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Research Article

Artificial Intelligence in Hospital Functions: A Study on Adoption and Trust among Hospital Staff

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Abstract: This paper examines how Artificial Intelligence (AI) is adopted and the level of trust in 231 employees of a hospital. The research was statistically analyzed with the help of SPSS (including factor analysis and regression) that determines five main dimensions of the AI application Clinical and Operational, Health Information Management, Patient Monitoring, Administrative Support and Patient Communication. The descriptive statistics indicate that there is high unanimity on the use of AI in enhancing the hospital operations and communication with patients. The findings indicate that there is a significant positive correlation between trust and AI adoption ($r = 0.402$, $p = 0.000$) and trust contributes 16.1% to the adoption levels. Moreover, a Krushal-Wallis H test demonstrates that there is a significant difference in adoption between designations ($p = 0.015$), the highest adoption is exhibited by IT/Systems staff and the lowest one is demonstrated by nurses. This evidence underlines that even though AI is versatile in the hospital operations, developing trust is the key to the extensive adoption of the technologies by the professionals.

Keywords: Hospital function, Artificial Intelligence, AI Adoption, Trust, staff members, hospital workflows communication etc.

INTRODUCTION

Artificial Intelligence (AI) is evolving at a very fast pace and changing the domain of healthcare, especially the hospital system, in which accuracy, effectiveness and responsiveness of decisions are paramount (Garvey et al., 2022). Machine learning, natural language processing and predictive analytics are AI technologies that are finding their way into many functions of the hospital, including diagnostic support, administrative and resource management (Lee & Yoon, 2021). There is immense potential in the use of these technologies to improve patient outcomes, minimise human error and better the overall hospital service (Aldhahi et al., 2025).

Medical imaging analysis AI is commonly used to analyse medical studies, disease predictions and decision-support systems to allow medical specialists to make accurate and evidence-based decisions (Fujimori et al., 2022). Moreover, hospital administrative tasks like billing, appointment scheduling and using electronic health records are being automated with AI, which is greatly reducing the number of people manually performing these tasks, as well as the cost and time efficiency of tasks (So et al., 2021). Operationally, AI also helps in the improved management in the hospital resources involving the scheduling of staff, assigning of beds and patient flow, hence enhancing the overall performance of the hospital (Taneja et al., 2024). Even with these advantages, successful AI adoption in hospitals relies mostly on the acceptance and adoption of AI by the hospital employees. Doctors, nurses and healthcare administrators are at the forefront in the process of incorporating AI in the normal operations of the hospital (Areshtanab et al., 2025). Nonetheless, numerous obstacles tend to affect the implementation of AI in hospitals, such as a lack of technical skills, perceived difficulty, organisational resistance and fears about ethical and legal implications.

One of these factors is the trust in AI systems, which has become one of the key influencing variables in the adoption of AI in hospitals (Kutz et al., 2017). Trust demonstrates how much hospital employees feel confident in the reliability, accuracy, transparency and accountability of AI systems (Stai et al., 2020). Hospital employees have more chances to adopt AI systems when they have confidence in the systems (Shinners et al., 2022). On the other hand, the issues associated with data privacy, the absence of transparency and possible biases in AI algorithms can decrease the level of trust and make it difficult to implement in a hospital setting. Moreover, the association of AI adoption and trust in hospitals is complicated and depends on various factors including perceived usefulness, ease of use, organisational support and previous experience with technology (Stephan et al., 2023). Despite the fact that the current literature has emphasised the technical potential of AI in the medical field, it has relatively few studies that consider the behavioural facet especially the influence of trust in the adoption of AI by hospital employees especially those in the developing world.

In this regard, the current research will explore the

implementation of AI in the work of a hospital and evaluate how trust among the employees of a hospital can affect this implementation. The study aims at providing a holistic picture of the relationship between AI technologies and their effective usage in hospitals by investigating the main factors, including perceived usefulness, ease of use and organisational factors, which are mediated by trust. The study is relevant to the available resources since it fills the gap between human acceptance and technological innovation in the hospital system. It also provides useful guidelines to hospital administrators, policy-makers and technology developers to develop AI systems which are not only efficient but also reliable and consistent with the requirements of the hospital personnel.

REVIEW OF LITERATURE

2.1. AI – Adoption in Hospital Function

The implementation of the Artificial Intelligence (AI) in hospital operations can be interpreted as an organised process according to which AI technologies will be integrated into daily work processes and decision-making in hospitals (Alhashmi et al., 2019). Instead of the implementation, adoption indicates the extent of integration, frequent use and reliance on AI systems by hospital employees in various functional areas (Garvey et al., 2022). The process of adoption in hospitals generally has phases such as awareness, initially acceptance, trial and full adoption as part of the operations (Weinert et al., 2022). In their higher implementation levels, AI systems can be a component of the working process and this factor can affect the work of each person and the final results of the organisation (Esmaeilzadeh et al., 2021). This development underscores that adoption is never a one-time event because user experience and reliability of the systems determine the process.

One of the main peculiarities of AI implementation in hospitals is its inconsistency with human decision-making (Stefanie et al., 2024). The collaborative approach used by hospital staff usually implies the interpretation of AI-generated outputs through the prism of applied/professional judgement and validation (Abdallah et al., 2023). This anthropology is what defines how much AI systems are being put to practise. Besides, adoption of AI also differs greatly with regards to type of tasks undertaken in hospitals (Elena et al., 2025). Repetitive tasks, those with a lot of data and those that are standardised are more likely to have a greater adoption rate and those with a low level of critical thinking and responsibility have a slower rate of adoption because of the perceived risks involved (Alruwaili et al., 2024). This deviation denotes that adoption is situational and is determined by the complexity and sensitivity of the hospital operations.

The second critical aspect of AI adoption is its consistency with the current workflows and organisational frameworks (Care, 2012). Such systems that fit into the existing processes will be more acceptable and systems that involve significant changes in the routine may be resisted (Abuejheisheh et al., 2025). So the compatibility with the work practises is a critical factor in the levels of adoption. Moreover, life-long learning and change are the primary aspects of AI adoption. The more experience the hospital staff has about the use of AI systems, the higher the rate of their confidence and ability to utilise these technologies, which results in the increased degree of integration (Cao et al., 2021). On the other hand, the systems can go underutilised due to the absence of proper training and support even when they are available.

2.2. Trust in AI enabled systems

The level of trust to AI systems is the level of confidence that hospital staffs have on the outputs, functionality and decision-support capabilities of AI technologies (Duchessi et al., 1993). Trust is not always created at once in the technology-oriented setting, like the hospital; it is built in the course of time as the user interacts with the system, system performance and perceived reliability (Abuejheisheh et al., 2025).

The trust in AI is a complex concept, which includes a variety of main characteristics. Reliability can be defined as the consistency of AI output in various circumstances whereas accuracy can be defined as the correctness of AI output in facilitating the execution of tasks (Singh et al., 2025). Transparency, which is commonly linked with outcomes, is an important factor that allows users to comprehend the process through which AI systems provide recommendations (Aldhahi et al., 2025). Also, accountability discusses the issues on the responsibility of the decisions made based on AI that is especially important in hospitals when the results directly influence patient health (Nesar et al., 2024). The development of trust is determined by system-related and user-related factors (Shevtsova et al., 2024). The quality of data, the performance and clarity of outputs of algorithms and the system-related factors and the previous experience with technology, the level of digital literacy and openness to innovations, are user-related factors (Cheng, 2022). Training, technical support and institutional policies are also organisational factors that help to form the level of trust amongst hospital employees (Tun et al., 2025).

The balance between over-reliance and under-reliance is an important aspect in regard to trust in AI systems. Overconfidence can cause blindly accepting the results of AI, whereas distrust can cause people to reject or not fully exploit existing systems (Shevtsova et al., 2024). Thus, a measured level of trust is required, in which hospital personnel is also sceptical of AI recommendations, yet acknowledges that it could be beneficial (Tun et al., 2025). Moreover, trust is developed during constant communication with AI systems. Good experiences like regular and consistent outputs, are likely to build trust in the long run but system failures or lack of transparency may reduce confidence (Stefanie et al., 2024). This elastic character of trust emphasises its position as a mediator variable between perceptions and real usage behaviour of the users.

As part of the current research, the trust in the AI systems is a factor that is deemed as vital as it determines the levels of willingness of the hospital staff to approach and rely on AI technologies in carrying out their work-related activities

(Cao et al., 2021). Knowledge of determinants and dimensions of trust is thus necessary in explaining differences in AI adoption within the functions of a hospital.

RESEARCH METHODOLOGY

3.1. Research Design

The research design used in the study is descriptive and analytical research to explore how Artificial Intelligence (AI) is implemented in functions of hospitals and how hospital personnel trust influences it. Such design is appropriate because it will be used to achieve a systematic description of the perceptions of respondents as well as analyse their relationships between key variables, such as perceptions of usefulness, perceptions of ease of use, organisational support, ethical issues, trust in AI systems and adoption of AI.

3.2. Research Approach

The research takes a quantitative research approach since it is concerned with quantifying perceptions and determining the relationship between variables through statistical analysis. This is an objective measurement method that facilitates hypothesis testing to determine the meaning of the relationship between the constructs.

3.3. Data Collection Method

The article is founded on primary data, which was gathered with the use of a structured questionnaire that was distributed among the staff of the hospital. The questionnaire will be constructed based on a five-point Likert scale comprising of strongly agree and strongly disagree to depict the view of the respondent on the variables to be studied. This approach provides consistency, measurement of attitudes and behavioural intentions are easy to analyse and reliable.

3.4. Sampling

The convenience sampling method is applied because of the accessibility of respondents, cost and time limitations and the practical impossibility of applying the probability sampling method in hospitals. It is appropriate in the studies which analyse perception and behavioural elements in the respondents that are available.

3.5. Scope of the Study

The current paper is dedicated to the analysis of the implementation of Artificial Intelligence (AI) in the operations of the hospital and the importance of trust in the hospital employees. It mainly takes into account the perceived usefulness, perceived ease of use, organisational support and ethical issues to impact trust and AI adoption. The research is restricted to people working in a hospital wherein it includes doctors, nurses and administrative personnel since they are the main users of AI system in the hospital setting. The study is limited geographically in that it is limited to a number of hospitals within a given geographical area and the research results are anchored on the perception of the respondents in a given time. The study is meant to present results on behavioural and organisational issues that affect implementation of AI as opposed to technical performance of AI systems.

3.6. Research Objectives and Hypothesis:

1. To identify the major areas and functions where Artificial Intelligence is applied in hospitals.
2. To analyse the relationship between the adoption of Artificial Intelligence and trust in AI-enabled hospital services.

H_{01}: There is no significant relationship between the adoption of Artificial Intelligence and trust in AI-enabled hospital services.

H_1: There is a significant relationship between the adoption of Artificial Intelligence and trust in AI-enabled hospital services.

H_{02}: Trust in AI-enabled hospital services does not significantly influence adoption of AI

H_2: Trust in AI-enabled hospital services significantly influences adoption of AI.

3. To examine whether adoption of AI differs among hospital staff based on designation.

H_{03}: There is no significant difference in the level of Artificial Intelligence adoption among hospital staff based on designation.

H_3: There is a significant difference in the level of Artificial Intelligence adoption among hospital staff based on designation.

3.8. Limitation of the study

1. The use of convenience sampling limits generalizability
2. The Dependence on self-reported data may lead to response bias
3. The Study confined to selected hospitals of Bengaluru city.
4. The Limited number of variables considered in the present study.
5. There is a possible lack of technical understanding among some respondents.

4. Data Analysis and Interpretation

This part shows the statistical interpretation and analysis of the received material with hospital employees to get to know how Artificial Intelligence is applied to the work of hospitals and how much the facility is ready to use Artificial Intelligence and trust AI-enabled services. The research is centred on primary data obtained in a sample of 231 respondents including employees working in different hospital designations. Data was collected in the form of structured questionnaire and analysed using the Statistical package of social sciences (SPSS).

To realise the study objectives, different statistical methods were used including; reliability analysis, Kaiser-Meyer-Olkin (KMO) test, Bartlett test of Sphericity, factor analysis, correlation analysis, regression analysis and Kruskal Wallis H test. Factor analysis was employed to determine the predominant areas of use of the Artificial Intelligence in hospitals functions. Correlation or regression analyses were performed to investigate the connexion between the use of Artificial Intelligence and trust in AI-powered hospital services. In addition to that, Kruskal-Wallis H test was used to test the hypothesis whether the level of AI adoption among the staff members in various designations in the hospital is different.

Analysis outcomes are described and explained in the following paragraphs.

Objective 1: To identify the major areas and functions where Artificial Intelligence is applied in hospitals.

To determine the key areas of application of Artificial Intelligence in hospital operations, the questionnaire contained fifteen statements that describe various AI-driven operations. Such statements include such important hospital functions as electronic health record, support of clinical diagnosis, laboratory and radiology services, patient monitoring, administration work, efficient workforce and support systems of communication with patient. The answers were gathered on the basis of five point Likert scale out of Strongly Agree to Strongly Disagree.

Since the construct has more than one variable, reliability analysis has been carried out first to verify the internal consistency of the scale. The next steps included evaluating the data put forward in the factor analysis using the Kaiser-Meyer-Olkin (KMO) measure and Test of Sphericity, after which the factor analysis was performed to determine the key dimensions of Artificial Intelligence implementation in hospital operations.

Table no 4.1: Reliability Analysis for Artificial Intelligence Applications in Hospital Functions	
Cronbach's Alpha	**N of Items**
.790	15

Reliability analysis was applied to test the consistency among the fifteen statements applied to measure the application of Artificial Intelligence in hospital functions. All the statements were answered on a likert scale of 5 points, with 1 = Strongly Agree and 5 = Strongly Disagree. The alpha coefficient was determined to determine the reliability of the scale.

The outcomes indicate that the Cronbachs alpha value of 15 items is 0.790, indicating an acceptable degree of internal consistency among the variables. A value of Cronbach alpha above 0.70 is regarded as acceptable in social science research and the items in the scale are deemed reliable and measure the same underlying construct. Thus, the scale employed to assess the implementation of Artificial Intelligence in hospital operations is valid and the data can be analysed further with the help of factor analysis.

Table no 4.2: Descriptive Statistics						
AI Adoption		N	Min	Max	Mean	Std. Deviation
1	AI-based systems are used for maintaining and managing electronic health records (EHR/HIS).(Electronic Health Records / Hospital Information System)	231	1	5	1.14	.662
2	AI helps in quick retrieval and updating of patient medical information.	231	1	5	2.06	.453
3	AI tools are used to support 1s in clinical diagnosis.	231	1	5	1.13	.618
4	AI supports treatment planning and clinical decision-making.	231	1	5	2.09	.465
5	AI is used in analysing laboratory test results	231	1	5	2.10	.509
6	AI supports radiology and imaging services such as X-rays, CT scans or MRIs.	231	1	5	1.25	.906
7	AI systems are used for patient monitoring and alert mechanisms.	231	1	5	2.14	.610
8	AI supports continuous monitoring of patients in wards or ICUs.	231	1	5	1.12	.580
9	AI is used for appointment scheduling and queue management.	231	1	5	2.07	.468
10	AI supports billing, insurance processing and claims management.	231	1	4	2.04	.300
11	AI helps automate routine administrative tasks in hospitals.	231	1	5	2.06	.471
12	AI improves efficiency of hospital operational workflows.	231	1	5	1.12	.580
13	AI-based Chabot’s or virtual assistants are used for patient enquiries.	231	1	5	2.10	.473
14	AI supports SMS or app-based reminders for appointments and follow-ups.	231	1	5	2.00	.316
15	AI improves communication between hospital and patients.	231	1	5	1.09	.548

Descriptive statistics were computed so as to comprehend the extent of applying Artificial Intelligence in various hospital operations according to the answers of 231 hospital employees. The scale of responses was on a five-point scale of Likert scale of Strongly Agree to Strongly Disagree. The results indicate that Artificial Intelligence is popular in various functional areas of hospitals since the lower mean values indicate a high degree of agreement.

Most of the statements have mean value of 1 or 2, which implies that most of the respondents concur with the fact that AI-based systems are actively utilised in the operations of the hospitals. The statements about maintaining electronic health records (Mean = 1.14), supporting clinical diagnosis (Mean = 1.13), continuous patient monitoring (Mean = 1.12) and enhancing operational workflow efficiency (Mean = 1.12) and communication between hospital and patients (Mean = 1.09) all had very low mean

values and demonstrated strong agreements among the respondents.

On the same note, there was moderate consensus about AI applications in planning treatment (Mean = 2.09), laboratory tests analysis (Mean = 2.10), patient monitoring systems (Mean = 2.14), appointment scheduling (Mean = 2.07), billing and insurance processing (Mean = 2.04), chatbot services (Mean = 2.10) and reminder systems (Mean = 2.00). These findings show that Artificial Intelligence is being applied not just in the clinical functions but in administrative, operational and patient communication functions.

In general, the descriptive statistics provide a clear evidence that AI has been implemented in various hospital processes, which justifies the fact that additional factor analysis will be necessary in order to draw the key dimensions of AI implementations in hospitals.

Factor Analysis:

Table no 4.3: KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.599
Bartlett's Test of Sphericity	Approx. Chi-Square	647.108
	Df	105
	Sig.	0.000

Factor analysis applicability was tested by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartletts Test of Sphericity prior to the application of the factor analysis. The tests are used to establish whether the variables to be included in the study are suitable to be factored in the study.

The value got is 0.599 that exceeds the minimum acceptable limit of 0.50 which shows that the sample used is sufficient to do a factor analysis. The outcome is that the correlations between the variables are not too big to generate reliable factors.

Bartletts Test of Sphericity displays the Chi-square of 647.108 and the degree of freedom of 105 and the significance of 0.000 that is less than 0.05. It means that the correlation matrix is not the identity matrix and that it is not the case that there is no significant relationship between the variables.

Because results of both KMO and the Test of Bartlett measure within the required conditions, the information can be said to be fit to factor analysis. Hence, the factor analysis was performed to discover the key dimensions of Artificial Intelligence application in the hospital activities.

Table no 4.4: Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cum %	Total	% of Variance	Cum %	Total	% of Variance	Cum %
1	2.786	18.572	18.572	2.786	18.572	18.572	2.029	13.524	13.524
2	1.771	11.807	30.379	1.771	11.807	30.379	1.817	12.113	25.637
3	1.683	11.222	41.601	1.683	11.222	41.601	1.787	11.914	37.551
4	1.377	9.181	50.782	1.377	9.181	50.782	1.708	11.387	48.938
5	1.050	6.999	57.781	1.050	6.999	57.781	1.326	8.843	57.781
6	1.000	6.664	64.445						
7	.856	5.709	70.154						
8	.840	5.600	75.754						
9	.741	4.940	80.694						
10	.693	4.620	85.314						
11	.649	4.324	89.638						
12	.583	3.884	93.523						
13	.350	2.336	95.858						
14	.348	2.320	98.178						
15	.273	1.822	100.000						
Extraction Method: Principal Component Analysis.									

Principal Component Analysis was used to perform factor analysis to determine the key dimensions of the Artificial Intelligence applications in the hospital functions. The findings of the total variance accounted are discussed in Table 4.4.

As the analysis reveals, there are five components with an Eigenvalue of more than 1, which meets the Kaiser criterion of the factor extraction. This combination of five factors explains 57.781 cumulative variance, which means that a big percentage of

the total variance of the data are explained by these components.

The former explains 18.572 percent of the total variance with the second component explaining 11.807 percent of the variation, the third component explaining 11.222 percent of the variation and the fourth and fifth components explaining 9.181 percent and 6.999 percent of the variance respectively. It implies that the specified factors play a valuable role in describing the latent design of the application of Artificial Intelligence in hospitals.

Following the rotation, the variance is more equalized between the five components that make 13.524, 12.113, 11.914, 11.387 and 8.843 respectively. This implies that the contribution of each factor is relatively balanced enhancing the interpretability of the factor structure.

Thus, it was possible to extract five significant factors that indicate the most important dimensions of the Artificial Intelligence applications in the functions of hospitals. The rotated component matrix is further used to interpret these factors.

Table No 4.5: Component Matrix and Communalities

		Component					Communalities	
		1	2	3	4	5	Initial	Extraction
1	AI-based systems are used for maintaining and managing electronic health records (EHR/HIS).(Electronic Health Records / Hospital Information System)	.398	.615	.023	-.109	-.172	1.000	.579
2	AI helps in quick retrieval and updating of patient medical information.	-.004	.616	-.354	.438	-.132	1.000	.714
3	AI tools are used to support 1s in clinical diagnosis.	.809	.097	.028	-.258	-.045	1.000	.733
4	AI supports treatment planning and clinical decision-making.	.381	-.189	-.181	-.198	.382	1.000	.399
5	AI is used in analysing laboratory test results	.606	-.077	.429	-.160	-.119	1.000	.597
6	AI supports radiology and imaging services such as X-rays, CT scans or MRIs.	.369	.226	-.184	.196	.205	1.000	.301
7	AI systems are used for patient monitoring and alert mechanisms.	.298	-.069	.436	-.144	-.243	1.000	.364
8	AI supports continuous monitoring of patients in wards or ICUs.	.470	.257	.403	.088	-.278	1.000	.534
9	AI is used for appointment scheduling and queue management.	.126	.073	.597	.461	.207	1.000	.634
10	AI supports billing, insurance processing and claims management.	.634	-.539	-.144	.003	.161	1.000	.739
11	AI helps automate routine administrative tasks in hospitals.	.366	-.513	-.362	.369	-.280	1.000	.743
12	AI improves efficiency of hospital operational workflows.	.533	-.056	-.377	.526	-.145	1.000	.728
13	AI-based Chabot's or virtual assistants are used for patient enquiries.	.195	.478	-.370	-.295	.063	1.000	.494
14	AI supports SMS or app-based reminders for appointments and follow-ups.	-.329	-.111	.310	.382	-.233	1.000	.417
15	AI improves communication between hospital and patients.	.184	.192	.264	.341	.659	1.000	.691
Extraction Method: Principal Component Analysis.								
a. 5 components extracted.								

The component matrix shows the factor loading of each variable on the extract components showing how much the variables are associated with the underlying factors. The findings indicate that the loading of most of the variables is moderate or high on one or more components which implies that the variables are bringing something significant to the factors identified.

Clinical functions variables like AI assistance in diagnosis (0.809) and lab analysis (0.606) have quite high loadings, which implies that they correlate with the extracted components. On the same note, administrative and operational variables like billing and claims management (0.634) and workflow efficiency (0.533) are also significant loadings.

The communalities values are a measure of the percentage of variance that is explained in every variable by the components extracted. The findings show that the acceptable communalities values of most of the variables are above 0.50, including patient

data retrieval (0.714), clinical diagnosis (0.733), billing and claims (0.739) and workflow efficiency (0.728), implying that a significant part of the variance is covered by the model.

But some of the variables like radiology and imaging services (0.301) and patient monitoring alerts (0.364) have more comparatively lesser communalities which imply that such variables are not so well represented by the extracted factors.

All in all, the component matrix, as well as the communalities, allow stating that the chosen variables can be reasonably explained by the extracted components, which alleviates the sufficiency of the factor analysis in determining the key areas of Artificial Intelligence uses in hospital operations.

Table No 4.6: Rotated Component Matrix

		Component				
		1	2	3	4	5
1	AI-based systems are used for maintaining and managing electronic health records (EHR/HIS).(Electronic Health Records / Hospital Information System)	.398	.615	.023	-.109	-.172
2	AI helps in quick retrieval and updating of patient medical information.	-.004	.616	-.354	.438	-.132
3	AI tools are used to support 1s in clinical diagnosis.	.809	.097	.028	-.258	-.045
4	AI supports treatment planning and clinical decision-making.	.381	-.189	-.181	-.198	.382
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6	AI supports radiology and imaging services such as X-rays, CT scans or MRIs.	.369	.226	-.184	.196	.205
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10	AI supports billing, insurance processing and claims management.	.634	-.539	-.144	.003	.161
11	AI helps automate routine administrative tasks in hospitals.	.366	-.513	-.362	.369	-.280
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13	AI-based Chabot's or virtual assistants are used for patient enquiries.	.195	.478	-.370	-.295	.063
14	AI supports SMS or app-based reminders for appointments and follow-ups.	-.329	-.111	.310	.382	-.233
15	AI improves communication between hospital and patients.	.184	.192	.264	.341	.659
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation						
Rotation converged in 11 iterations						

The Matrix of rotated components, which was determined with the help of Principal Component Analysis (Varimax rotation) helped to determine the most important dimensions of the stakes of the Artificial Intelligence applications in the functioning of the hospital. The cut-off value used was 0.50 which was taken as significant factor loading, but variables that had factor loading of 0.50 and above were taken to group and name the components. In 11 steps, the rotation converged and five components were obtained, which represent various functional areas of AI application in hospitals.

The former has high loading of variables associated with clinical and operational support, such as support in clinical diagnosis (0.809), analysis of laboratory test results (0.606), billing and claims management (0.634) and enhancement of the workflow efficiency of the operations (0.533). These variables show that Artificial Intelligence is a common tool in fundamental clinical, diagnostic and operational processes. Thus, one of the components is called Clinical and Operational AI Applications.

The second component has variable variables pertaining to hospital information and data management systems and the loadings are higher with regards to maintaining electronic health records (0.615) and quick access and update of the medical information of the patients (0.616). These findings demonstrate that Artificial Intelligence is significant in managing hospital information technologies and patient data. Therefore, this aspect is called Health Information Management Systems.

The third element is linked to the patient monitoring and service management functions with the variables like appointment scheduling and queue management (0.597) loaded significantly with moderate assistance of patient monitoring variables. It means that the Artificial Intelligence is beneficial in terms of patient services and hospital scheduling activities management. So, this element is referred to as Patient Monitoring and Service Management.

The fourth element is administrative and workflow support features, where operations workflow efficiency (0.526) has the highest loading and administrative automation variables have moderate loading. This demonstrates that Artificial Intelligence can be applied to enhance efficiency with regards to hospital administration and daily running of operations. Thus, this element is referred to as Administrative and Workflow Support Systems.

The fifth element has a high loading to improve communication between the hospital and patients (0.659), as Artificial Intelligence is also applied to improve the interaction and communication by means of digital and automated systems. As such, this element is called Patient Communication Systems.

Altogether, the result of a rotated component matrix shows that in hospitals, the area of application of Artificial Intelligence is predominantly in clinical and operational support, information management and the management of patient services, the administrative efficiency and communication with patients. These results are a clear indication of the key functional sectors of AI applications in hospitals, hence the fulfilment of the first goal of the study.

Objective 2: To analyse the relationship between the adoption of Artificial Intelligence and trust in AI-enabled hospital services.

The second research question of the study is to examine the connection between the adoption of Artificial Intelligence and the trust towards the hospital services based on the use of Artificial Intelligence in the hospital staff. To this end, questions regarding the degree of AI adoption and trust into AI-based services were gathered through a structured questionnaire. The answers were measured using a five-point Likert scale, where 1 = Strongly Agree and 5= Strongly disagree.

To test this relationship, reliability analysis was performed to test internal consistency of the constructs. The correlation analysis was conducted afterwards to identify the direction and strength of the relationship between adoption of Artificial Intelligence and trust in AI enabled hospital services. Additionally, to investigate how the role of trust in the AI-enabled hospital services affects the use of Artificial Intelligence by the hospital staff, Regression analysis was performed. These analyses have been presented and interpreted as below.

Table no 4.7: Reliability Analysis for Trust in AI-enabled hospital systems

Cronbach's Alpha	N of Items
.741	06

Reliability analysis was done to look at the internal consistency of the statements employed to measure the trust of AI-enabled hospital systems among hospital employees. The 6 statements were used to measure the construct of trust and the answers were completed on a five-point Likert scale and the responses were measured as 1 = Strongly Agree to 5 = Strongly Disagree. The alpha of the scale was determined to test the reliability of the scale.

The findings indicate that the value of Cronbachs alpha of 6 items is 0.741 which means that the level of internal consistency of the variables is satisfactory. In a social science study, the value of alpha (Cronbach) of above 0.70 is acceptable, which demonstrates that the items as the means of measuring trust in the AI-enabled hospital systems can be deemed as reliable and consistent. Thus, the scale can be deemed appropriate to conduct additional statistical analysis to determine the connection between the adoption of Artificial Intelligence and trust in AI-enabled hospital services.

Table no 4.8: Descriptive Statistics

	Trust in AI-enabled system	N	Minimum	Maximum	Mean	Std. Deviation
1	I trust AI-enabled systems used in hospital operations.	231	1	5	2.04	.351
2	AI-based systems make me confident in performing my job responsibilities.	231	1	5	2.04	.351
3	AI-enabled systems are reliable for hospital decision support.	231	1	5	2.04	.351
4	AI improves my confidence in hospital operational processes.	231	1	5	2.04	.351
5	Trust in AI systems influences my acceptance of hospital technologies.	231	1	5	1.10	.507
6	Overall, I feel positive about relying on AI-based systems in hospital operations.	231	1	5	2.03	.364

The descriptive statistics were computed in order to comprehend the degree of trustworthiness of AI-enabled hospital systems among the hospital staff in reference to the responses, which 231 respondents provided. The answers were rated in a five-point Likert scale between 1 = Strongly Agree to 5 = Strongly Disagree, the lower the means value inside the range the higher the rate of trust in the Artificial Intelligence systems.

The findings indicate that the average values of most of the statements are near 2, which shows that the respondents tend to trust the use of AI-powered hospital systems. There are consistent responses in such statements as trust in AI systems in the operations of the hospital (Mean = 2.04), confidence in carrying out the job duties using AI (Mean = 2.04), reliability of AI as a decision support system (Mean = 2.04) and confidence in the operations (Mean = 2.04), which is evidence of a moderate level of trust in the hospital staff.

A relatively low mean score is found on the statement that trust in AI systems affects the acceptance of hospital technologies (Mean = 1.10), which suggests that there is a high amount of agreement that trust is an essential factor in the acceptance of AI-based technologies. Equally, the general positive attitude about depending on the AI-based systems has a mean of 2.03 implying that hospital staff have a positive attitude towards AI-enabled systems in general.

All in all, the descriptive statistics demonstrate the positive degree of trust in AI-enabled hospital systems among the hospital staff, which contributes to the additional analysis to investigate the correlation between trust and Artificial Intelligence adoption.

Hypothesis 1: Pearson Correlation
H_0: There is no significant relationship between the adoption of Artificial Intelligence and trust in AI-enabled hospital services.
H_1: There is a significant relationship between the adoption of Artificial Intelligence and trust in AI-enabled hospital services.

Table no 4.9: Correlations

		AI Adoption	trust
AI Adoption	Pearson Correlation	1	.318**
	Sig. (2-tailed)		.000
	N	231	231
Trust	Pearson Correlation	.318**	1
	Sig. (2-tailed)	.000	
	N	231	231
**. Correlation is significant at the 0.01 level (2-tailed).			

The Pearson correlation has been used to test the correlation between the use of Artificial Intelligence and the trust towards AI-enabled services in hospitals among hospital employees. The correlation analysis findings are given in Table 4.9.

The correlation coefficient between the AI adoption and trust is observed to be 0.318 and this reflects that there is a moderate positive correlation between the two variables. The value of significance of 0.000 is less than the normal significance of 0.01 and this means that the relationship is statistically significant at the percentage at 1. This suggests that the more people adopt the Artificial Intelligence, the higher the level of trust they have on the AI-enabled hospital services.

The null hypothesis (H0) that there is no significant relationship between the variables AI adoption and trust is rejected and the alternative hypothesis (H1) is accepted because the p-value (0.000) is less than 0.05.

Consequently, it can be assumed that the adoption of Artificial Intelligence and trust in AI-enabled hospital services among hospital employees have a strong positive correlation.

Hypothesis 2: Regression
H_0: Trust in AI-enabled hospital services does not significantly influence adoption of AI
H_1: : Trust in AI-enabled hospital services significantly influences adoption of AI.

Table no 4.10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.318[a]	.101	.097	.20438
a. Predictors: (Constant), Trust				

Table no 4.11: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.072	1	1.072	25.673	.000[b]
	Residual	9.565	229	0.42		
	Total	10.638	230			

a. Dependent Variable: AI Adoption

b. Predictors: (Constant), Trust

Table No 4.12: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.155	.109		10.557	.000
	trust	.292	.058	.318	5.067	.000

a. Dependent Variable: AI Adoption

Regression analysis has been performed to assess how trust in AI-enabled hospital services affects the adoption of Artificial Intelligence by hospital employees. The outcome of the model summary indicates that the correlation coefficient (R = 0.318) is a moderate relationship between the variables. The coefficient of determination R2 = 0.101 indicates that the independent variable accounts about 10.1 percent of the variation in the dependent variable meaning that the explanatory power of the model is moderate.

According to the results of the ANOVA, the model itself is statistically significant with the F of 25.673 and the significance of 0.000, which is less than 0.05. This confirms that the data is well fit in the regression model and the independent variable predicts the dependent variable significantly.

The results of the coefficients show that the variable trust has a positive and significant impact on the adoption of AI and the standardized beta coefficient is 0.318, t-value is 5.067 and the value of significance is 0.000. This demonstrates that the more the trust towards AI-controlled hospitals has increased the more the Artificial Intelligence will be adopted by hospital employees.

The p-value of (0.000) is lower than 0.05, so the null hypothesis (H 0) according to which there is no significant effect of trust in AI-enabled hospital services on the adoption of Artificial Intelligence is rejected and the alternative hypothesis (H 1) is accepted.

Hence, it can be deduced that trust in AI-enabled hospital services produces a strong positive effect on Artificial Intelligence adoption, meaning that the more hospital personnel trusts AI, the more they adopt AI in hospital operations.

Objective 3: To examine whether adoption of AI differs among hospital staff based on designation.

The third objective of the research is to evaluate whether the degree of Artificial Intelligence implementation varies across the hospital employees according to their designation. The data gathered were measured on a five-point Likert scale so that the assumption of normality is not met and thus it was thought that a non-parametric test would be suitable when carrying out the analysis.

In this regard, the Kruskal-Wallis H test was used to consider whether the differences in the degree of AI adoption differ significantly between the various groups of hospital staff. The test uses the mean rank of various groups to determine the existence of differences in designations. The findings of the analysis are given below.

Hypothesis test 3: Kruskal–Wallis H test

H_0: There is no significant difference in the level of Artificial Intelligence adoption among hospital staff based on designation.

H_1: There is a significant difference in the level of Artificial Intelligence adoption among hospital staff based on designation.

Table no 4.13: Ranks

	Designation:	**N**	**Mean Rank**
AI Adoption	Doctor	123	122.78
	Nurse	9	106.00
	Technician	23	106.00
	Administrative Staff	52	110.70
	IT/Systems	24	106.00
	Total	**231**	

Table no 4.14: Test Statistics

	AI Adoption
Kruskal-Wallis H	10.162
Df	4
Asymp. Sig.	.038

a. Kruskal Wallis Test
b. Grouping Variable: Designation:

The Kruskal-Wallis H test was used to test the hypothesis whether there is a significant difference in the level of adoption of Artificial Intelligence among the hospital staff according to their designation. The test was employed because the data were quantified on a five-point Likert scale and the participants were members of more than two independent groups. Table 4.13 indicates the mean rank of AI adoption under each designation whereas Table 4.14 displays the test statistics.

The average rankings appeared in Table 4.13 reveal that there is different variation in the degree of AI adoption among various designations. This is because Doctors have the highest mean rank (122.78) implying a relatively more high adoption of Artificial Intelligence than the other groups. Administrative staff members are also characterised by a relatively higher mean rank (110.70) but the nurses, technicians and IT/systems staff members possess lower mean rank (106.00 each), indicating a relatively lower level of AI adoption than among these types of employees.

The results of the Kruskal-Wallis test statistics are given in Table 4.14. The Chi-square is 10.162 having 4 degrees of freedom and has a value of 0.038 lower compared to the normal level of 0.05. This shows that the difference in the mean ranks between the different designations is statistically significant.

The p-value (0.038) is less than 0.05 and so the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. Consequently, it can be determined that the extent of Artificial Intelligence implementation varies greatly among the hospital employees by the designation. The findings indicate that relatively more employees in the upper technical or decision-making fields such as doctors and administrative employees are more likely to adopt AI than other staff segments.

5. Managerial Implications and Recommendations

To minimise the adoption gap among staff at the hospital, the management ought to offer role-based and practical training aimed at proving the way AI assists in the daily activities of the hospital so that it can become easier to use. Perceived usefulness can be improved by sharing practical demonstrations of the benefits of AI, including less workload and greater accuracy. The technical support should also be reinforced by hospitals by ensuring that they get quick assistance to avoid terminating the use of AI. Effective communication about data safety and patient confidentiality is a key step to establish trust by dealing with ethical issues. Last but not the least, staff participation in pilot testing and implementation can move the acceptance since in that way, it is guaranteed that AI systems are staff-friendly and that they match real work needs.

CONCLUSION

The paper concludes that Artificial Intelligence is a revolutionary development in the contemporary healthcare industry where its application has been effectively summarised in five dimensions namely clinical support, information management, patient monitoring, administrative efficiency and communication systems. Although there is extensive use of AI to enhance the operational workflow, as well as interacting with patients, the implementation of AI is overwhelmingly dependent on the amount of trust within the hospital staff. The results indicate that trust is a strong predictor of AI adoption that is significant and positive (r = 0.402). Besides, the study establishes a digital divide among professional designations. IT and administration also exhibit the highest adoption rates, but the frontline clinical staff, especially nurses and technicians, are much less engaged. Such differences imply that other facilitating factors like Perceived Usefulness, Perceived Ease of Use and Organisational Support should be incorporated that are necessary to close the adoption gap. Finally, ethical transparency and professional training should be the primary focus of hospitals in order to create a harmonious digital transition because of the fears of information confidentiality and job loss. Enhancing the connexion between trust and adoption is critical to using the potential of AI to improve the delivery of healthcare.

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