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Article

Assess the Role of AI in Real-Time Decision-Making and Adaptation in Response to Market Dynamics in Maharashtra, India

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Abstract: The Information Technology (IT) sector generates vast amounts of data and requires rapid, accurate business decisions, driving the adoption of Artificial Intelligence (AI) as a decision-support tool. This study assesses the role of AI in supporting real-time business decision-making and organizational adaptation to market dynamics among IT employees in Maharashtra, while emphasizing the continuing importance of human judgment. A positivist philosophy and deductive approach were adopted using a quantitative, cross-sectional survey design. Primary data were collected from 900 IT employees through a structured five-point Likert scale questionnaire using stratified random sampling. Reliability of the measurement scales was confirmed through Cronbach's alpha values ranging from 0.78 to 0.89. Data were analysed using descriptive statistics, chi-square tests, Pearson correlation, multiple linear regression and one-sample t-tests. Findings indicate that employees perceive AI as a valuable and reliable decision-support tool that improves decision speed, accuracy and organizational adaptability. Real-time decision support showed a significant positive relationship with decision speed and accuracy ($r = 0.49$, $p < 0.001$), while market adaptation was positively associated with decision quality ($r = 0.44$, $p < 0.001$). The regression model explained 58% of the variance in employee satisfaction with AI, with real-time decision support emerging as the strongest predictor. Skill gaps and implementation costs were identified as the primary barriers to AI adoption, whereas organizational size had no significant influence. The study concludes that AI enhances business decision-making and organizational responsiveness without replacing human intelligence or judgment. It recommends greater investment in employee training, explainable AI systems, responsible AI implementation, and continuous human oversight.
Keywords: artificial intelligence, decision support, real-time decision-making, market adaptation, human-AI collaboration, IT sector, Maharashtra

1. Introduction

1.1 Background of the Study

The information technology sector is a major contributor to Maharashtra's economy and requires professionals to make complex, time-bound business decisions (Agrawal, Gans, & Goldfarb, 2018). Increasing data volumes and faster decision requirements have increased the need for intelligent decision-support systems (Sharda, Delen, & Turban, 2024). AI has therefore become a common feature of software used by IT professionals (Russell & Norvig, 2021; Dwivedi et al., 2021). In this study, AI is viewed as a **decision-support tool** that analyses structured and unstructured data and provides evidence-based insights, while human professionals retain decision-making responsibility (Power, 2002; Jarrahi, 2018; Kahneman, 2011).

IT professionals use AI-supported tools for activities such as effort estimation, resource allocation, risk management, client requirements, and business data analysis (Davenport, 2018). AI dashboards, predictive analytics, and recommendation systems help identify opportunities, anticipate risks, monitor performance, and allocate resources

(McAfee & Brynjolfsson, 2012; Brynjolfsson & McElheran, 2016). However, effective use of these tools depends on professional expertise, ethical judgement, and contextual understanding (Kahneman, 2011; UNESCO, 2021). This study therefore examines how IT employees in Maharashtra use AI insights for business decision making and adaptation to changing market conditions.

Maharashtra was selected because it is one of India's leading IT hubs, with a large workforce concentrated in cities such as Pune, Mumbai, Navi Mumbai, Thane, and Nagpur (Government of Maharashtra, 2023; NASSCOM, 2025). The state's large and diverse IT sector provides an appropriate setting for examining employee-level use of AI in daily business decisions.

1.2 Research Problem

The problem addressed by this study is that the adoption of AI-based tools is often treated as an end in itself, without critical examination of whether that adoption actually translates into faster and more accurate real-time decisions and improved adaptation to market change. A tool that is adopted but poorly understood may add little value, whereas a tool that is understood and used with judgement can materially improve the speed, accuracy and timeliness of decisions. If this issue is ignored, organisations may continue to invest in AI without knowing whether the investment improves the decisions their employees make. The study therefore investigates not merely whether AI is present in IT organisations in Maharashtra, but whether and how it supports the decision-making of the employees who use it.

1.3 Aim of the Study

The aim of the study is to assess the role of artificial intelligence as a decision-support tool in the real-time business decisions of IT employees in Maharashtra and in their adaptation to changing market dynamics, while keeping human judgement at the centre of the analysis.

1.4 Significance of the Study

The study is significant for several groups. For IT organisations, it clarifies whether investment in AI translates into real improvements in the speed, accuracy and adaptability of decisions rather than merely an increase in technological spend. For IT professionals, it offers evidence on how such tools are best used. For managers and policymakers, it informs the responsible introduction of AI and the design of support measures for the sector (Government of Maharashtra, 2023). By keeping human professionals at the centre and treating AI as a support rather than a replacement, the study offers a balanced and realistic perspective that is directly useful to the IT workforce of Maharashtra.

2. Review of Literature

Existing literature shows that business decision-making has become increasingly complex with the integration of Artificial Intelligence (AI), business analytics, and intelligent decision-support technologies. Agrawal, Gans, and Goldfarb (2018) argued that AI primarily improves prediction, while human judgement remains essential for final decisions. Davenport (2018) emphasized that successful AI implementation depends on organizational readiness, employee skills, and managerial support. Kahneman (2011), through dual-process theory, similarly highlighted the importance of human judgement in complex and uncertain situations. The Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), Technology-Organization-Environment (TOE) framework, and Dynamic Capabilities Theory identify factors such as perceived usefulness, organizational support, technological readiness, trust, transparency, and adaptability as important for effective AI adoption. These perspectives suggest that AI can improve decision quality while strengthening organizational responsiveness to changing market conditions.

International research indicates that AI supports real-time decision making through faster data analysis, improved forecasting, strategic planning, enhanced data security, and reduced operational time and cost. AI also assists organizations in responding to changing customer requirements, technological disruptions, and competitive pressures. However, studies generally emphasize that

AI should complement rather than replace human judgement, particularly in ethical, strategic, and people-related decisions. In India, reports from NITI Aayog, the Ministry of Electronics and Information Technology (MeitY), NASSCOM, and the Government of Maharashtra indicate increasing AI adoption in the IT sector. These sources identify skill development, organizational readiness, implementation costs, technical integration, data privacy, cybersecurity, and responsible AI governance as major challenges. However, much existing evidence is based on executive surveys, organizational cases, and industry reports rather than employees who directly use AI systems.

Furthermore, limited empirical research specifically examines AI-supported real-time decision making among IT employees in Maharashtra. Existing studies rarely integrate decision speed, accuracy, market adaptation, implementation barriers, data security, employee trust, and human judgement within one framework. Therefore, the present study addresses these gaps using primary data from 900 IT employees across Maharashtra to examine AI as a decision-support tool for real-time business decision making and organizational adaptation to market dynamics.

Research Gap

Existing research on AI largely focuses on organizational adoption, technical performance, and executive perspectives, with limited employee-level evidence on AI-supported decision making. Few studies examine real-time decision support, decision speed and accuracy, market adaptation, implementation barriers, data security, and overall employee assessment within a single framework. Moreover, much of the existing evidence comes from developed countries, limiting its applicability to emerging economies such as India. Despite Maharashtra's importance as a major technology ecosystem, limited research specifically examines AI-supported decision making among its IT employees. Therefore, this study addresses these gaps by providing employee-level empirical evidence on AI-supported real-time decision making and adaptation to market dynamics in Maharashtra.

Research Objectives

The present study is guided by the following research objectives:

1. To explore the challenges in business decision making.
2. To solve the problem of decision making with AI
3. To find out the role of AI
4. To explore the challenges in the introduction of AI
5. To the study of two goals aim to provide a solution to the problem of uneven speaking distribution and advance the conversation further.

Research Hypotheses

The study tests the following five hypotheses:

Hypothesis 1

H0: Role of AI in business decision making is significant in today era

H1, Role of AI in Business decision making is not very significance in today's era.

Hypothesis 2

H0: AI overall sur pass human intelligence in the near future H1: AI does not surpass human intelligence in the near future

Hypothesis 3

H0: AI cannot substitute the HR manager's job H1: AI can substitute the HR manager's job

Hypothesis 4

H0: AI secure the data

H1: AI does not secure the data

Hypothesis 5

H0: AI saves time and cost.

H1: AI does not save time and cost.

3. Research Methodology

3.1 Research Design

This study adopted a quantitative, descriptive, analytical, and cross-sectional design to assess AI's role in real-time business decision making and market adaptation among Maharashtra's IT employees. Numerical data measured perceptions, while descriptive and analytical methods examined variables statistically. A cross-sectional survey captured AI-supported decision making at one point in time.

Study Area

The study was conducted in Maharashtra, India, a major IT and ITES hub. Data were collected from IT employees across 14 major IT districts, including Mumbai, Pune, Navi Mumbai, Thane, Nagpur, Nashik, and others. Maharashtra was selected due to its large IT workforce, developed

technology ecosystem, and diverse organizations, making it suitable for examining AI-supported decision making and market adaptation.

Population

The target population comprised IT and ITES employees across Maharashtra, with an estimated workforce of **10.7 lakh**. Respondents represented diverse roles in software development, analytics, project management, cybersecurity, cloud computing, and related business functions requiring real-time decision making.

3.2 Sample

The minimum sample size was 384 respondents based on Cochran's formula at a 95% confidence level and 5% margin of error. The study obtained 900 valid responses representing diverse IT organizations, roles, experience levels, and AI implementation stages across Maharashtra's 14 IT districts.

3.3 Sampling Technique

The study used stratified random sampling to represent IT employees across Maharashtra. The fourteen IT districts were treated as separate strata, with respondents selected proportionately according to IT workforce concentration. This approach reduced geographical bias and improved representation across organizational sizes, sectors, and employee experience levels.

3.4 Data Collection

The study utilized both primary and secondary data.

- Primary data were collected from 900 IT employees through a structured questionnaire administered using a five-point Likert scale. Participation in the survey was voluntary, informed consent was obtained from all respondents before data collection, and anonymity and confidentiality were maintained throughout the study.

- Secondary data were obtained from books, peer-reviewed journal articles, conference papers, government publications, reports published by the Ministry of Electronics and Information Technology (MeitY), NASSCOM, NITI Aayog, and other authentic academic and industry sources. These sources were used to develop the conceptual framework, review the existing literature, identify research gaps, formulate the research objectives and hypotheses, and support the interpretation of the empirical findings.

3.5 Research Instrument

The study used a structured questionnaire with two sections. Section 1 collected demographic information, while Section 2 measured the study constructs using a five-point Likert scale (1 =

Strongly Disagree to 5 = Strongly Agree). The questionnaire covered all five objectives, including real-time decision support, market adaptation, decision speed and accuracy, implementation barriers, ethics and bias, overall AI assessment, and hypothesis-related constructs.

3.6 Reliability Analysis

Reliability was assessed using Cronbach's alpha values of 0.70 or above indicate acceptable reliability, while values of 0.80 or above indicate good internal consistency. Results are presented in Table 1.

Table 1: Reliability Analysis (Cronbach's Alpha)

Construct	**Cronbach's Alpha**
Real-Time Decision Support	0.88
Market Dynamics Adaptation	0.88
Decision Speed and Accuracy	0.87
Implementation Barriers	0.89
Ethics and Bias Confidence	0.80
Overall Assessment	0.85
H1: Significance of AI Role	0.87
H2: AI vs Human Intelligence	0.83
H3: AI Substituting HR	0.89
H4: Data Security	0.82
H5: Time and Cost Savings	0.78

Source: Primary Survey of 900 IT Employees in Maharashtra.

Interpretation

The Cronbach's alpha values ranged from 0.78 to 0.89, indicating satisfactory to excellent internal consistency. Implementation Barriers and H3 had the highest reliability ($\alpha = 0.89$), while H5 had the lowest ($\alpha = 0.78$). All constructs exceeded 0.70, confirming adequate reliability for further statistical analysis.

Data Pre-Processing

Before statistical analysis, all responses were prepared using IBM SPSS Statistics through a systematic data pre-processing procedure.

Coding: Questionnaire responses were numerically coded using a predefined scheme. Construct items used a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Implementation levels ranged from 1 (Not using, no plans) to 5 (Fully Implemented).

Reverse Coding: Negatively worded items were reverse coded so that higher scores consistently represented more positive AI perceptions.

Data Screening: All 900 questionnaires were checked for completeness, duplicates, missing values, and coding errors. No invalid records were identified, and all 900 responses were retained. **Construction of Composite Scores:** Items within each construct were combined using arithmetic mean scores for Real-Time Decision Support, Market Dynamics Adaptation, Decision Speed and Accuracy, Implementation Barriers, Ethics and Bias Confidence, Overall Assessment, and hypothesis-related constructs.

Pilot Testing: A pilot study with 100 IT employees assessed clarity, structure, and reliability. All constructs had Cronbach's alpha > 0.70. No major revisions were required, pilot responses were excluded, and only the 900 main-survey responses were analyzed.

4. Data Analysis, Interpretation and Hypothesis Testing

4.1 Objective 1: To Explore the Challenges in Business Decision Making

The first objective of this study is to explore the challenges that organizations face in business decision-making, especially when adopting AI.

Table 2: Mean Severity Ranking of Challenges in Business Decision Making

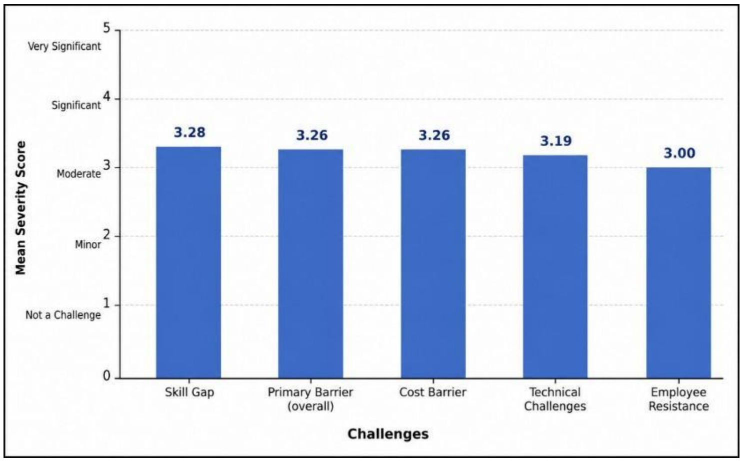
Challenge	**Mean Severity (1 - 5)**
Skill Gap	3.28
Primary Barrier (Overall)	3.26
Cost Barrier	3.26
Technical Challenges	3.19
Employee Resistance	3.00

Source**:** Primary Survey of 900 IT Employees in Maharashtra.

Interpretation:

The mean severity scores of the challenges faced in business decision making. Skill Gap was the most significant challenge (3.28), followed by primary and cost barriers (3.26 each). Technical challenges were moderate (3.19), while employee resistance was lowest (3.00), indicating skills and financial constraints as key barriers to AI adoption.

Figure 1: Ranked Challenges in Business Decision Making



Interpretation:

Figure 1 presents the same challenges in ranked order, making the small differences between them easy to see. All the challenges fall within the moderate range, which means that organizations face several barriers simultaneously rather than a single dominant one. The visual clearly places skill and cost concerns at the top, confirming that building employee capability and managing the cost of AI are the areas that need the most attention from IT organizations in Maharashtra.

Table 3: Chi-Square Test of Association: AI Implementation Level vs. Organization Size

Chi-square statics	**Degrees of freedom**	**p-value**	**Significant at 0.05**
14.50	16	0.56	No

Interpretation:

Table 3 shows that AI implementation level was not significantly associated with organization size ($\chi^2 = 14.50$, df = 16, p = 0.56). Since the p-value exceeds 0.05, organization size does not significantly influence AI implementation. Thus, organizations of different sizes show broadly similar AI adoption levels, indicating that decision-making and adoption challenges are shared across firms.

4.2 Objective 2: To Examine How AI Supports Business Decision Making

The second objective examines how AI supports employees in making business decisions, focusing on real-time decision support and decision speed and accuracy.

Table 4: Descriptive Means: Role of AI in Decision Making

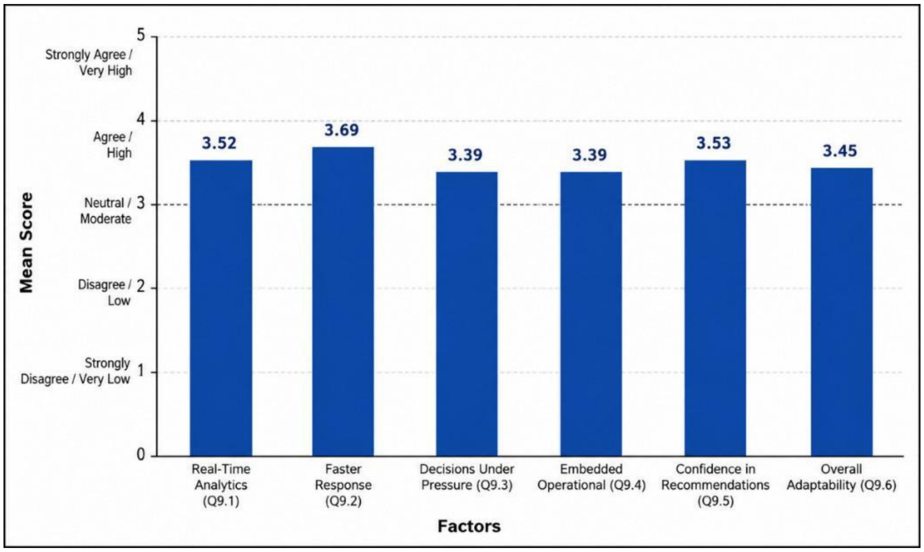
Statement	**Mean (1 - 5)**
AI Analyses Data in Real Time	3.52
AI Helps Respond Faster	3.69
AI Supports Decisions Under Pressure	3.39
AI Embedded in Daily Operations	3.39
Confidence in AI Recommendations	3.53
Overall Adaptability	3.45

Source: Primary Survey of 900 IT Employees in Maharashtra.

Interpretation:

Table 4 shows that AI helps organizations respond faster received the highest mean score (3.69), followed by confidence in AI recommendations (3.53) and real-time data analysis (3.52). Overall adaptability (3.45), decision support under pressure (3.39), and daily AI use (3.39) were also positive. Overall, employees viewed AI as a useful decision-support tool, particularly for improving response speed and providing reliable recommendations.

Figure 2: Perceived Role of AI in Decision Making



Interpretation:

Figure 2 shows that faster response had the highest mean (3.69), highlighting time-saving as the main practical benefit of AI in decision making. The relatively similar scores for other factors indicate that AI is broadly useful across different decision-making situations.

Table 5: Pearson Correlation: Real-Time Decision Support and Decision Speed and Accuracy

Pearson r	**P-Value**	**Significant at 0.05**
0.49	<0.001	Yes

Interpretation:

Table 5 shows a moderate positive correlation ($r = 0.49$, $p < 0.001$) between real-time decision support and decision speed and accuracy. This significant relationship indicates that better AI support is associated with faster and more accurate business decisions.

4.3 Objective 3: AI and Adaptation to Market Dynamics

The third objective examines how AI helps organizations adapt to changes in the market. This includes detecting market shifts, adjusting pricing, responding to competitors, and forecasting demand.

Table 6: Descriptive Statistics of Market-Dynamics Adaptation (Mean and SD)

Statement	**N**	**Mean**	**SD**
AI Helps Detect Market Shifts Early	900	3.54	1.04
AI Helps Adjust Pricing Strategy	900	3.40	1.05

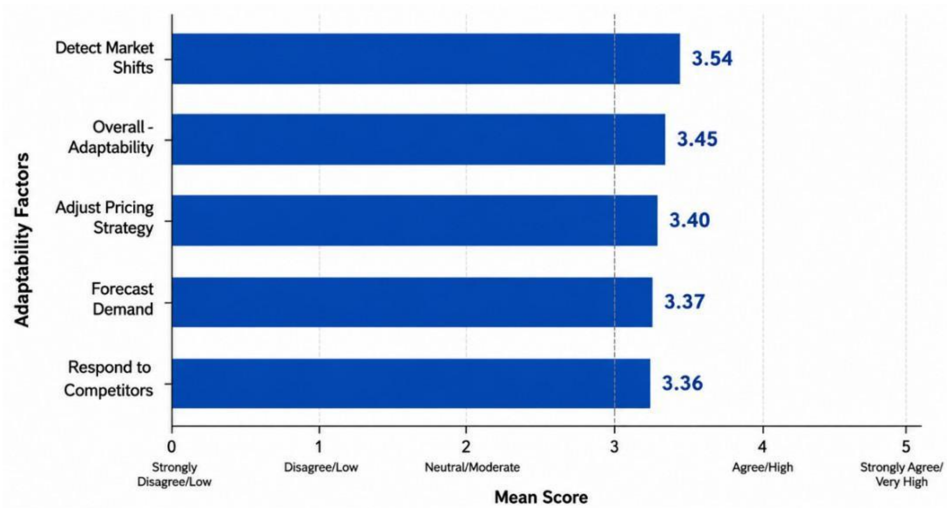
AI Helps Respond to Competitors	900	3.36	1.03
AI Helps Forecast Demand	900	3.37	1.03
Overall Adaptability	900	3.45	1.02
Market-Dynamics Adaptation (Overall Score)	900	3.42	0.84

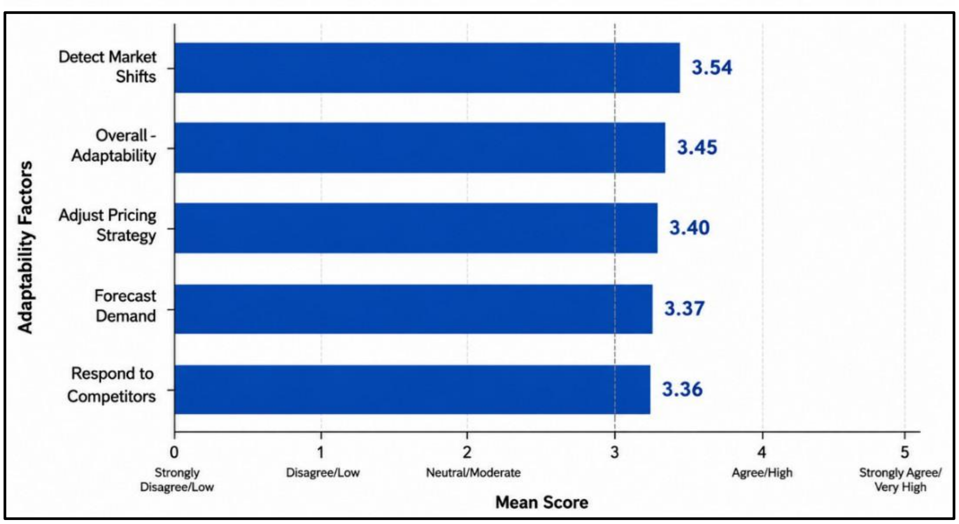
Source: Primary Survey of 900 IT Employees in Maharashtra.

Interpretation:

Table 6 shows that respondents generally viewed AI positively in supporting market adaptation. Early detection of market changes received the highest mean score (3.54), followed by overall adaptability (3.45). The overall Market-Dynamics Adaptation score was 3.42, above the neutral value of 3.00, indicating that AI supports organizations in responding to changing market conditions.

Figure 3: Market-Dynamics Adaptation Components





Interpretation:

Figure 3 shows that early detection of market shifts received the highest score (3.54). The similar scores for pricing, demand forecasting, and competitor response indicate that AI supports different aspects of market adaptation in a balanced manner.

Table 7: Pearson Correlation: Market-Dynamics Adaptation and Decision Speed and Accuracy

Pearson r	**P-Value**	**Significant at 0.05**
0.44	<0.001	Yes

Interpretation:

Table 7 shows a moderate positive correlation ($r = 0.44$, $p < 0.001$) between market adaptation and decision speed and accuracy. This significant relationship indicates that better market adaptation is associated with faster and more accurate business decisions.

4.4 Objective 4: Challenges in AI Implementation

The fourth objective looks more closely at the barrier's organizations face while putting AI into practice. Table 16 ranks the main implementation barriers by their mean severity, and Table 17 shows which single barrier respondents consider the most important.

Table 8: Mean Severity Ranking AI Implementation Barriers

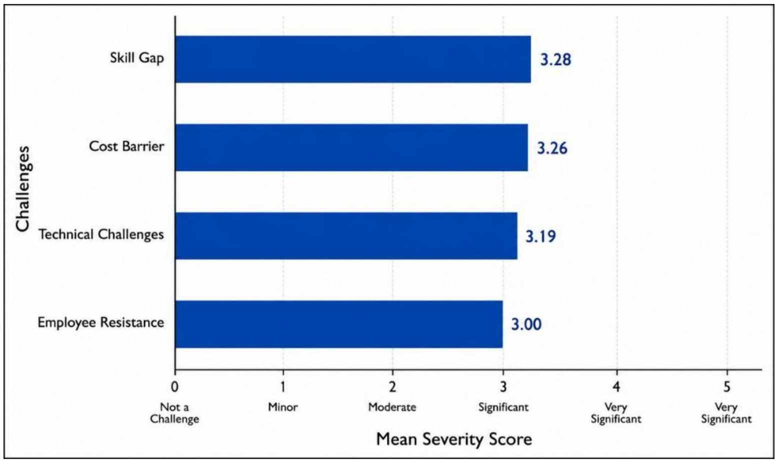
Barrier	**Mean Severity (1 - 5)**
Skill Gap	3.28
Cost Barrier	3.26
Technical Challenges	3.19
Employee Resistance	3.00

Source: Primary Survey of 900 IT Employees in Maharashtra.

Interpretation:

Table 8 shows that skill gap was the highest AI implementation barrier (3.28), followed by cost (3.26) and technical challenges (3.19). Employee resistance was lowest (3.00), indicating that skills, costs, and technical issues are greater barriers to AI adoption.

Figure 4: Ranked Barriers to AI Implementation



Interpretation:

Figure 4 shows the implementation barriers in ranked order. The pattern matches the earlier challenge ranking in the decision-making analysis, which strengthens the finding that skills and costs are consistent pressure points for these organizations. Because all the bars are in the moderate range, the figure suggests that no single barrier blocks AI adoption on its own; instead, organizations must manage several moderate barriers together.

Table 9: Frequency Distribution of the Primary Barrier to AI Introduction

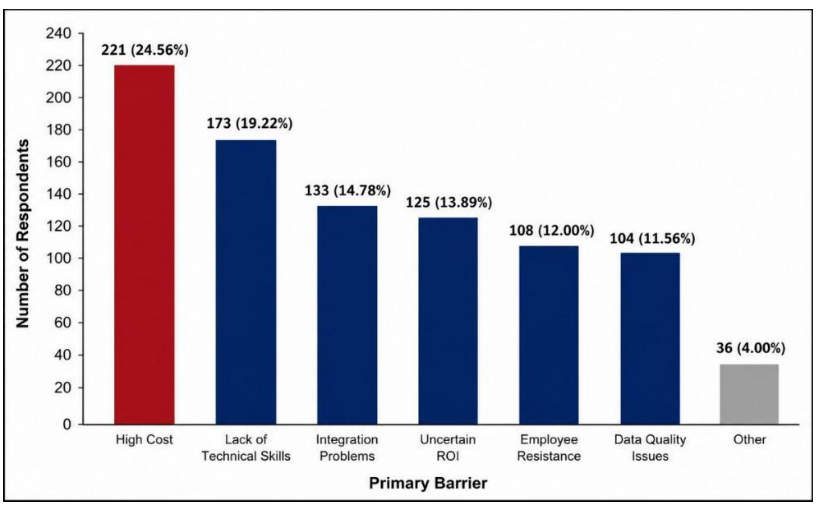
Primary Barrier	Frequency	Percentage (%)
High Cost	221	24.56
Lack of Technical Skills	173	19.22
Integration Problems	133	14.78
Uncertain Return on Investment	125	13.89
Employee Resistance	108	12.00
Data Quality Issues	104	11.56
Other	36	4.00

Source: Primary Survey of 900 IT Employees in Maharashtra.

Interpretation:

Table 9 shows that high cost was the leading AI adoption barrier (24.56%), followed by lack of technical skills (19.22%) and integration problems (14.78%). This indicates that financial and technical challenges are the main obstacles to AI implementation.

Figure 5: Primary Barriers to AI Introduction



Interpretation:

Figure 5 shows that high cost was the leading barrier to AI adoption, followed by technical skills and integration problems. The results indicate that organizations must address financial, technical, data quality, and integration challenges for successful AI implementation.

Table 10: Multiple Linear Regression Coefficients (Outcome: Overall Satisfaction)

Predictor	Coefficient (B)	t-value	p-value
Constant	-0.38	-3.38	0.001

Real-Time Decision Support Score	0.63	19.49	< 0.001

Decision Speed and Accuracy Score 0.49 16.20 < 0.001

Interpretation:

Table 10 shows that both predictors significantly and positively influence overall AI satisfaction ($p < 0.001$). Real-time decision support had the stronger effect ($B = 0.63$) compared with decision speed and accuracy ($B = 0.49$), indicating that real-time support is the stronger predictor of employee satisfaction.

Table 11: Regression Model Summary

R-squared (R^2)	Adjusted R^2	F-statistic	p-value
0.58	0.58	624.43	< 0.001

Interpretation:

Table 11 shows that the regression model explains 58% of the variation in overall satisfaction (R^2

$= 0.58$). The model is statistically significant ($F = 624.43$, $p < 0.001$), indicating that real-time decision support, decision speed, and accuracy significantly contribute to employees' satisfaction with AI.

4.5 Objective 5: Overall Assessment of AI

The fifth objective provides an overall assessment of AI by examining how useful, trusted, and effective employees find it and how willing organizations are to expand its use.

Table 12: Descriptive Means - Overall Assessment of AI

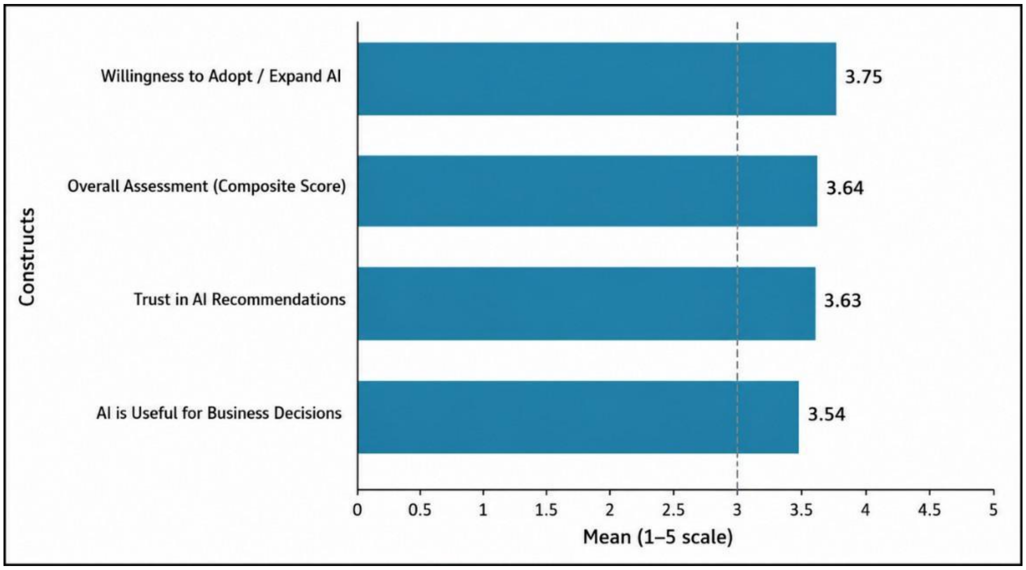
Statement	Mean (1 - 5)
AI is Useful for Business Decisions	3.54
Willingness to Adopt / Expand AI	3.75
Trust in AI Recommendations	3.63
Overall Assessment (Composite Score)	3.64

Source: Primary Survey of 900 IT Employees in Maharashtra.

Interpretation:

Table 12 shows that willingness to adopt and expand AI received the highest mean (3.75), followed by trust in AI recommendations (3.63) and AI usefulness (3.54). The overall assessment score was 3.64, above the neutral value of 3.00, indicating a generally positive perception of AI among respondents.

Figure 5: Overall Assessment of AI



Interpretation:

Figure 5 shows that willingness to expand AI use is highest, followed by trust and current usefulness. This positive outlook suggests that employees are ready for wider AI adoption in business decision-making across Maharashtra's IT sector.

4.6 Hypothesis Testing

This section tests the five hypotheses using responses from 900 IT employees. One-sample t-tests compare construct means with the neutral value of 3.00, while correlation and regression are used for market adaptation. A mean significantly above 3.00 indicates agreement, whereas a lower mean indicates disagreement. Combined test results are presented in Table 21, followed by individual hypothesis discussions.

Table 13: One-Sample t-Test Results: Hypotheses H1 to H5 (Test Value = 3.00)

Hypothesis	Mean	Test Value	t-value	p-value	Significant
H1 - Significance of AI Role	3.69	3.00	23.14	< 0.001	Yes
H2 - AI vs Human Intelligence	2.96	3.00	-1.16	0.25	No
H3 - AI Substituting HR	2.61	3.00	-12.26	< 0.001	Yes
H4 - Data Security	3.41	3.00	12.90	< 0.001	Yes
H5 - Time and Cost Savings	3.70	3.00	22.20	< 0.001	Yes

Source: Primary survey of 900 IT employees in Maharashtra.

Interpretation:

Table 13 shows that H1, H4, and H5 are significant with means above 3.00, indicating positive perceptions. H2 is not significant, while H3 is significant but below 3.00, showing disagreement that AI can replace human judgement in HR decisions.

Hypothesis 1

H_0: AI does not play a significant role in real-time business decision making.

H_1: AI plays a significant role in real-time business decision-making.

Test Used: One-sample t-test (test value = 3.00). **Results:** Mean = 3.69, t-value = 23.14, p-value < 0.001. **Decision: H_0 is rejected and H_1 is accepted.**

The mean of 3.69 is significantly above 3.00, confirming that respondents perceive AI as important for real-time business decision making.

Hypothesis 2

H_0: AI does not surpass human intelligence in business decision making.

H_1: AI surpasses human intelligence in business decision making.

Test Used: One-Sample t-test (test value = 3.00). **Results:** Mean = 2.96, t-value = -1.16, p-value = 0.25. **Decision: H_0 is Accepted and H_1 is Rejected.**

The mean is not significantly different from 3.00, indicating that respondents do not believe AI surpasses human intelligence.

Hypothesis 3

H_0: AI does not significantly support employee decision-making in HR-related tasks.

H_1: AI significantly supports employee decision-making in HR-related tasks.

Test Used: One-Sample t-test (test value = 3.00). **Results:** Mean = 2.61, t-value = -12.26, p-value < 0.001. **Decision: H_0 is Accepted and H_1 is Rejected.**

The mean of 2.61 is significantly below 3.00, indicating that respondents do not support AI replacing human judgement in HR decisions.

Hypothesis 4

H_0: AI does not significantly improve data security in business decision-making.

H_1: AI significantly improves data security in business decision making.

Test Used: One-sample t-test (test value = 3.00). **Results:** Mean = 3.41, t-value = 12.90, p-value < 0.001. **Decision: H_0 is rejected and H_1 is accepted.**

The mean of 3.41 is significantly above 3.00, indicating that respondents perceive AI as improving data security.

Hypothesis 5

H_0: AI does not significantly save organizational time and cost.

H_1: AI significantly saves organizational time and cost.

Test Used: One-Sample t-test (test value = 3.00). **Results:** Mean = 3.70, t-value = 22.20, p-value < 0.001. **Decision: H_0 is rejected and H_1 is accepted.**

The mean of 3.70 is significantly above 3.00, indicating that respondents believe AI contributes to organizational time and cost savings.

Discussion of Findings

The study assessed Artificial Intelligence (AI) in real-time business decision making and organizational adaptation among IT employees in Maharashtra. Overall, AI was perceived as an effective decision-support tool that complements rather than replaces human judgement, while improving decision quality, market responsiveness, data security, and operational efficiency.

Skill gaps were the most significant AI adoption barrier, followed by implementation costs and technical challenges, while employee resistance was least significant. This indicates that successful adoption depends on workforce capability, organizational readiness, and suitable infrastructure, consistent with Davenport (2018) and reports from NASSCOM and NITI Aayog.

Employees valued AI for real-time support, faster responses, improved accuracy, and confidence in recommendations. Pearson correlation showed a significant positive relationship between real-

time decision support and decision speed and accuracy ($r = 0.49$, $p < 0.001$). This supports Agrawal, Gans, and Goldfarb (2018), who emphasize AI's role in improving prediction and supporting human decisions.

AI was also viewed positively for market adaptation, particularly identifying market changes, forecasting demand, monitoring competitors, and adjusting pricing. Early identification of market changes received the strongest agreement. Market adaptation was positively related to decision speed and accuracy ($r = 0.44$, $p < 0.001$), indicating improved organizational responsiveness.

Major implementation barriers included high costs, skill shortages, integration difficulties, uncertain returns, and data quality issues. Regression analysis showed that real-time decision support was the strongest predictor of employee satisfaction, followed by decision speed and accuracy; together, they explained 58% of variation ($R^2 = 0.58$), supporting the TOE framework. Overall perceptions were positive, particularly willingness to expand AI adoption and trust in recommendations. Hypothesis testing confirmed significant contributions to real-time decision making, data security, and time and cost savings. However, employees did not view AI as superior to human intelligence or as a replacement for human judgement in HR decisions. Overall, AI creates greatest value through collaboration with human decision makers, combining evidence-based analysis with human expertise, ethical reasoning, and accountability.

5. Summary, Conclusions and Recommendations

The study assessed the role of Artificial Intelligence (AI) in real-time business decision making and organizational adaptation to market dynamics among IT employees in Maharashtra. It examined AI's contribution to decision speed and accuracy, market adaptation, implementation barriers, and overall employee assessment. A positivist philosophy, deductive approach, and quantitative cross-sectional design were adopted. Primary data were collected from 900 IT employees through stratified random sampling using a structured five-point Likert scale questionnaire. Data were analysed using descriptive statistics, Cronbach's alpha, chi-square tests, Pearson correlation, multiple linear regression, and one-sample t-tests.

The findings indicate that AI is widely perceived as a valuable decision-support tool that helps employees make faster, more accurate, and evidence-based decisions. Real-time decision support had a significant positive relationship with decision speed and accuracy, while market adaptation was also positively associated with improved decision quality. Regression analysis identified real-time decision support as the strongest predictor of overall employee satisfaction with AI. Skill

gaps and implementation costs were the major adoption barriers, whereas employee resistance was comparatively low. Hypothesis testing confirmed that AI significantly supports real-time business decision making, improves data security, and contributes to organizational time and cost savings. However, respondents did not consider AI superior to human intelligence or support replacing human judgement in HR-related decisions.

Overall, the study concludes that AI should function as a collaborative decision-support system rather than a substitute for human intelligence. Organizations can maximize AI's benefits by investing in employee skill development, strengthening digital infrastructure, adopting explainable and trustworthy AI systems, and maintaining appropriate human oversight in critical decisions. Although limited to IT employees in Maharashtra, the study provides useful employee-level evidence on AI-supported decision making and offers practical directions for organizational implementation and future research.

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