A Study on the Challenges and Barriers in Implementing Hospital Information System at OneHealth Hospital

Dr.R.Vignesh[1*], Assistant Professor, School of Management Studies, Sathyabama Institute of Science and Technology Deemed to be University, Chennai, Tamil Nadu, India.
Mohana V[2], MBA Final year Student, School of Management Studies, Sathyabama Institute of Science and Technology Deemed to be University, Chennai, Tamil Nadu, India.
Corresponding Author E-Mail Id[1*]: vignesh-vicky@outlook.com

ABSTRACT

The adoption of Hospital Information Systems (HIS) plays a vital role in enhancing healthcare efficiency, accuracy, and service quality. This study aims to analyze the challenges and barriers associated with the implementation of HIS at OneHealth Hospital. The research focuses on examining structural, technical, administrative, and organisational factors, along with user perceptions, managerial support, and data security concerns influencing system adoption. A qualitative research design was employed, with primary data collected through structured questionnaires from 104 respondents over a period of three months. Statistical tools such as percentage analysis, correlation, regression, and ANOVA were used for data analysis. The findings indicate a strong level of agreement among respondents regarding the presence of multiple barriers, with technical issues reducing user confidence (mean = 4.43) and lack of technical expertise (mean = 4.41) identified as the most critical challenges. Insufficient training, data security concerns, infrastructural limitations, and workflow disruptions also significantly impact HIS implementation. Correlation analysis reveals a strong positive relationship ($r = 0.856$, $p < 0.01$) between inadequate training and lack of technical expertise, which is further supported by ANOVA results indicating statistical significance. Although factors such as high implementation cost and employee resistance exist, they are comparatively less influential. The study concludes that improving training programs, enhancing technical infrastructure, and ensuring effective managerial support are essential for successful HIS adoption and sustainability in healthcare organisations.

Keywords: Health Information Systems (HIS), Healthcare Efficiency, Implementation Challenges, Digital Healthcare, Data Security.

INTRODUCTION

The rapid advancement of information technology has significantly transformed the healthcare sector, leading to the increased adoption of Hospital Information Systems (HIS) to improve operational efficiency, patient care, and decision-making processes (Ashish Jha et al., 2009). HIS integrates various hospital functions such as clinical services, administrative operations, and patient data management into a unified digital platform, thereby enhancing accuracy, accessibility, and coordination within healthcare institutions (Rainer Thiel et al., 2018). Despite these benefits, the successful implementation of HIS remains a complex and challenging process. Healthcare organisations often face multiple barriers during HIS adoption, including high implementation costs, inadequate infrastructure, technical issues, and concerns related to data privacy and security (Black A.D. et al., 2011). In addition, human factors such as resistance to change, lack of technical expertise, and insufficient training programs further complicate the implementation process (Venkatesh Viswanath et al., 2003). Among these, system reliability and user competency play a crucial role in determining the effectiveness and acceptance of HIS. This study focuses on OneHealth Hospital to analyse the various challenges and barriers affecting HIS implementation. It critically examines structural, technical, and administrative issues, evaluates organisational readiness and resource capacity, and explores the role of managerial support and leadership in facilitating successful adoption. Furthermore, the study investigates user perceptions regarding system usability and effectiveness, along with concerns related to data security and regulatory compliance. By identifying key influencing factors and their relationships, the study aims to provide meaningful insights and practical recommendations to enhance the successful implementation and utilisation of Hospital Information Systems in healthcare settings.

OBJECTIVES OF THE STUDY

The objective of the study is to analyse the challenges and barriers in implementing the Hospital Information System at OneHealth.

- To critically examine the structural, technical, and administrative challenges that influence the Hospital Information System.
- To analyse the organisational readiness and resource capacity required for effective adoption of HIS technologies.
- To evaluate the role of managerial support and strategic leadership in facilitating successful HIS implementation.

- To explore data security, privacy and regulatory concerns affecting the adoption and utilisation of HIS.
- To examine user perceptions regarding the effectiveness and usability of the Health Information System.

METHODOLOGY

The present study adopts a qualitative research approach to examine the challenges and barriers in implementing the Hospital Information System (HIS) at OneHealth Hospital. Qualitative research is appropriate for this study as it enables an in-depth understanding of participants' experiences, perceptions, and organisational issues in real-world settings (Creswell & Poth, 2018). Primary data were collected using structured questionnaires distributed to relevant respondents, ensuring that the data reflect direct insights from individuals involved in or affected by HIS implementation. A total of 104 valid responses were obtained over a period of three months, providing a sufficient sample size for meaningful analysis, as qualitative-oriented studies often emphasise depth over large sample sizes (Saunders et al., 2019). To analyse the collected data, both descriptive and inferential statistical techniques were employed. Percentage analysis was used to measure the level of agreement among respondents regarding various challenges, while correlation analysis helped to examine the relationships between key variables such as insufficient training and lack of technical expertise. Furthermore, regression and ANOVA were applied to determine the strength and statistical significance of these relationships, ensuring a more robust and comprehensive analysis of the data (Field, 2018). This combination of analytical tools enhances the reliability and validity of the findings by integrating both descriptive insights and statistical validation. Overall, the methodology is designed to systematically evaluate the structural, technical, and organisational factors influencing HIS adoption and to provide empirically supported conclusions.

Table 1

S.No	Statement	Mean Score	Percentage (%)
1	High implementation cost is a major barrier to adopting HIS	4.35	87.0%
2	Employees resist adopting HIS due to fear of change	4.27	85.4%
3	Insufficient training programmes make it difficult for staff	4.35	87.0%
4	Lack of technical expertise among staff	4.41	88.2%
5	Data privacy and security concerns	4.36	87.2%

6	Technical issues reduce user confidence	4.43	88.6%
7	Poor network connectivity affects usage	4.32	86.4%
8	Inadequate infrastructure affects implementation	4.34	86.8%
9	Frequent software updates disrupt workflow	4.36	87.2%
10	Regular system maintenance is performed	4.37	87.4%

Source: Computing from Primary Data

The analysis of Table 1 indicates a strong level of agreement among respondents regarding the various challenges and barriers in implementing the Hospital Information System (HIS), as reflected by all mean scores exceeding 4.25 and percentage values above 85%. Among the identified factors, technical issues reducing user confidence emerge as the most critical concern, with the highest mean score of 4.43 (88.6%), highlighting the importance of system reliability in ensuring user acceptance. This is closely followed by the lack of technical expertise among staff (mean = 4.41, 88.2%), suggesting that insufficient skill levels significantly hinder effective system usage. Regular system maintenance (mean = 4.37, 87.4%) and data privacy and security concerns (mean = 4.36, 87.2%) also rank prominently, indicating the need for consistent system support and robust data protection measures. Additionally, factors such as high implementation cost and insufficient training programs (mean = 4.35, 87.0% each) reflect both financial and capacity building challenges. Infrastructure related issues, including inadequate infrastructure (mean = 4.34, 86.8%) and poor network connectivity (mean = 4.32, 86.4%), further emphasise the importance of a strong technological foundation. Although employee resistance due to fear of change (mean = 4.27, 85.4%) is still a concern, it is comparatively less significant than other barriers. Overall, the findings suggest that technical performance, staff competency, and infrastructural readiness are the key determinants affecting successful HIS implementation.

Table 2

S.No	Statement	Mean Score	Percentage (%)	Rank	Interpretation
1	High implementation cost is a major barrier to adopting HIS	4.35	87.0%	6	Strong agreement – Cost is a significant barrier
2	Employees resist adopting HIS due to fear of change	4.27	85.4%	10	Agreement – Resistance exists, but comparatively lower
3	Insufficient training programmes make it difficult for staff	4.35	87.0%	7	Strong agreement – Training gap is a key issue.

4	Lack of technical expertise among staff	4.41	88.2%	2	Very strong agreement – Major challenge
5	Data privacy and security concerns	4.36	87.2%	5	Strong agreement – Security concerns are great
6	Technical issues reduce user confidence	4.43	88.6%	1	Highest agreement – Most critical challenge
7	Poor network connectivity affects usage	4.32	86.4%	9	Agreement – Connectivity issues present
8	Inadequate infrastructure affects implementation	4.34	86.8%	8	Strong agreement – Infrastructure matters
9	Frequent software updates disrupt workflow	4.36	87.2%	4	Strong agreement – Workflow disruption exists.
10	Regular system maintenance is performed	4.37	87.4%	3	Strong agreement – Maintenance is recognised

Source: Computing from Primary Data

The table 2 reveals a consistently high level of agreement among respondents regarding the barriers and challenges associated with adopting a Hospital Information System (HIS), as all mean scores exceed 4.25 and percentages remain above 85%, indicating strong consensus. The most critical issue identified is that technical issues reduce user confidence (mean = 4.43, 88.6%, rank 1), suggesting that system reliability plays a decisive role in user acceptance. Closely following is the lack of technical expertise among staff (mean = 4.41, 88.2%, rank 2), highlighting a significant skills gap that can hinder effective implementation. Regular system maintenance (mean = 4.37, 87.4%, rank 3) and frequent software updates disrupting workflow (mean = 4.36, 87.2%, rank 4) indicate that while maintenance is acknowledged, it may also contribute to operational interruptions. Data privacy and security concerns (mean = 4.36, 87.2%, rank 5) and high implementation cost (mean = 4.35, 87.0%, rank 6) further emphasise financial and risk related barriers. Additionally, insufficient training programs (mean = 4.35, 87.0%, rank 7) reinforce the importance of capacity building, while inadequate infrastructure (mean = 4.34, 86.8%, rank 8) and poor network connectivity (mean = 4.32, 86.4%, rank 9) point to systemic and technological limitations. Employee resistance due to fear of change (mean = 4.27, 85.4%, rank 10), although still agreed upon, is comparatively the least significant factor. Overall, the findings suggest that technical reliability, staff competency, and infrastructural readiness are the most influential determinants affecting HIS adoption, while human resistance, though present, plays a relatively smaller role.

Table 3

Correlations			
Insufficient training programs make it difficult for staff to use HIS effectively.	Pearson Correlation	1	.856**
	Sig. (2-tailed)		.000
	N	77	77
Lack of technical expertise among staff is a challenge in using the HIS.	Pearson Correlation	.856**	1
	Sig. (2-tailed)	.000	
	N	77	77

Correlation is significant at the 0.01 level (2 - tailed)
Source: Computing from Primary Data

The correlation analysis in table 3 demonstrates a very strong and statistically significant positive relationship between insufficient training programs and the lack of technical expertise among staff in using the Hospital Information System (HIS). With a Pearson correlation coefficient of 0.856 and a significance value of 0.000 ($p < 0.01$), the results indicate that these two factors are closely interconnected and tend to increase or decrease together. This suggests that inadequate training is likely a major contributing factor to the observed deficiency in technical expertise among staff. In practical terms, when training opportunities are limited or ineffective, employees are less likely to develop the necessary skills to operate HIS efficiently, thereby reinforcing the challenge of technical incompetence. The high correlation also implies that addressing one issue, particularly by improving training programs, could significantly mitigate the other, leading to better system utilisation. Overall, the findings highlight the critical importance of structured and continuous training initiatives as a strategic approach to enhance staff competency and ensure successful HIS implementation.

Table 4

Factors	Mean	Std. Deviation	N
Insufficient training programmes make it difficult for staff to use HIS effectively	4.32	.938	100
Lack of technical expertise among staff is a challenge in using the HIS.	4.39	.905	100

Source: Computing from Primary Data

The descriptive statistics in table 4 indicates that both insufficient training programmes and lack of technical expertise are perceived as significant challenges in the effective use of the Hospital Information System (HIS), with high mean scores of 4.32 and 4.39, respectively.

The slightly higher mean for lack of technical expertise suggests that respondents view it as a more critical issue compared to training gaps, although both factors are rated strongly. The standard deviations (0.938 for training and 0.905 for technical expertise) are relatively low, indicating a reasonable level of consistency in responses, with minimal variation among participants' opinions. With a sample size of 100 for both variables, the results are reliable and reinforce the earlier finding that skill related barriers are prominent in HIS adoption. Overall, the analysis highlights that deficiencies in both training and technical knowledge are closely aligned issues, suggesting that improving structured training programs could play a key role in enhancing staff expertise and optimising system usage.

Table 5

Correlations			
Pearson Correlation	Insufficient training programmes make it difficult for staff to use HIS effectively	1.000	.856
	Lack of technical expertise among staff is a challenge in using the HIS.	.856	1.000
Sig. (1-tailed)	Insufficient training programmes make it difficult for staff to use HIS effectively.	.	.000
	Lack of technical expertise among staff is a challenge in using the HIS.	.000	.
N	Insufficient training programmes make it difficult for staff to use HIS effectively	100	100
	Lack of technical expertise among staff is a challenge in using the HIS.	100	100

Source: Computing from Primary Data

In table 5 the correlation results indicates a very strong positive relationship between insufficient training programmes and the lack of technical expertise among staff in using the Hospital Information System (HIS), with a Pearson correlation coefficient of 0.856. This high value suggests that both variables are closely linked and tend to move in the same direction, meaning that as training deficiencies increase, the level of technical expertise among staff correspondingly decreases. The significance value of 0.000 (1-tailed) confirms that this relationship is statistically significant, indicating that the observed correlation is not due to random chance. With a sample size of 100 respondents, the findings are robust and provide

strong empirical evidence of the interdependence between these two factors. This relationship highlights that inadequate training is a key underlying cause of limited technical skills among staff, and addressing training gaps could substantially improve staff competence. Overall, the analysis emphasises that enhancing structured training initiatives is essential for overcoming technical expertise challenges and ensuring more effective HIS implementation and utilisation.

Table 6

ANOVA[a]					
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	49.006	1	49.006	205.593	.000b
Residual	17.877	75	.238		
Total	66.883	76			

Source: Computing from Primary Data

In table 6 the ANOVA results indicates that the regression model examining the relationship between the variables is highly statistically significant. The regression sum of squares (49.006) is substantially larger than the residual sum of squares (17.877), suggesting that a considerable portion of the total variation (66.883) is explained by the model. With an F-value of 205.593 and a significance level of 0.000 ($p < 0.05$), the model demonstrates a very strong overall fit, meaning the independent variable significantly predicts the dependent variable. The relatively low residual mean square (0.238) further indicates that the unexplained variance is minimal. Overall, these findings confirm that the predictor variable, likely insufficient training, has a significant and meaningful impact on the outcome variable, such as lack of technical expertise, reinforcing the conclusion that improving training programs can substantially enhance staff competency in using the Hospital Information System (HIS).

CONCLUSION

The study concludes that the implementation of the Hospital Information System (HIS) at OneHealth Hospital is significantly influenced by a combination of technical, organisational, and human related challenges, with technical reliability and staff competency emerging as the most critical factors. The findings reveal a strong consensus among respondents that issues such as technical problems, lack of technical expertise, insufficient training, and infrastructural limitations act as major barriers to effective HIS adoption. Among these, technical issues that reduce user confidence and the lack of staff expertise are identified as the most severe challenges, indicating that system performance and user capability are central to successful implementation. Furthermore, the strong positive correlation between insufficient training and

lack of technical expertise, supported by statistically significant ANOVA results, confirms that inadequate training is a key underlying cause of skill deficiencies among staff. Although factors such as high implementation cost, data security concerns, and employee resistance to change also exist, they are relatively less influential compared to technical and knowledge based barriers. The study also highlights the importance of organisational readiness, including infrastructure, network connectivity, and continuous system maintenance, in ensuring smooth HIS operations. Additionally, managerial support and strategic leadership play a crucial role in facilitating adoption by addressing these challenges effectively. Overall, the study emphasises that enhancing structured training programs, strengthening technical infrastructure, ensuring data security, and promoting supportive leadership are essential for improving user confidence, increasing system efficiency, and achieving successful and sustainable HIS implementation.

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