

# **Analysis of Ict Integration in Hospital Administration and Clinical Practices in Corporate Hospitals**

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## **Abstract**

This research paper presents an analysis of the integration of Information and Communication Technology (ICT) in hospital administration and clinical practices within corporate hospitals. The study aims to understand the impact of ICT integration on various aspects of healthcare delivery, including administrative processes and clinical decision-making. Through a combination of qualitative and quantitative research methods, the study explores the existing trends, challenges, and benefits associated with ICT integration in the healthcare industry. A comprehensive literature review is conducted to identify the potential advantages of ICT in streamlining hospital administration and enhancing clinical practices, such as improved efficiency, accuracy, and accessibility of patient information. Primary data is collected through surveys and interviews with key stakeholders, including hospital administrators, healthcare professionals, and IT personnel. The analysis of this data focuses on assessing the current level of ICT integration in corporate hospitals, identifying barriers to implementation, and investigating the perceived impact of ICT on hospital administration and clinical practices. The research paper concludes by discussing the implications of the findings and providing recommendations for corporate hospitals seeking to enhance ICT integration. These recommendations include investing in robust ICT infrastructure, providing comprehensive training for healthcare staff, addressing privacy and security concerns, and fostering a culture of innovation and collaboration.

**Keywords:** ICT, Hospital, Administration, Clinical, Practices

## **1. Introduction**

"E-health," according to the World Health Organization (WHO), is "the use of information and communication technology to assist health and health-related enterprises." Computers, crude electronic health records, and Tele-consultation for persons in faraway locations were commonplace ten years ago. This is considerably more prevalent nowadays. It now encompasses diverse applications, ranging from mobile health (m-Health) to telehealth. In many facets of healthcare, it is becoming increasingly vital. Figure 1 depicts the many categories of e-Health (Goh & Sigala, 2020).

According to Mukhtarov et al. (2018), M-Health is when mobile wireless technology is employed for health. This is frequently, but not always, accomplished with the use of a smartphone. It's simple to use m-Health to get healthcare information and services from abroad. Patients and emergency responders in Estonia can obtain summary health data through a "e-Patient portal," which is part of a nationwide system known as a "e-Health record." The NHS

App is a new app from the National Health Service of the United Kingdom. It allows users to view their summary medical record (including test results) and schedule appointments, with new capabilities being introduced all the time (Mukhtarov et al. 2018). In an eight-country study, 47 percent of those who took the test had poor or inadequate health literacy. People with several chronic conditions had a higher rate of 61 percent. The NHS has partnered with Amazon to provide health advice via Alexa, and there are other educational applications that make information more visual and understandable. Others allow you to keep track of your symptoms or even provide basic health advice and triage (Matthews et al. 2020).

Several health authorities are providing instructions on how to evaluate healthcare applications, making it easier for healthcare practitioners to utilise patient data to "prescribe" applications with the best evidence. The National Institute for Health and Care Excellence (NICE) in England has established an evidence-based framework for digital technologies to aid doctors in judging the usefulness and cost-effectiveness of developing digital technologies such as mobile applications (Ahmadi et al. 2011). In the United States, the Food and Drug Administration (FDA) regulates mobile applications that might harm patients if they malfunction. The majority of "health and wellness" applications make no medical claims (Santos-Peyret et al. 2020). With the assistance of the ICT Social Health Foundation, the Catalan government has built a public library of verified, trustworthy, and safe health applications. Similarly, the NHS Apps Library in the United Kingdom delivers Apps that have been validated as safe, secure, and compliant with particular technological standards.

## **2. Literature Review**

Email transmission is not free, despite appearances. However, it is significantly cheaper than a phone call. Additionally, ICT has allowed the automation of corporate operations, enabling organisations to restructure in order to save money. ICT has enabled the automation of enterprises, granting clients access to a website or voicemail 24 hours a day, seven days a week. More people have access to technology, which has aided in bridging the cultural divide by allowing people from various cultures to connect and exchange ideas. This has fostered understanding and diminished prejudice. ICT has made it possible to create new occupations. This is arguably the best outcome of the situation. Computers, their programmes, and the Internet have made learning possibilities available to individuals that did not previously exist. ICT may be used to educate using visuals and to help students retain information. Using ICT, teachers may easily explain and guarantee that students grasp complicated structures and lectures. Students' classes may be made more interesting and entertaining via the usage of ICT.

Computers, their programmes, and the Internet have provided people with learning opportunities that did not previously exist. The near-constant evolution of technology, according to experts from a wide range of disciplines, has made ICT a major concern for job security (Kim et al. 2019). This implies that individuals must always study or at least be abreast of changes in their industries if they wish to feel confident in their jobs. Cultures That Succeed - Information and communication technologies have made the globe smaller, making it simpler for one culture to dominate another. The majority of individuals believe that American teenagers have an influence on how young people dress and behave around the world. Information technology has improved the speed, ease, and convenience of communication, bringing privacy problems. People are concerned that once private information could become public due to collected cell phone signals and hacked e-mails.

Professor Ian Robertson, a neuropsychology expert at Trinity College Dublin who conducted the study, stated, "People nowadays have more to remember and rely on technology to help them recall, yet the less you utilise your memory, the worse it gets." People do not bother to learn how to spell or do basic math when spell checkers and calculators are readily available. How to Rely on Information - Since anybody with a computer and an internet connection may create a blog or upload material to a website, the existence of something on the internet does not always indicate its veracity. Wikipedia, a free online encyclopaedia, is an excellent illustration of this. Although it is a reliable source of information, academic institutions do not rely on it (Matthews et al. 2020). Viruses, worms, Trojan horses, malware, spam, and phishing may all make life more difficult. Setting up the gadget may require some time. The technology cannot manage its size. It has been determined that teachers who have little experience with ICT technologies would find them difficult to use.

### **3. Research Methodology**

Information and communication technology (ICT) is concerned with the use of technology to treat information, whereas health information technology describe the comprehensive management of health information across computerized systems and its secure exchange between patients, providers, government and quality entities, and insurers. Health information technology (HIT) is viewed as the most promising tool for improving the overall quality, safety and efficiency of the health delivery system. Broad and consistent utilization of HIT will improve health care quality; prevent medical errors; reduce health care costs; increase administrative efficiencies; decrease paperwork and expand access to affordable care.

This study attempts to gain insight into factors of adoption, barriers, and benefits of use of ICT in administrative works and in clinical prescriptions in corporate hospitals. Thus, this research is descriptive in nature as it aims to ascertain the degree to which relationships exist between a set of variables that influence adoption, barriers, and benefits of use of ICT in administrative works and in clinical prescriptions in corporate hospitals. The main advantage of such a correlational design is the ability to delineate the important factors that are associated with of adoption, barriers, and benefits of use of ICT in administrative works and in clinical prescriptions in corporate hospitals. This study is based on primary sources of data / information. In the present study, a structured close-ended questionnaire was designed specifically for conducting the survey and acquiring primary data. Self-administered questionnaire method chosen for obtaining responses. Descriptive and inferential statistical analysis on various parameters using SPSS software is down.

#### **3.1 Respondents**

In this research study, a sample of 200 each respondents was selected, consisting of doctors, nurses, and administrators from various corporate hospitals. The sample size was determined to ensure a representative and diverse representation of key stakeholders involved in hospital administration and clinical practices. This sample includes individuals who hold critical roles in patient care, decision-making, and the implementation of ICT solutions within healthcare settings. By including a balanced representation of doctors, nurses, and administrators, the research aims to capture a comprehensive perspective on the integration of ICT in corporate hospitals and its impact on different facets of healthcare delivery.

### **4. Research Objectives**

From the above research questions following objectives are as follows:

1. To study the factors of adoption, barriers, and benefits of use of ICT in administrative works and in clinical prescriptions in corporate hospitals.
2. To study the attitude and behavior of administrators and doctors towards use of ICT in administrative and clinical practices.
3. To study the e-prescription readiness and benefits in clinical practice.

## 5. Research Hypothesis

**H1:** There is a significant difference in factors of adoption towards the use of ICT with respect to doctors in administrative works and in clinical prescriptions in corporate hospitals

**H2:** There is a significant impact of doctor's attitude of use of ICT in clinical prescriptions in corporate hospitals

**H3:** There is a significant impact of barriers on doctors towards the use of ICT in clinical prescriptions in corporate hospitals

**H4:** There is a significant difference in doctor's perception on the use of Information Technology Implementation

**H5:** There is a significant difference in doctor's response to ICT usage

**H6:** There is a significant difference in factors of adoption of use of ICT clinical prescriptions in corporate hospitals with respect to nurses

## 6. Results and Discussion

**6.1 H1:** *There is a significant difference in factors of adoption towards the use of ICT with respect to doctors in administrative works and in clinical prescriptions in corporate hospitals*

In order to check the above hypothesis, ANOVA has been applied.

**Table 1:** ANOVA results

		Sum of Squares	df	Mean Square	F	Sig.
Electronic usage	Between Groups	57.939	4	14.485	10.9080.000	
	Within Groups	258.936	195	1.328		
	Total	316.875	199			
Support for data sharing	Between Groups	57.469	4	14.367	12.8440.000	
	Within Groups	218.126	195	1.119		
	Total	275.595	199			
Support for data access	Between Groups	36.268	4	9.067	9.424 0.000	
	Within Groups	187.607	195	0.962		
	Total	223.875	199			
Support for managerial function	Between Groups	74.805	4	18.701	22.9910.000	

	Within Groups	158.615	195	0.813	
	Total	233.42	199		
Patient appointment system	Between Groups	57.211	4	14.303	16.6670.000
	Within Groups	167.344	195	0.858	
	Total	224.555	199		
Surgery scheduling system	Between Groups	32.315	4	8.079	8.577 0.000
	Within Groups	183.68	195	0.942	
	Total	215.995	199		
Prescription and follow up management system	Between Groups	55.593	4	13.898	14.1210.000
	Within Groups	191.927	195	0.984	
	Total	247.52	199		
Clinical and pathological data management system	Between Groups	74.525	4	18.631	20.9430.000
	Within Groups	173.475	195	0.89	
	Total	248	199		

Above table indicates that, the factors of adoption towards the use of ICT with respect to doctors in administrative works and in clinical prescriptions in corporate hospitals are significant. Thus, it is concluded that there is a significant difference in factors of adoption towards the use of ICT with respect to doctors in administrative works and in clinical prescriptions in corporate hospitals.

### **6.2 H2. There is a significant impact of doctor's attitude of use of ICT in clinical prescriptions in corporate hospitals**

In order to check the above hypothesis, Regression has been applied.

**Table: 2 Regression results**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.895	0.204		4.396	0.000
	Doctor's attitude	0.692	0.058	0.645	11.884	0.000
R <sup>2</sup> =.416, F=141.22						

Above table indicates that, there is a significant impact of doctor's attitude of use of ICT in clinical prescriptions in corporate hospitals as p-value is less than 0.05.

**6.3 H3. There is a significant impact of barriers on doctors towards the use of ICT in clinical prescriptions in corporate hospitals**

In order to check the above hypothesis, Regression has been applied.

**Table: 3 Regression results**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.683	0.224		3.052	0.003
	Barriers	0.761	0.065	0.64	11.71	0.000
$R^2=.409, F=137.12$						

Above table indicates that, there is a significant impact of barriers on doctors towards the use of ICT in clinical prescriptions in corporate hospitals as p-value is less than 0.05.

**6.4 H4. There is a significant difference in doctor's perception on the use of Information Technology Implementation**

In order to check the above hypothesis, ANOVA has been applied.

**Table: 4 ANOVA results**

		Sum of Squares	df	Mean Square	F	Sig.
Electronic storage and its foreseen outcomes	Between Groups	66.829	4	16.707	23.898	0.000
	Within Groups	136.326	195	0.699		
	Total	203.155	199			
Support for data sharing	Between Groups	55.411	4	13.853	16.337	0.000
	Within Groups	165.344	195	0.848		
	Total	220.755	199			
IT Support for managerial functions	Between Groups	40.201	4	10.05	9.396	0.000
	Within Groups	208.579	195	1.07		
	Total	248.78	199			
IT support for data security	Between Groups	57.717	4	14.429	16.972	0.000
	Within Groups	165.783	195	0.85		
	Total	223.5	199			

Above table indicates that, doctor's perception on the use of Information Technology Implementation is significant. Thus, it is concluded that there is a significant difference in doctor's perception on the use of information technology implementation.

**6.5 H5. There is a significant difference in doctor's response to ICT usage**

In order to check the above hypothesis, ANOVA has been applied.



**Table: 5 ANOVA results**

		Sum of Squares	df	Mean Square	F	Sig.
Electronic storage and its foreseen outcomes	Between Groups	27.498	4	6.874	7.847	0.000
	Within Groups	170.822	195	0.876		
	Total	198.32	199			
Efficiency of use	Between Groups	57.031	4	14.258	17.56	0.000
	Within Groups	158.324	195	0.812		
	Total	215.355	199			
Intuitiveness of EHR user interfaces	Between Groups	27.687	4	6.922	6.792	0.000
	Within Groups	198.708	195	1.019		
	Total	226.395	199			
Support for information exchange	Between Groups	69.134	4	17.284	21.996	0.000
	Within Groups	153.221	195	0.786		
	Total	222.355	199			
Support for collaboration	Between Groups	56.474	4	14.118	14.303	0.000
	Within Groups	192.481	195	0.987		
	Total	248.955	199			
Interoperability and reliability	Between Groups	82.053	4	20.513	28.551	0.000
	Within Groups	140.102	195	0.718		
	Total	222.155	199			
Speed up	Between Groups	64.52	4	16.13	21.124	0.000
	Within Groups	148.9	195	0.764		
	Total	213.42	199			
Time	Between Groups	41.982	4	10.496	10.799	0.000
	Within Groups	189.518	195	0.972		
	Total	231.5	199			

Above table indicates that, doctor's response to ICT usage is highly significant. Thus, it is concluded that there is a significant difference in doctor's response to ICT usage.

**6.6 H6. There is a significant difference in factors of adoption of use of ICT clinical prescriptions in corporate hospitals with respect to nurses**

In order to check the above hypothesis, ANOVA has been applied.

**Table 1:** ANOVA results

		Sum of Squares	df	Mean Square	F	Sig.
Electronic usage	Between Groups	30.038	4	7.51	8.976	0.000
	Within Groups	163.142	95	0.837		
	Total	193.18	99			
Support for data sharing	Between Groups	51.861	4	12.965	15.222	0.000
	Within Groups	166.094	95	0.852		
	Total	217.955	99			
Support for data access	Between Groups	58.816	4	14.704	16.595	0.000
	Within Groups	172.779	95	0.886		
	Total	231.595	99			
Support for managerial function	Between Groups	61.976	4	15.494	18.072	0.000
	Within Groups	167.179	95	0.857		
	Total	229.155	99			
Patient appointment system	Between Groups	89.791	4	22.448	28.838	0.000
	Within Groups	151.789	95	0.778		
	Total	241.58	99			
Surgery scheduling system	Between Groups	60.727	4	15.182	18.271	0.000
	Within Groups	162.028	95	0.831		
	Total	222.755	99			
Prescription and follow up management system	Between Groups	16.267	4	4.067	3.827	0.000
	Within Groups	207.233	95	1.063		
	Total	223.5	99			
Clinical and pathological data management system	Between Groups	38.893	4	9.723	9.513	0.000
	Within Groups	199.302	95	1.022		
	Total	238.195	99			



Above table indicates that there is a significant difference in factors of adoption of use of ICT clinical prescriptions in corporate hospitals with respect to nurses as p-value is less than 0.05.

## 7. Conclusion

The employment of new technology to deal with data is what information and communication technology (ICT) is all about? Health data innovation is concerned with broadening the board of health data across modern frameworks and keeping it secure when shared across patients, suppliers, government and quality-control agencies, and safety-net providers. The greatest method to improve the overall quality, security, and efficiency of the health care system is to use health information technology (HIT). The vast bulk of clinical information is now available in digital format. Thanks to developments in communication technology, sensor size, and processing power, and electronic health records may now be connected and analysed clinically.

Using "Big Data," machine learning and artificial intelligence are assisting people in understanding more about diseases, making better decisions, and managing their own health. Even four months after the virus SARS-CoV-2 was discovered, the administrator looked at research articles from the previous decade that discussed how to use digital health technology or telemedicine to aid patients with epilepsy. Despite the fact that 63% of US primary care physicians say EHRs have made treatment better overall, 74% say they have made their work more difficult, and 68% say they have taken valuable time away from patient care. EHRs and administration took up 49% of clinicians' time in a study done in the United States. There are several factors that may influence the amount of information and communication technology (ICT) employed in the healthcare business, and this study seeks to identify them. Much emphasis will be placed on the factors that motivate physicians to employ ICT in patient care and clinical service delivery.

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