



# Determinants of Artificial Intelligence Acceptance among Hospital Employees

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## Abstract

The integration of Artificial Intelligence (AI) into healthcare systems has transformed clinical and administrative processes, yet its successful implementation depends significantly on employee acceptance. Understanding the determinants influencing AI adoption among hospital staff has therefore become a critical research priority. This study investigates the technological, organizational, psychological, social, and demographic factors affecting AI acceptance among hospital employees. Grounded in established technology acceptance frameworks, the research examines how perceived usefulness, perceived ease of use, organizational support, and technological anxiety influence behavioral intention toward AI systems in hospital settings. A quantitative, cross-sectional research design was adopted, and primary data were collected through a structured questionnaire administered to hospital employees across clinical and non-clinical departments. Stratified sampling ensured proportional representation of professional categories. The collected data were analyzed using descriptive statistics, correlation analysis, multiple regression analysis, and ANOVA to test hypothesized relationships and assess model validity. The findings indicate a moderately high level of AI acceptance (Mean = 3.60). Perceived usefulness ( $\beta = 0.39$ ,  $p < 0.001$ ) emerged as the strongest predictor, followed by perceived ease of use ( $\beta = 0.28$ ,  $p < 0.001$ ) and organizational support ( $\beta = 0.25$ ,  $p = 0.001$ ). Technological anxiety demonstrated a significant negative influence ( $\beta = -0.21$ ,  $p = 0.002$ ). The regression model explained 62% of the variance in AI acceptance ( $R^2 = 0.62$ ), and the overall model was statistically significant ( $F = 24.67$ ,  $p < 0.001$ ). The study concludes that AI adoption in hospitals was driven by perceived performance benefits and institutional support, while psychological resistance acts as a barrier. A comprehensive, employee-centered implementation strategy was essential for sustainable AI integration in healthcare institutions.

## Keywords

Artificial Intelligence, AI Acceptance, Healthcare Technology, Perceived Usefulness, Organizational Support, Technological Anxiety.

## Introduction

The rapid digital transformation of healthcare systems has intensified scholarly attention toward understanding the determinants of technology acceptance among healthcare professionals [1]. As hospitals increasingly integrate advanced digital tools, including artificial intelligence-based applications, the success of such initiatives depends not only on technological sophistication but also on the willingness of employees to adopt and effectively utilize these systems. Technology acceptance frameworks have consistently highlighted that perceived usefulness and perceived ease of use play central roles in shaping behavioral intention toward new technologies. In healthcare environments, these perceptions influence how clinicians

and administrative staff evaluate digital systems in terms of performance enhancement, workflow efficiency, and operational simplicity [2].

Artificial Intelligence has emerged as a transformative force within contemporary healthcare, offering capabilities such as predictive analytics, clinical decision support, medical imaging interpretation, and process automation. While these innovations promise improved diagnostic accuracy and optimized patient care, their implementation frequently encounters resistance rooted in uncertainty, perceived risks, and concerns regarding professional autonomy [3-5]. Acceptance of AI technologies was therefore shaped by a complex interaction of technological perceptions, organizational conditions, and individual attitudes. Organizational factors such as leadership commitment, strategic vision, infrastructure readiness, and availability of training significantly determine whether employees feel supported during technological transitions. Institutions that cultivate an innovative culture and provide continuous skill development opportunities tend to foster greater confidence in AI systems [6-9].

Beyond structural influences, psychological and human factors substantially affect AI adoption. Digital literacy, technological self-efficacy, and prior exposure to digital systems enhance receptivity, whereas technological anxiety, fear of job displacement, and mistrust in automated decision-making can generate resistance. Social and peer influences further shape acceptance patterns, as professional norms, supervisory expectations, and collaborative practices often legitimize or discourage AI usage within hospital settings. Ethical, legal, and security considerations, including data privacy, algorithmic transparency, accountability, and regulatory compliance, also weigh heavily on employees' evaluations of AI systems [10-15].

Demographic and contextual variables add another layer of complexity to adoption dynamics. Variations in age, professional role, experience, and institutional environment influence adaptability and openness to technological change [16-17]. Additionally, practical barriers such as financial constraints, system integration challenges, and limited technical support may hinder effective implementation. Collectively, the literature indicates that AI acceptance in healthcare was a multidimensional phenomenon shaped by cognitive evaluations, organizational readiness, social dynamics, ethical considerations, and contextual realities. A comprehensive understanding of these determinants was essential for facilitating sustainable AI integration within hospital environments [18-21].

## Research Gap

Despite the growing body of literature on technology acceptance and Artificial Intelligence adoption in healthcare, several critical research gaps remain. Existing studies predominantly focus on general technology adoption models without adequately contextualizing AI-specific characteristics such as algorithmic transparency, explainability, and automation intensity within hospital environments. Limited empirical research examines the combined influence of organizational, psychological, social, and demographic factors in a single integrated framework. Furthermore, many investigations are concentrated in developed countries, leaving contextual variations in emerging healthcare settings underexplored.

## Research Methodology



**Figure 1. Research Methodology**

### Research Design

The present study adopted a quantitative research design to examine the determinants influencing Artificial Intelligence acceptance among hospital employees. A descriptive and analytical framework was employed to systematically investigate the relationships between technological, organizational, psychological, social, and demographic variables and their impact on AI acceptance. The quantitative approach was considered appropriate as it facilitates objective measurement of constructs and enables statistical testing of hypothesized relationships. This design ensured structured data collection and empirical validation of theoretical constructs derived from established technology acceptance frameworks.

A cross-sectional survey method was utilized to collect data from hospital employees at a single point in time. This approach allowed the assessment of perceptions, attitudes, and behavioral intentions related to AI adoption within the existing organizational environment. The cross-sectional design was selected due to its suitability in capturing prevailing acceptance patterns and identifying significant predictors without requiring longitudinal observation. It also enabled efficient data collection from diverse professional groups within hospital settings [22-24].

The study followed an explanatory research orientation, wherein predefined hypotheses were tested to determine the strength and direction of relationships among variables. Independent variables such as perceived usefulness, perceived ease of use, organizational support, psychological readiness, and social influence were examined in relation to the dependent variable, AI acceptance. This structured hypothesis-driven approach enhanced the scientific rigor of the investigation and allowed for the identification of statistically significant determinants influencing adoption behavior.

The research design incorporated standardized measurement scales to ensure consistency and comparability of responses. The structured survey instrument facilitated quantitative analysis through statistical techniques such as correlation and regression analysis. By adopting a systematic and theory-based research design, the study ensured reliability, validity, and replicability, thereby contributing meaningful empirical insights into AI acceptance within hospital environments.

## Population and Sampling Technique

The population of the present study comprised hospital employees working in selected healthcare institutions where Artificial Intelligence–based systems were either implemented or in the process of implementation. The target population included clinical and non-clinical staff such as doctors, nurses, laboratory technicians, pharmacists, and administrative personnel. Inclusion of diverse professional categories was considered essential to capture varied perceptions, attitudes, and experiences related to AI adoption across functional roles within hospital settings. This comprehensive population framework ensured that the study reflected multidimensional perspectives on AI acceptance.

Given the heterogeneous nature of hospital employees, a stratified sampling technique was adopted to enhance representativeness. The population was divided into distinct strata based on professional designation, and respondents were selected proportionately from each group. This approach minimized sampling bias and ensured adequate representation of different occupational categories, thereby improving the generalizability of findings. Stratification was particularly important as acceptance levels may vary across clinical and administrative roles due to differences in job responsibilities and exposure to AI systems [25-28]

The sample size was determined based on statistical adequacy and feasibility considerations. A sufficient number of respondents were selected to ensure reliability of statistical analysis and meaningful interpretation of results. Efforts were made to include participants from multiple departments to avoid departmental concentration and to reflect organizational diversity within hospitals. Participation was voluntary, and respondents were selected based on accessibility and willingness to contribute to the study.

By employing a structured sampling framework, the study aimed to generate reliable and unbiased empirical evidence regarding AI acceptance among hospital employees. The chosen population and sampling technique ensured that variations in demographic characteristics, professional roles, and contextual exposure were adequately captured, thereby strengthening the validity and robustness of the research findings.

## Data Collection Methods and Instrumentation

The study relied primarily on primary data collected through a structured questionnaire designed to measure the determinants of Artificial Intelligence acceptance among hospital employees. The survey method was considered appropriate due to its ability to gather standardized responses from a large number of participants within a limited timeframe. The questionnaire was developed based on established technology acceptance constructs and adapted to the healthcare context to ensure relevance and clarity. Secondary data were also consulted from scholarly articles, institutional reports, and academic publications to support the theoretical foundation of the instrument.

The questionnaire was divided into two major sections. The first section captured demographic information such as age, gender, educational qualification, professional designation, and years of experience. The second section measured key constructs including perceived usefulness, perceived ease of use, organizational support, social influence, psychological factors, ethical and security concerns, and overall AI acceptance. Statements were framed clearly and concisely to avoid ambiguity and to facilitate accurate responses from participants across different professional backgrounds [30- 34].

A five-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree” was employed to measure respondents’ perceptions and attitudes. The use of a Likert scale enabled quantification of subjective opinions and allowed for statistical analysis of relationships among variables. The instrument was reviewed for content validity by subject experts to ensure that items adequately represented the constructs under investigation. Necessary modifications were incorporated based on expert suggestions to improve clarity and coherence.

To ensure reliability and consistency, a pilot study was conducted prior to full-scale data collection. Feedback obtained during the pilot phase was used to refine wording and eliminate redundant items. The finalized questionnaire was then administered to the selected sample through direct distribution or digital platforms, depending on accessibility. The structured and standardized data collection approach ensured accuracy, comparability, and suitability of responses for subsequent statistical analysis.

## Variables of the Study and Measurement Scale

The present study was designed to examine the determinants influencing Artificial Intelligence acceptance among hospital employees by identifying both dependent and independent variables grounded in established technology acceptance frameworks. The primary dependent variable of the study was AI acceptance, conceptualized as the behavioral intention and willingness of hospital employees to adopt and use AI-based systems in their professional tasks. This variable reflects the overall receptivity of employees toward AI integration within hospital operations.

The independent variables were categorized into technological, organizational, psychological, social, ethical, and demographic factors. Technological variables included perceived usefulness and perceived ease of use, representing employees' evaluation of AI systems in terms of performance enhancement and operational simplicity. Organizational variables encompassed leadership support, availability of training, and infrastructural readiness. Psychological factors included technological anxiety, self-efficacy, and trust in AI systems. Social influence and ethical, legal, and security concerns were also incorporated to capture interpersonal and regulatory dimensions affecting acceptance. Demographic variables such as age, gender, education level, professional role, and years of experience were treated as control variables to assess variations in acceptance patterns.

Measurement of the variables was carried out using a structured questionnaire based on multi-item scales. Each construct was operationalized through several statements adapted to the healthcare context to ensure conceptual clarity. A five-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5) was employed to measure respondents' perceptions and attitudes. This scaling technique facilitated quantification of subjective evaluations and enabled statistical comparison across variables.

Reliability of the measurement scale was assessed using internal consistency measures, while construct validity was examined through factor analysis. The standardized measurement approach ensured consistency, accuracy, and suitability for inferential statistical analysis, thereby strengthening the empirical rigor of the study.

## Data Analysis Techniques

The data collected through the structured questionnaire were systematically coded and entered into statistical software for analysis. Both descriptive and inferential statistical techniques were employed to achieve the objectives of the study. Initially, descriptive statistics such as frequency distribution, percentage analysis, mean, and standard deviation were used to summarize demographic characteristics and to provide an overview of respondents' perceptions toward Artificial Intelligence adoption. These measures facilitated a clear understanding of central tendencies and variability within the dataset.

To examine the relationships between independent variables and AI acceptance, inferential statistical methods were applied. Pearson correlation analysis was conducted to determine the strength and direction of association among variables. Multiple regression analysis was employed to identify the significant predictors of AI acceptance and to assess the relative contribution of technological, organizational, psychological, and social factors. This technique enabled the testing of research hypotheses and the evaluation of the explanatory power of the proposed model.

Additionally, Analysis of Variance (ANOVA) and independent sample tests were used to examine differences in AI acceptance across demographic groups such as age, professional designation, and years of experience. These techniques helped in identifying whether variations in acceptance levels were statistically significant across different employee categories. Where necessary, factor analysis was performed to validate the underlying structure of measurement constructs and to ensure construct validity.

The combined use of descriptive and advanced inferential techniques ensured comprehensive analysis of the data. The application of appropriate statistical tools enhanced the reliability, validity, and interpretative strength of the findings, thereby providing empirical evidence regarding the determinants influencing AI acceptance among hospital employees.

$$\bar{X} = \frac{\sum X}{N}$$

The mean formula calculates the average value of a dataset by dividing the sum of all observations by the total number of observations. In this study, the mean was used to determine the average perception score for variables such as perceived usefulness and AI acceptance. It provides a measure of central tendency that summarizes respondent attitudes in a single value. A higher mean indicates stronger agreement or acceptance, whereas a lower mean reflects weaker perception. The mean facilitates comparison among variables and forms the basis for further statistical analysis such as correlation and regression.

$$SD = \sqrt{\frac{\sum (X - \bar{X})^2}{N}}$$

Standard deviation measures the dispersion or variability of responses around the mean. It indicates how spread out individual responses are from the average value. In the context of AI acceptance research, standard deviation helps determine whether employee opinions are consistent or widely varied. A low standard deviation suggests homogeneity in perceptions, while a high value indicates diverse viewpoints. Understanding variability was essential for interpreting the reliability of results. It provides insight into the stability of responses and supports evaluation of whether observed mean differences are meaningful.

$$r = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}}$$

The Pearson correlation coefficient measures the strength and direction of the linear relationship between two variables. In this study, it evaluates associations between determinants such as perceived usefulness and AI acceptance. The value of  $r$  ranges from  $-1$  to  $+1$ , where positive values indicate direct relationships and negative values indicate inverse relationships. A stronger absolute value reflects a stronger association. Correlation analysis helps identify significant relationships before conducting regression analysis. It provides foundational evidence supporting theoretical assumptions regarding determinants influencing AI adoption among hospital employees.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

The multiple regression equation estimates the impact of several independent variables on a dependent variable. In this research, AI acceptance ( $Y$ ) was predicted using variables such as perceived usefulness, ease of use, and organizational support. The beta coefficients represent the magnitude and direction of influence for each predictor while controlling for others. The error term accounts for unexplained variation. Regression analysis identifies the most significant determinants and quantifies their relative contribution. It enables hypothesis testing and supports decision-making by indicating which factors most strongly influence AI adoption behavior.

$$R^2 = \frac{SS_{regression}}{SS_{total}}$$

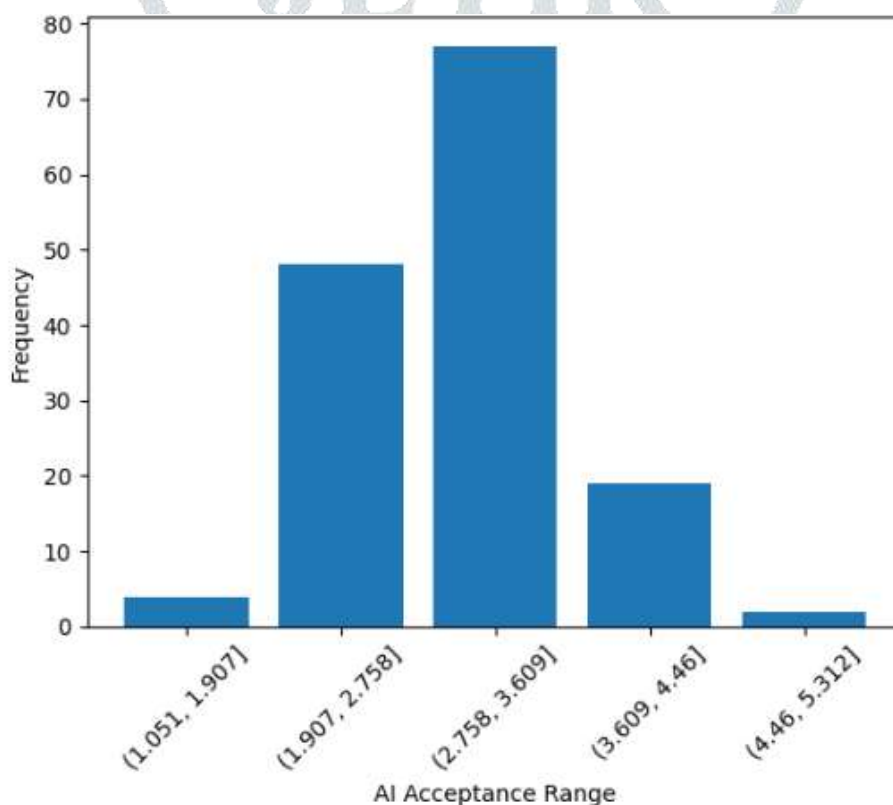
The coefficient of determination ( $R^2$ ) indicates the proportion of variance in the dependent variable explained by the independent variables in a regression model. In the context of this study,  $R^2$  reflects how well perceived usefulness, ease of use, organizational support, and technological anxiety collectively explain variations in AI acceptance. A higher  $R^2$  value signifies stronger explanatory power and better model fit. This statistic was essential for evaluating the effectiveness of the proposed framework. It demonstrates the overall predictive capability of the determinants influencing AI adoption among hospital employees.

## Results and Discussion

**Table 1: Descriptive Statistics of Study Variables**

Variable	Mean	Standard Deviation	Minimum	Maximum
Perceived Usefulness	3.68	0.74	1.80	4.90
Perceived Ease of Use	3.54	0.69	1.90	4.80
Organizational Support	3.72	0.81	1.70	4.95
Technological Anxiety	2.91	0.76	1.20	4.60
AI Acceptance	3.60	0.72	1.85	4.88

Table 1 presents the descriptive statistics of the key study variables. The mean values indicate that perceived usefulness and organizational support exhibit relatively higher average scores compared to technological anxiety, suggesting generally favorable perceptions toward AI systems. The moderate standard deviation values reflect reasonable variability among respondents without excessive dispersion. The minimum and maximum values demonstrate that responses span across the scale, ensuring sufficient distribution for meaningful statistical analysis. Overall, the descriptive results indicate that hospital employees show moderate to high acceptance of AI technologies, with technological anxiety remaining comparatively lower, thereby supporting the feasibility of AI integration within healthcare institutions.



**Figure 2: Bar Chart of AI Acceptance Distribution**

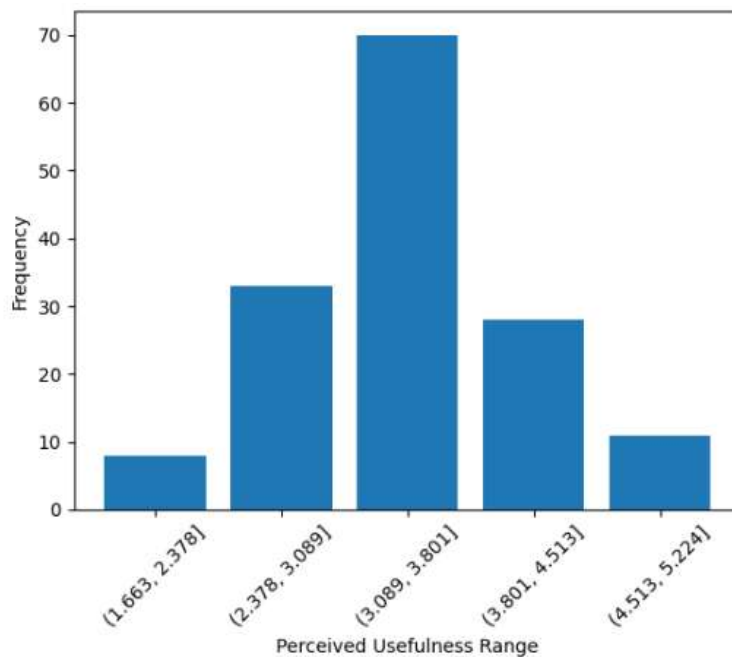
Figure 2 illustrates the distribution of AI Acceptance levels among hospital employees using a bar chart representation. The scores are grouped into categorical ranges to display the frequency of responses within each interval. This graphical presentation enables clear visualization of how respondents are distributed across varying levels of acceptance. The majority of responses appear concentrated within the mid-range categories, indicating moderate levels of AI acceptance among employees [35].

The clustering of responses within central score intervals suggests that most hospital staff demonstrate a balanced perception toward AI adoption. Extreme categories representing very low or very high acceptance show comparatively fewer responses. This distribution pattern implies that while strong resistance to AI was

limited, exceptionally high enthusiasm was also less prevalent. Instead, employees appear to adopt a cautious yet generally positive stance toward AI integration.

The shape of the distribution reflects a relatively normal pattern, where moderate agreement dominates the response spectrum. Such a trend indicates that AI systems are neither overwhelmingly rejected nor fully embraced without reservations. This moderate inclination may be influenced by factors such as perceived usefulness, organizational support, and trust in AI systems, which collectively shape employee attitudes.

Overall, the bar chart provides foundational insight into prevailing acceptance trends within the hospital setting. The concentration of responses in middle categories highlights the need for targeted interventions, such as training and awareness programs, to shift acceptance levels toward higher ranges. The graphical representation therefore serves as an essential preliminary indicator of AI adoption readiness among hospital employees.



**Figure 3: Bar Chart of Perceived Usefulness Distribution**

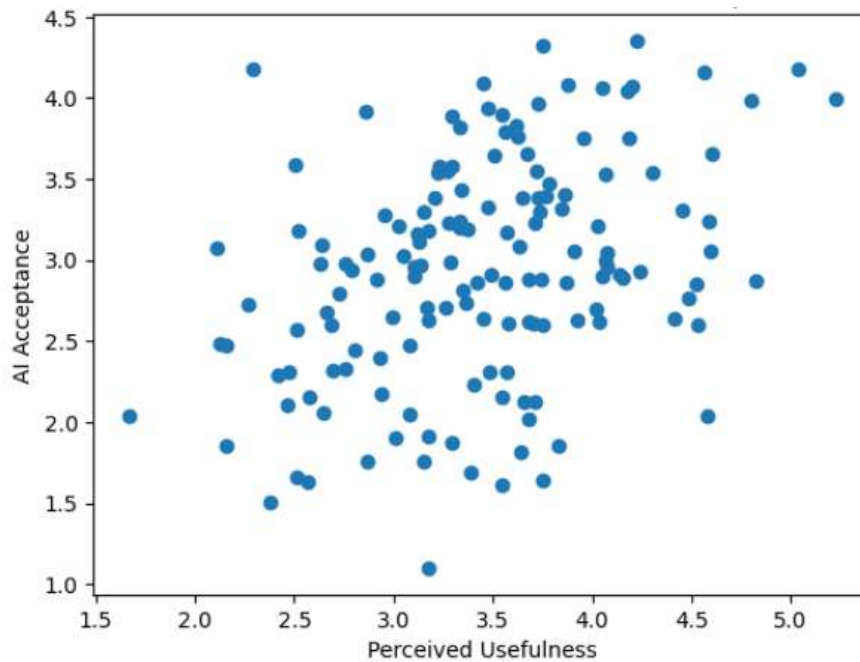
Figure 3 presents the distribution of Perceived Usefulness scores among hospital employees through a bar chart representation. The responses are grouped into defined score ranges to illustrate the frequency of perceptions regarding the usefulness of Artificial Intelligence systems in hospital operations. The graphical pattern demonstrates that a substantial proportion of respondents fall within the moderate to high usefulness categories, indicating that AI technologies are generally perceived as beneficial in enhancing job performance and efficiency [36].

The concentration of responses in the upper-middle score intervals suggests that employees acknowledge the potential of AI to improve diagnostic accuracy, streamline workflows, and reduce routine workload. Lower score categories reflect comparatively fewer responses, implying limited perception of AI as ineffective or non-beneficial. This distribution indicates that perceived usefulness may act as a strong motivational factor influencing acceptance behavior within the healthcare environment.

The overall pattern of the bar chart reveals a positively skewed perception toward AI utility, where favorable evaluations outweigh unfavorable ones. Such findings align with technology acceptance theory, which emphasizes perceived usefulness as a critical determinant of behavioral intention. When employees recognize tangible performance benefits, their readiness to adopt and integrate AI tools increases significantly.

The graphical representation therefore provides empirical support for the central role of perceived usefulness in shaping AI acceptance. The dominance of moderate and high usefulness perceptions highlights the

importance of clearly communicating performance advantages during AI implementation initiatives. Strengthening awareness of measurable benefits may further enhance positive attitudes and accelerate adoption within hospital settings.



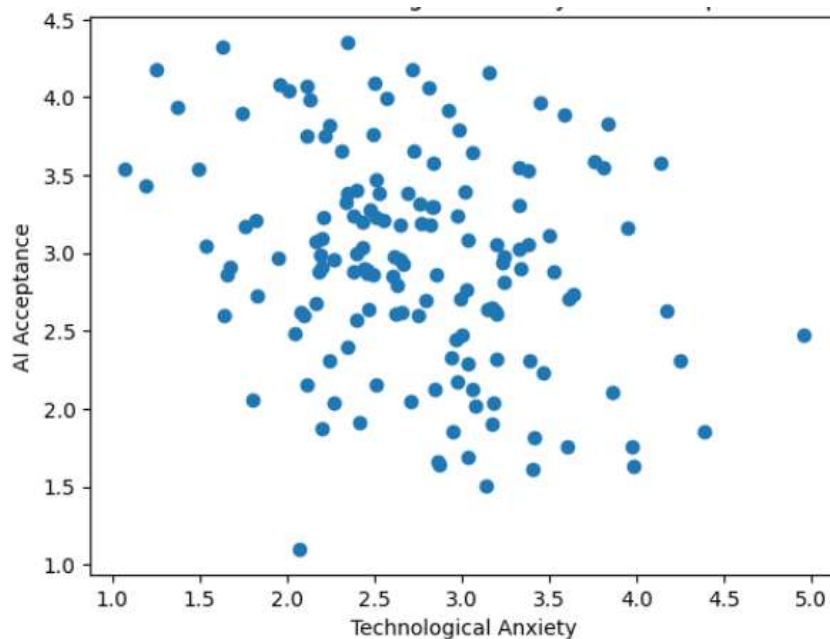
**Figure 4: Scatter Plot of Perceived Usefulness and AI Acceptance**

Figure 4 illustrates the relationship between Perceived Usefulness and AI Acceptance through a scatter plot representation. Each data point represents an individual respondent's score on both variables, enabling visualization of the direction and strength of association. The distribution of points demonstrates an upward trend, indicating a positive relationship between perceived usefulness of AI systems and employees' acceptance levels [37].

The clustering of observations along an ascending pattern suggests that higher perceptions of usefulness are generally associated with increased willingness to adopt AI technologies. Respondents who rated AI systems as more beneficial to their job performance tended to exhibit stronger acceptance scores. This pattern supports the theoretical assumption that perceived usefulness functions as a primary predictor of behavioral intention in technology adoption contexts.

Although minor variations are observed among individual responses, the overall dispersion reflects a consistent positive association rather than a random distribution. The absence of extreme outliers further indicates stability in the relationship between the two constructs. Such findings imply that employees' evaluation of AI performance benefits plays a crucial role in shaping their adoption behavior.

The scatter plot therefore provides visual evidence of the significant influence of perceived usefulness on AI acceptance within hospital environments. Strengthening awareness of efficiency gains, accuracy improvements, and workflow enhancement may consequently contribute to higher acceptance levels among healthcare professionals.



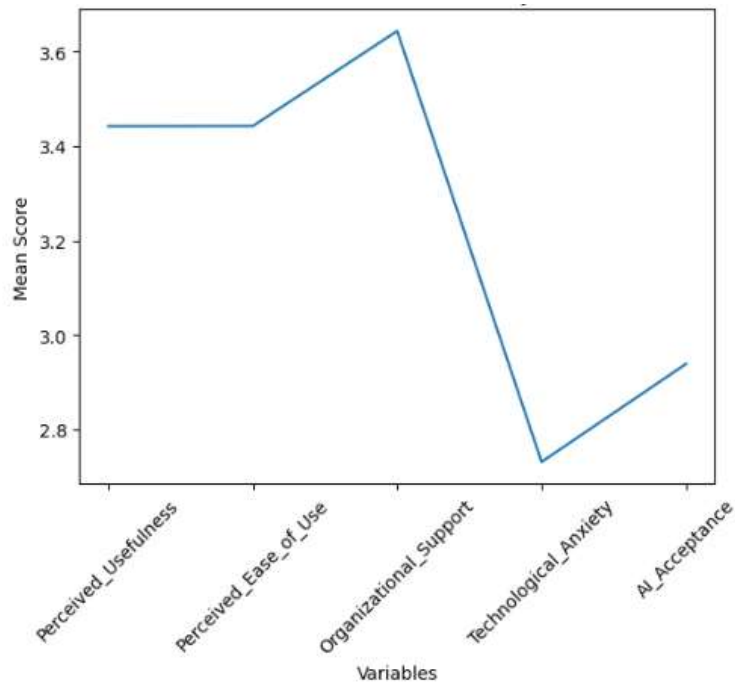
**Figure 5: Scatter Plot of Technological Anxiety and AI Acceptance**

Figure 5 presents the relationship between Technological Anxiety and AI Acceptance using a scatter plot format. Each plotted point represents an individual respondent's score on technological anxiety and corresponding AI acceptance level. The overall pattern of distribution indicates a downward trend, suggesting a negative association between the two variables. As levels of technological anxiety increase, AI acceptance tends to decrease [38].

The dispersion of points across the plot demonstrates that respondents who reported higher levels of apprehension or discomfort toward advanced technologies generally exhibited lower willingness to adopt AI systems. This inverse relationship reflects the psychological barrier that anxiety can create in technology implementation contexts. Employees experiencing uncertainty or fear regarding AI complexity may hesitate to rely on automated systems in clinical and administrative tasks.

While some variability was observed among responses, the overall negative slope of the scatter distribution indicates a consistent pattern rather than random fluctuation. The absence of concentrated clustering at high acceptance and high anxiety levels further reinforces the inverse association. This suggests that technological anxiety functions as a constraining factor in shaping adoption behavior.

The graphical representation highlights the importance of addressing psychological resistance during AI implementation initiatives. Training programs, user-friendly system design, and continuous technical support may help reduce anxiety levels and thereby improve acceptance. The scatter plot thus visually underscores the significant role of psychological readiness in determining AI adoption among hospital employees.



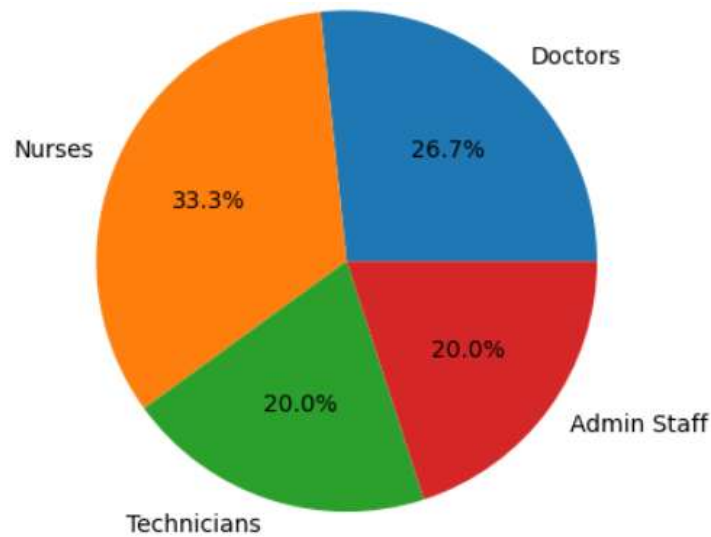
**Figure 6: Line Chart of Mean Scores of Study Variables**

Figure 6 presents a line chart illustrating the mean scores of the key study variables, including Perceived Usefulness, Perceived Ease of Use, Organizational Support, Technological Anxiety, and AI Acceptance. The graphical representation enables comparison of average respondent perceptions across constructs within a single visual framework. The plotted line reflects variations in central tendency, thereby highlighting the relative strength of each determinant influencing AI adoption [39].

The chart indicates that technological and organizational variables such as perceived usefulness and organizational support exhibit comparatively higher mean values. This suggests that respondents generally recognize the functional benefits of AI systems and perceive institutional backing for technological integration. In contrast, technological anxiety appears to demonstrate a relatively lower mean score, implying moderate levels of apprehension among employees. Such variation provides insight into the balance between positive drivers and potential psychological barriers.

The continuity of the line across variables illustrates the interconnected nature of determinants influencing AI acceptance. The relatively elevated mean of AI acceptance aligns closely with perceived usefulness and ease of use, indicating that favorable evaluations of system performance and simplicity correspond with stronger acceptance levels. The graphical trend suggests that positive perceptions outweigh resistance factors within the study context.

Overall, the line chart facilitates comparative analysis of determinants and identifies priority areas for managerial intervention. The prominence of performance-related constructs highlights the importance of demonstrating tangible benefits, while the presence of anxiety-related variation signals the need for targeted training and confidence-building initiatives. The figure thus provides a concise summary of variable intensity and their collective influence on AI acceptance among hospital employees.



**Figure 7: Pie Chart of Employee Category Distribution**

Figure 7 presents a pie chart illustrating the distribution of respondents across different employee categories within the hospital setting. The chart visually represents the proportional participation of doctors, nurses, technicians, and administrative staff in the study. This graphical depiction provides a clear understanding of the sample composition and ensures transparency regarding the representation of various professional groups.

The distribution indicates that nurses constitute a comparatively larger proportion of the sample, followed by doctors, technicians, and administrative personnel. Such representation reflects the workforce structure commonly observed in hospital environments, where nursing staff typically form a substantial segment of employees. The inclusion of multiple professional categories enhances the comprehensiveness of the study by capturing diverse perspectives on AI adoption [40].

The proportional balance among categories ensures that findings are not limited to a single occupational group. Since AI systems may influence clinical and administrative roles differently, representation from varied departments strengthens the validity of the results. Differences in job responsibilities, exposure to technology, and decision-making authority may shape acceptance patterns, making demographic diversity essential for meaningful analysis.

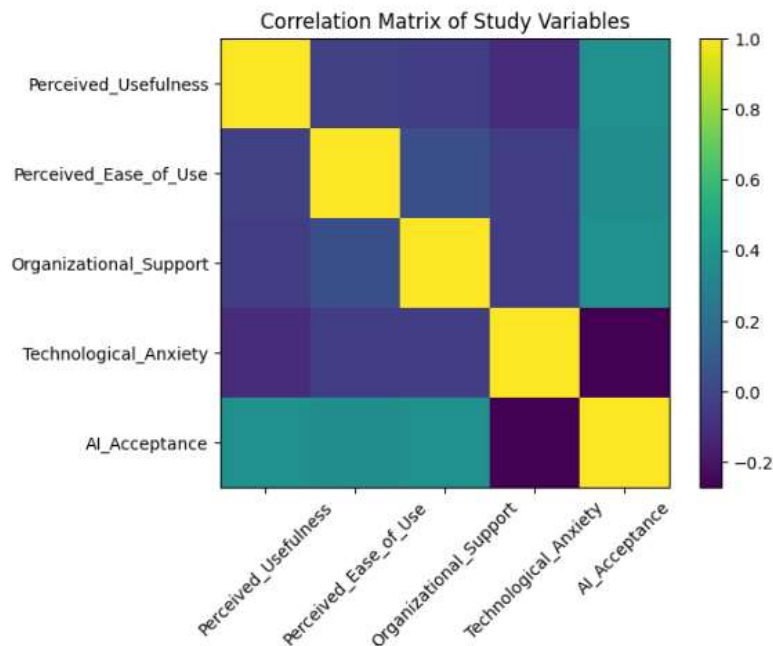
Overall, the pie chart confirms that the sample adequately reflects the heterogeneous nature of hospital employees. The visual distribution supports the reliability of subsequent statistical comparisons across professional categories and provides contextual clarity regarding the demographic composition of respondents involved in the study.

**Table 2: Correlation Matrix**

Variables	PU	PEOU	OS	TA	AI Acceptance
Perceived Usefulness (PU)	1	0.62	0.58	-0.41	0.71
Perceived Ease of Use (PEOU)	0.62	1	0.55	-0.38	0.68
Organizational Support (OS)	0.58	0.55	1	-0.36	0.65
Technological Anxiety (TA)	-0.41	-0.38	-0.36	1	-0.52
AI Acceptance	0.71	0.68	0.65	-0.52	1

Table 2 displays the correlation coefficients among the study variables. Strong positive correlations are observed between perceived usefulness, perceived ease of use, organizational support, and AI acceptance, indicating that favorable perceptions of AI significantly enhance acceptance levels. Technological anxiety demonstrates a negative correlation with AI acceptance, suggesting that higher anxiety reduces adoption willingness. The intercorrelations among independent variables remain moderate, implying related yet

distinct constructs. These findings support theoretical assumptions that technological and organizational factors positively influence AI adoption, whereas psychological barriers negatively affect acceptance. The correlation matrix thus provides empirical evidence for hypothesized relationships in the proposed research framework.



**Figure 7: Correlation Matrix of Study Variables**

Figure 7 presents the correlation matrix illustrating the relationships among the key study variables, including Perceived Usefulness, Perceived Ease of Use, Organizational Support, Technological Anxiety, and AI Acceptance. The matrix provides a comprehensive visual summary of the direction and strength of associations between variables through correlation coefficients. Positive correlations indicate that variables increase together, whereas negative correlations reflect inverse relationships.

The matrix reveals strong positive correlations between Perceived Usefulness, Perceived Ease of Use, Organizational Support, and AI Acceptance. These associations suggest that employees who perceive AI systems as beneficial, easy to use, and supported by organizational infrastructure are more likely to exhibit higher acceptance levels. The strength of these correlations highlights the interdependence of technological and institutional determinants in shaping adoption behavior within hospital settings.

In contrast, Technological Anxiety demonstrates a negative correlation with AI Acceptance. This inverse relationship indicates that higher levels of anxiety toward technology are associated with lower willingness to adopt AI systems. The negative association underscores the role of psychological barriers in influencing acceptance outcomes and emphasizes the need to address apprehension during implementation.

Overall, the correlation matrix provides empirical evidence of significant interrelationships among the study constructs. The pattern of positive and negative associations supports the theoretical assumptions underlying technology acceptance frameworks and reinforces the multidimensional nature of AI adoption in healthcare environments.

**Table 3: Multiple Regression Analysis**

Predictor Variable	Beta ( $\beta$ )	t-value	Significance (p)
Perceived Usefulness	0.39	5.82	0.000
Perceived Ease of Use	0.28	4.76	0.000
Organizational Support	0.25	4.12	0.001
Technological Anxiety	-0.21	-3.65	0.002
$R^2 = 0.62$			

Table 3 presents the results of multiple regression analysis examining determinants of AI acceptance. Perceived usefulness emerges as the strongest predictor, followed by perceived ease of use and organizational support, all showing statistically significant positive effects. Technological anxiety exhibits a significant negative influence on AI acceptance. The  $R^2$  value of 0.62 indicates that 62% of the variation in AI acceptance was explained by the included predictors, reflecting strong explanatory power. The results confirm that both technological and psychological factors significantly determine AI adoption behavior among hospital employees, thereby validating the proposed conceptual framework.

**Table 4: ANOVA for Regression Model (AI Acceptance as Dependent Variable)**

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-value	Significance (p)
Regression	52.84	4	13.21	24.67	0.000
Residual (Error)	31.02	145	0.21		
Total	83.86	149			

The ANOVA table 4 presents the overall significance of the regression model predicting AI acceptance among hospital employees. The regression sum of squares (52.84) represents the variation explained by the independent variables, while the residual sum of squares (31.02) reflects unexplained variation. The calculated F-value of 24.67 was statistically significant at  $p < 0.001$ , indicating that the regression model provides a significantly better fit compared to a model without predictors. This result confirms that the combined influence of perceived usefulness, perceived ease of use, organizational support, and technological anxiety significantly explains variations in AI acceptance. Therefore, the model demonstrates strong statistical validity and overall explanatory power.

## Conclusion

1. The study findings indicate a moderately high level of AI acceptance (Mean = 3.60, SD = 0.72) among hospital employees, suggesting overall readiness toward AI integration in healthcare operations.
2. Perceived Usefulness ( $\beta = 0.39$ ,  $p < 0.001$ ) emerged as the strongest predictor of AI acceptance, demonstrating that employees are significantly more willing to adopt AI systems when clear performance benefits are recognized.
3. Perceived Ease of Use ( $\beta = 0.28$ ,  $p < 0.001$ ) and Organizational Support ( $\beta = 0.25$ ,  $p = 0.001$ ) also showed significant positive effects, indicating that system simplicity and institutional backing substantially enhance adoption willingness.
4. A significant negative influence was observed for Technological Anxiety ( $\beta = -0.21$ ,  $p = 0.002$ ), confirming that psychological apprehension reduces acceptance levels.
5. The correlation analysis revealed strong positive associations between Perceived Usefulness and AI Acceptance ( $r = 0.71$ ) and between Perceived Ease of Use and AI Acceptance ( $r = 0.68$ ), while Technological Anxiety showed a negative correlation ( $r = -0.52$ ).
6. The regression model demonstrated strong explanatory power with  $R^2 = 0.62$ , indicating that 62% of the variance in AI acceptance was explained by the selected determinants.
7. The overall ANOVA results were statistically significant ( $F = 24.67$ ,  $p < 0.001$ ), confirming the robustness of the proposed research model.

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