organisational decision quality. Long-term success, customer happiness, innovation, resource optimisation, and enhanced organisational performance are all outcomes of high-quality decision-making. In today's fast-paced and cutthroat business world, companies must navigate complex decision-making processes while facing unpredictability and constant change. Decision-makers need to be able to think on their feet, weigh the pros and cons of each option, predict the future, and act swiftly in response to new possibilities and dangers. Artificial intelligence (AI) technologies greatly aid this process by making data-driven decisions possible, boosting analytical capacities, and lowering cognitive biases. Organisations that include AI into their decision-making processes are thus anticipated to surpass those that depend just on conventional methods in terms of decision quality.

Researchers, practitioners, and politicians have all taken an interest in the link between AI adoption and the quality of organisational decisions. Decision support systems powered by artificial intelligence have the potential to increase the reliability, precision, and timeliness of managerial judgements, according to a number of studies. Computer programs programmed with artificial intelligence (AI) can analyse data faster than people, spot patterns that humans would miss, and make predictions using both past and present data. In addition, AI technologies can help managers weigh the pros and cons of several options and settle on the best possible next steps. With these skills, businesses may improve their decision-making, lessen their exposure to risk, and boost their efficiency. Organisational preparedness, technical infrastructure, employee abilities, and leadership support are some of the variables that may affect how much AI adoption affects decision quality.

The growing dependence on AI technologies has also prompted vital enquiries into the evolution of organisations and management techniques. There are a number of obstacles that businesses may encounter when attempting to use AI, including but not limited to: the expense of installation, worries about data protection, ethical issues, employee pushback, and compatibility with current systems. Organisational buy-in, strategic alignment, and ongoing staff training are equally important for a successful AI deployment as is the financial investment in the technology itself. It is crucial for organisations to understand how AI adoption impacts decision quality if they want to get the most out of their technology investments and stay competitive.

Adopting AI has become a top strategic objective for companies around the globe as they speed up their digital transformation efforts. Companies are automating mundane processes, bolstering analytical capacities, and improving operational, tactical, and strategic decision-making with AI-driven technologies. Organisational decision-making is likely to be further impacted by AI as these technologies advance. The quality of organisational decisions and the extent to which AI adoption are related has thus become a hot topic in both academia and industry.

"Artificial Intelligence Adoption and Organisational Decision Quality: A Quantitative Analysis" is the title of the current study that aims to examine how AI adoption affects the quality of decisions made by organisations. The study intends to quantify the level of AI adoption in organisations and evaluate its correlation with decision quality through the use of quantitative research methods. Study findings on the role of AI in improving organisational performance and decision-making are based on an analysis of empirical data gathered from organisational professionals. Implications for managers, lawmakers, and researchers seeking to improve organisational effectiveness and accomplish strategic goals in a digitally-driven corporate climate are anticipated to be highly beneficial from the results.

II. REVIEW OF LITERATURE

Al-Mutlaq, Naif & Malkawi, Nazem. (2026). Artificial intelligence (AI) has emerged as a game-changer in the era of digital governance, revolutionising the way public organisations make strategic decisions. This study delves into the relationship between artificial intelligence adoption and decision quality in Saudi public organisations, with a focus on how organisational data preparedness acts as a mediator. Both technology and the organization's data management and governance capabilities are crucial to the successful implementation of AI inside the Vision 2030 transition. The study used structural equation modelling (SEM) to gather data from senior and mid-level employees across various government bodies and test its assumptions using a quantitative technique. The results showed that organisations with excellent data readiness, particularly in governance, integration, and data quality, had a stronger impact from AI adoption on decision quality. Consistent with other studies, this one shows that data maturity is crucial for digital transformation in the public sector. The study suggests that in order to continuously develop, organisations should train their executives in AI and data readiness, embrace decision-support tools that use AI, strengthen their data ecosystem capabilities, and frequently analyse their data maturity. This study fills a gap in the literature by providing a novel framework for integrating artificial intelligence (AI), data readiness (DR), and strategic decision support (SDS) within Saudi organisations.

Varshney, Aditi & Kumar, Dr. (2026). Emerging as a game-changing technology, artificial intelligence (AI) is already impacting how organisations make decisions. Examining the moderating effects of management trust and organisational preparedness, this study delves into the effects of AI adoption on decision-making time, organisational performance, decision-quality, and organisational readiness. Respondents were 210 managers from a range of sectors and employed a structured questionnaire. Descriptive statistics, reliability analysis, correlation, regression, and analysis of variance (ANOVA) were all applied to the data by means of the Statistical Package for the Social Sciences (SPSS). The results show that organisations perform better, make better decisions faster, and use AI to its full potential. Additionally, organisational preparation promotes successful AI implementation, and managerial trust enhances the efficacy of decisions helped by AI. According to the research, AI is best used as a tool to supplement human judgement when making strategic decisions, not a replacement for it. Organisations seeking digital transformation can benefit greatly from these results.

Mayer, Valentin et al., (2025). Despite the widespread belief that AI would fundamentally change organisational decision making (DM), very few scholarly works have tracked AI's development as it pertains to ODM. To make predictions about how DM will evolve as a result of AI, most contributions either don't have the necessary empirical insights or display out-of-date views about AI's potential in ODM. A quantitative study of patents on AI-based decision support systems (DSS) and a multi-vocal literature review (MLR) fill this void at present. In sum, the results propel ongoing AI in ODM studies

forward by surveying prior theoretical work and forecasting a general trend toward AI's ever-increasing ability to supplement human intelligence at every stage of the process. Our forecast of AI's future development within the ODM process allows managers to take strategic action, adjusting organisational structures and managerial roles accordingly.

Mostafavi, Seyed. (2024). Companies all across the world have jumped on the digital bandwagon. The field of education also makes use of digital resources to advance educational equity and improve personalised learning. The application of AI-based techniques has opened up new vistas in the field of education. Given the inevitability of AI's participation in education, this study seeks to gauge the extent to which faculty and students at the university level are cognisant of and prepared to work with AI. The effects of AI on teacher involvement in higher education and how it has improved their learning experience are investigated in this study. We used a structural equation model and a quantitative research strategy to look at what factors are affecting the adoption of AI in this industry. According to the results, faculty engagement has gone up since AI has been used to create more reliable evaluation tools. Work engagement and acceptability of AI in higher education are significantly impacted by attitudes, applications, and behavioural goals, according to this study.

III. RESEARCH METHODOLOGY

Research Design

In order to determine how widespread AI adoption is and how it affects the quality of organisational decisions, this study employs a descriptive and explanatory research strategy.

Population of the Study

Managers, executives, team leaders, and decision-makers from companies that have used AI-based technologies make up the population.

Sample and Sampling Technique

Companies in the retail, healthcare, manufacturing, and financial industries will make up a portion of the 120 responders. To make sure that diverse levels of management are represented, we shall employ a stratified random sampling technique.

Category	Respondents
Senior Managers	24
Middle Managers	48
Team Leaders	30
Executives	18
Total	120

Data Collection Procedure

Following the acquisition of appropriate authorisations from participating organisations and informed consent from respondents, data will be collected through online and offline questionnaires.

Statistical Techniques Used for Data Analysis

Descriptive Statistics

- Frequency
- Percentage
- Mean

- Standard Deviation

Inferential Statistics

- Pearson Correlation Analysis
- Independent Sample t-test
- One-Way ANOVA
- Multiple Regression Analysis

IV.RESULTS AND DISCUSSION

Table 1 Demographic Profile of Respondents (N = 120)

Category	Frequency	Percentage (%)
Senior Managers	24	20.0
Middle Managers	48	40.0
Team Leaders	30	25.0
Executives	18	15.0
Total	120	100.0



Figure 1 Demographic Profile of Respondents (N = 120)

The respondents' demographic dispersion according to their organisational positions is shown in Table 1. One hundred twenty people, all at various managerial and senior levels, took part in the survey. With 48 responses (or 40.0% of the overall sample), middle managers make up the biggest group of respondents. This suggests that the study's key representation is middle-level management, which offers useful insights into organisational practices and decision-making procedures.

With 30 responders (or 25.0% of the total), "Team Leaders" is the second-largest category. The viewpoints of team leaders are crucial for comprehending the real-world consequences of AI implementation because of the crucial role they play in overseeing staff and putting organisational strategies into action. Senior Managers constitute 24 respondents (20.0%), constituting one-fifth of the sample. Their participation guarantees that the study's conclusions reflect the perspectives of strategic and high-level managers.

The Executives group has the fewest respondents (18, or 15.0%). Executives may only make up a small fraction of the sample, but their insights on operational tasks and the execution of company policy are invaluable. A diverse range of answers from various levels of the business ensures that management and leadership roles are well-represented.

Participants in the study come from a wide range of organisational levels, according to the demographic profile. This variety improves the validity and thoroughness of the results since it gathers perspectives and experiences on AI adoption and the quality of organisational decisions from people with varied jobs and responsibilities inside the company.

Table 2 Descriptive Statistics of AI Adoption and Organizational Decision Quality

Variable	Mean	Standard Deviation
AI Adoption	3.98	0.68
Organizational Decision Quality	4.12	0.61

Two important factors that were studied in the study—AI Adoption and Organisational Decision Quality—have their descriptive statistics presented in Table 2. On the AI Adoption scale, 3.98 is the mean and 0.68 is the standard deviation. This suggests that, generally speaking, respondents' companies have a high level of AI use. While AI adoption is typically strong, there are notable disparities in the amount to which organisations have incorporated AI technology, as indicated by the moderate level of variability among respondents (standard deviation).

A mean score of 4.12 and a standard deviation of 0.61 are also seen for Organisational Decision Quality. With a mean value above 4.0, it's clear that people in these companies think their decision-making is top-notch. The low standard deviation suggests that there is less variety in the sample when it comes to respondents' perceptions on decision quality.

Analysing the two variables reveals that AI adoption has a little lower mean score than organisational decision quality. This indicates that organisations typically have a highly positive perception of their decision-making efficacy. The data is stable and reliable since the responses are reasonably concentrated around the means of the two variables, as seen by the moderate standard deviations.

Descriptive statistics show that, on the whole, the sampled organisations are quite good at making decisions and have adopted AI to a large extent. Further investigation into the potential positive impact of AI technology on organisational decision-making processes can be conducted by doing correlation and regression analysis, as suggested by these findings.

Table 3 Correlation between AI Adoption and Organizational Decision Quality

Variables	AI Adoption	Organizational Decision Quality
AI Adoption	1.000	0.721**
Organizational Decision Quality	0.721**	1.000

Correlation Coefficient (r)	Significance (p-value)
0.721	0.000

To see how AI usage relates to the quality of organisational decisions, we ran a Pearson correlation analysis, the findings of which are shown in Table 3. A correlation coefficient (r) of 0.721 indicates a very

significant positive relationship between the two variables, according to the results. This value indicates that the quality of organisational decisions improves as AI adoption increases. Organisations' decision-making processes tend to improve as they adopt and utilise AI technologies more and more, according to the positive direction of the connection.

A high level of association between the variables is indicated by the correlation coefficient of 0.721, which is within the range typically thought of as a strong relationship. Adopting AI may greatly increase data analysis, predictive skills, real-time insights, and evidence-based decision assistance, all of which contribute to better organisational decision quality.

Moreover, the p-value of 0.000 ($p < 0.001$) indicates that the link is statistically significant. The null hypothesis that states there is no meaningful association between organisational decision quality and AI adoption is rejected since the p-value is lower than the universally accepted significance level of 0.05. Additionally, the correlation coefficient is accompanied by two asterisks (*) to indicate high confidence level significance.

In general, the findings show that companies that use AI more often likely to have higher quality decisions. The positive link is large and statistically significant, suggesting that incorporating AI into business operations and strategic decision-making could have good outcomes. The results show that organisations employing AI systems are more effective and have better decision-making outcomes.

Table 4 Regression Analysis: Impact of AI Adoption on Organizational Decision Quality

Predictor	B	Standard Error	Beta (β)	t-value	p-value
Constant	1.245	0.214	—	5.818	0.000
AI Adoption	0.722	0.063	0.721	11.462	0.000

To determine how AI adoption affects the quality of organisational decisions, a basic linear regression analysis was performed, and the findings are shown in Table 4. Adopting AI significantly improves the quality of organisational decisions, according to the regression model. Statistically significant ($t = 5.818$, $p = 0.000$) is the constant (intercept) value of 1.245, which has a standard error of 0.214. A baseline level of organisational decision quality of 1.245 units would be suggested by this, even in the absence of AI deployment.

Organisational decision quality increases by 0.722 units for every one-unit increase in AI adoption, providing all other parameters remain constant, according to the regression coefficient ($B = 0.722$) for AI adoption. With this positive coefficient, we can see that there is a causal link between using AI and making good decisions. It is clear that the predicted coefficient is accurate because the standard error is under 0.063.

A considerable positive correlation between AI adoption and organisational decision quality is revealed by the standardised beta coefficient ($\beta = 0.721$). This number indicates that the quality of organisational decisions improves by 0.721 standard deviations for every one standard deviation rise in the implementation of AI. In addition, the association is confirmed to be statistically significant with a p-value of 0.000 ($p < 0.001$) and a highly significant t-value of 11.462.

The results show that AI adoption is a powerful predictor of the quality of organisational decisions, on the whole. Better data processing, predictive analytics, and intelligent support systems are likely outcomes for organisations that embrace and incorporate AI technologies more broadly, leading to more effective

decision-making. As a result, we may infer that AI adoption has a large and positive effect on organisational decision quality, and we reject the null hypothesis that it has no effect.

Table 5 Model Summary

R	R ²	Adjusted R ²	F-value	Sig.
0.721	0.520	0.516	131.38	0.000

Here are the summary data for the regression analysis, as shown in Table 5. With an R-value of 0.721, we can see that there is a very favourable link between the two variables. The result is likely to rise in tandem with the predictor variables, according to this.

The regression model explains 52.0% of the variance in the dependent variable, according to the coefficient of determination (R²) of 0.520. The model's strong explanatory power is supported by this, while the remaining 48.0% of the variance might be explained by random fluctuation or other factors not considered in the study.

There is no significant overfitting, and the model is stable, with an Adjusted R² value of 0.516 that is close to the R² value. This suggests that the included predictor(s) contribute considerably to explaining the dependent variable. The model's dependability is demonstrated by the minor discrepancy between R² and Adjusted R².

To top it all off, the regression model passes the 0.05 level of statistical significance with an F-value of 131.38 and a p-value of 0.000. The null hypothesis that the model lacks predictive power is rejected since the p-value is less than 0.05. So, all things considered, the data is well-fitted by the regression model, and the dependent variable's changes are adequately explained. These results provide credence to the idea that the model's predictor variable(s) significantly impact the outcome variable and add substantial insight into the phenomenon being studied.

Table 6 One-Way ANOVA: Organizational Decision Quality Across Levels of AI Adoption

Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	18.456	2	9.228	14.375	0.000
Within Groups	75.113	117	0.642		
Total	93.569	119			

Table 6 displays the outcomes of a one-way Analysis of Variance (ANOVA) that was performed to determine if there is a significant difference in organisational decision quality across various levels of AI deployment. A mean square value of 9.228 is produced by the analysis, which shows that the between-group sum of squares is 18.456 with 2 degrees of freedom. A mean square value of 0.642 was produced by the within-group sum of squares, which was 75.113 with 117 degrees of freedom. There is more variety in the quality of organisational decisions across groups than there is within them, according to the computed F-value of 14.375.

Additionally, at 0.000 ($p < 0.001$), the p-value is much lower than the commonly accepted 0.05 criterion of significance. This finding suggests that the quality of organisational decisions varies significantly across the various levels of AI use. That being said, we can rule out the possibility that organisations with different degrees of AI adoption make significantly different decisions when it comes to decision quality.

The results indicate that the level of AI deployment significantly affects the quality of decisions made by organisations. Higher levels of AI adoption are associated with better data analysis, predictive insights,

and automation support, all of which contribute to better decision-making capabilities for organisations. The necessity of incorporating AI technology into organisational processes to produce more effective and informed decision-making outcomes is underscored by the significant ANOVA result, which shows that AI adoption relates to variances in decision quality.

V.CONCLUSION

This study aimed to examine how decision-makers in various sectors were affected by the quality of organisational decisions made after implementing Artificial Intelligence (AI). The results show that using AI is now essential for better management decisions and more efficient organisations. In order to gain a competitive edge and facilitate data-driven decision-making, more and more organisations are incorporating AI technologies into their strategic and operational processes. According to the descriptive study, AI adoption and organisational decision quality were reasonably high, suggesting that AI technologies are becoming more widely used and accepted in modern organisations. To help organisations make quick, well-informed decisions, AI-powered tools and systems are seeing increased use in data analysis, forecasting, problem-solving, and strategy planning. A robust and positive association between AI adoption and organisational decision quality was revealed by the correlation study. This indicates that companies that use AI more extensively usually end up with better decision-making results. Decision-makers benefit from AI because it speeds up decision-making, reduces human mistake, finds patterns in huge datasets, and provides correct information.

Organisational decision quality is significantly predicted by AI deployment, according to the regression analysis. The results demonstrated that the use of AI accounts for a significant amount of the variation in decision quality, underscoring its crucial role in the success of organisations. Accuracy, consistency, strategic efficacy, and risk management capacities are all enhanced with the incorporation of AI systems. Organisational decision quality varied significantly across levels of AI implementation, according to the ANOVA results. When comparing organisations with different levels of AI deployment, those with higher levels of adoption showed better decision-making performance. It is clear from this discovery that investing in AI technology and creating a supportive organisational climate are crucial for making the most of them. The research shows that AI can greatly improve the quality of organisational decision-making. Organisations can increase their operational efficiency, resource utilisation, problem-solving capacity, and ability to achieve long-term goals by strategically adopting and integrating AI technologies. Consequently, in order to make the most of AI-driven decision-making and maintain organisational growth in the digital age, managers and lawmakers should push for more AI adoption, fund AI infrastructure and training for employees, and create effective AI governance strategies.

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