Dissertation Report

at

TrioTree Technologies Pvt. Ltd.

Effect of Requirement Analysis in terms of Hospital Information System (HIS) Implementation

by

Dr. Shakshi Gupta

PG/22/107

Under the guidance of

Dr. Altaf Yousuf Mir

PGDM (Hospital & Health Management)

2022-2024

International Institute of Health Management Research, New Delhi

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Shakshi Gupta** student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at **TrioTree Technologies Pvt. Ltd** from **01/03/2024** to **01/06/2024**

The Candidate has successfully carried out the study designated to him during internship training and his/her approach to the study has been sincere, scientific and analytical. The Internship is in fulfillment of the course requirements. I wish him all success in all his/her future endeavors

Dr. Sumesh Kumar
Associate Dean, Academic and Student Affairs
IIHMR, New Delhi

Mentor
IIHMR, New Delhi

Certificate of Approval

The following dissertation titled " **Effect of Requirement Analysis in terms of Hospital Information System (HIS) Implementation**" at "**TrioTree Technologies Private Limited**" is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name	Signature
Dr. Nidhi Yadav	
Associate Professor	

Certificate of Dissertation Advisory Committee

This is to certify that **Dr. Shakshi Gupta**, a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. She is submitting this dissertation titled **"Effect of Requirement Analysis in terms of Hospital Information System (HIS) Implementation"** at **"TrioTree Technolgoies Pvt. Ltd."** in partial fulfillment of the requirements for the award of the **PGDM (Hospital & Health Management).**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Dr. Altaf Yousuf Mir
Associate Professor
IIHMR, New Delhi

Mr. Girjesh Kumar
Project Manager
TrioTree Technologies Pvt. Ltd.

Feedback Form

Name of Student:

Dr. Shakshi Gupta

Name of the Organisation in Which Dissertation Has Been Completed:

TrioTree Technologies Pvt. Ltd.

Area of Dissertation:

Hospital Information System Implementation

Attendance:

100 %

Objectives achieved:

Found the requiremetn changes which is affecting the implementation and development of HIS Web Application.

Deliverables:

Testing along with Test cases development, BRD's Creations, SRS Understading

Strengths:

Good Communication, Presentation and leadership Skill

Suggestions for Improvement:

More depth understanding before making any critical suggestion.

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):

Include some more depth knowledge about Healthcare applications integrations like API's. Keep sending students like her more to the orgarnization. Some seminars related to Health IT will be helpful to them.

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: 18/07/2024

Place: Port Louis, Mauritius

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH (IIHMR)

Plot No. 3, Sector 18A, Phase- II, Dwarka, New Delhi- 110075
Ph. +91-11-30418900, www.iihmrdelhi.edu.in

CERTIFICATE ON PLAGIARISM CHECK

Name of Student (in block letter)	Dr./Mr./Ms.: SHAKSHI GUPTA		
Enrollment/Roll No.	PGI22/107	Batch Year	2022-24
Course Specialization (Choose one)	Hospital Management	Health Management	Healthcare IT ✓
Name of Guide/Supervisor	Dr./ Prof.: Altaf Yousuf Mir		
Title of the Dissertation/Summer Assignment	Effect of Requirement Analysis in terms of Hospital Information System (HIS) Implementation.		
Plagiarism detect software used	"TURNITIN"		
Similar contents acceptable (%)	Up to 15 Percent as per policy		
Total words and % of similar contents Identified	3955 14%		
Date of validation (DD/MM/YYYY)	21/7/2024		

Guide/Supervisor

Name:

Signature:

Student

Name: DR. SHAKSHI GUPTA

Signature: Shakshi

Report checked by

Institute Librarian

Signature:
Date:
Library Seal

Dean (Academics and Student Affairs)

Signature:
Date: 27/7/24
(Seal)

Certificate by Scholar

This is to certify that the dissertation titled **"Effect of Requirement Analysis in terms of Hospital Information System (HIS) Implementation"** and submitted by **Dr. Shakshi Gupta** Enrollment No. **PG/22/107** under the supervision of **Dr. Altaf Yusuf Mir** for award of **PGDM (Hospital & Health Management)** of the Institute carried out during the period from **01/03/2024** to **01/06/2024** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

Acknowledgement

I express my sincere regards to **Ms. Akanksha Rajeec,** Director and Client Executive of TrioTree Technologies Pvt. Ltd.

I feel to acknowledge my indebtedness and sense of gratitude to my guide **Mr. Grijesh Kumar,** Project Manager, TrioTree Technologies Pvt. Ltd. whose guidance and supervision given to me throughout the course of my internship as well as providing the necessary information regarding the project which shaped the present work as it shows.

My thanks and appreciation also goes to all the members of TrioTree Technologies Pvt. Ltd., whose deliverance and acquaintance of the insights of their departments gave me a wholesome knowledge.

I am immensely obliged to my institute **IIHMR DELHI**, for providing me with the opportunity to pursue my internship from such a prestigious organization. I sincerely would like to thank **Dr. Sutapa Neogi, Director of IIHMR DELHI**, for her constant motivation and guidance for all our endeavors. I would like to extend my gratitude to **Dr. Sumesh Kumar,** Associate Dean (Academics). I acknowledge with thanks the kind of patronage, inspiration and guidance which I have received from my faculty mentor**, Dr. Altaf Yusuf Mir**

Acronyms/Abbreviations

HIS	Hospital Information System
HMIS	Hospital management information system
SDLC	Software Development Life Cycle
MOHW	Ministry of Health and Wellness
EHR	Electronic Health Record
EMR	Electronic Medical Record
ICT	Information and Communication Technologies
JCI	Joint Commission International
NABH	National Accreditation Board for Hospitals and Healthcare Providers (NABH)
ISO	International Organization for Standardization
IFAH	International Forum for Advancement in Healthcare

Table of content

Introduction

With a bequest of over 200+ facility currently running with TrioTree's HIS web application has established itself as a poineer in the area of Digital Hospital Solution, and is recognised as the leading exclusive Health IT solution provider in India,UK and the Middle-East. TrioTree Technologies was founded by a group of doctors and engineers with decades of experience in the healthcare domain.

Indian Express Healthcare IT Award 2016 (EMR Adoption)

IMC Award (2017) – Patient portal

JCI & NABH Accredited Clientele

Top 100 Healthcare Leaders Award - IFAH 2019

An ISO 9001:2015 and ISO 27001:2013 Certified Company

Currently more than 200 facilities are live running the HISTree at the same time and by the end of this year the organization is going live in 165 facilities of entire Mauritius at the same time.

Organizational Profile

TrioTree's vision is to revolutionize the quality and efficiency of everyday patient experiences with the convergence of healthcare

THE TREE represents the growing state of the company - A strong organic growth.

THE TRUNK the fusion of three unique identities joining in a triple helix, uniting towards a single foliage. The identities being very different in character - strong and vibrant on their own.

THE FOLIAGE represents the united energy. The bubbles - new ideas expanding, taking shape.

OUR SPIRIT- United, Strong, Ideating...

Services provided by TrioTree

HISTree

An Enterprise Hospital Information System. Modules available in HISTree are below

Front Office & Appointment Management	IPD Management	Package & Plans Management System
Emergency Management	Asset Management	Accounts Recievables Management
Physicians- EMR	MRD- Medical Record Department	Queue Management System
RIS & Diagnostics Management	Doctors Accounting	Discharge Summary Managament
Pharmacy Management System	Day Care Management	Document Management System
Inventory & General Stores Management System	Template Designer	Rehabilitation Management
Kitchen & Diet Management	ICU Management	Nursing Management
Transfusion Medicine - Blood Bank	OT Management - operation theatre	Housekeeping & Linen Management
ADT- Admissions, Transfer & Discharge	OPD Management	

Dashboard

TrioTree Technologies dashboards is a modern analytics & BI tool to monitor healthcare KPIs in a dynamic and interactive way for strategy analysis and execution, performance reviews, performance improvement and Data Insights

Operations Dashboard (For Operations Head/COO/CEO)

Finance Dashboard (For Finance Managers/ CFO)

Audit Dashboard (For Quality Champion/Clinical Auditors)

Inventory Dashboard (For Store Managers/SCM Heads)

Clinical Dashboard (For Medical Directors/Clinical Researchers)

Mobile Application

TrioTree technologies Mobile apps allow providers to effectively streamline communication between patients, providers, and their caregivers and allows for 24/7 management of a patient's condition along with the ability to personalize healthcare patient wise.

Project Undertaken other than Dissertation

Current HIS Testing, Training

Solely undertook these responsibilities under the guidance of the organizational mentor

- Regressive testing for Physician Module
- Regressive testing for Nursing Module
- General manual testing for Emergency Module
- General manual testing for Inventory Module
- Bug findings in the flow

Effect of Requirement Analysis in terms of Hospital Information System (HIS) Implementation

Abstract

Background

The healthcare industry is rapidly evolving with the integration of digital technologies, aiming to improve patient care, enhance operational efficiency, and reduce costs. However, the success of these technological advancements hinges on the technical robustness of the systems, which is dependent on thorough initial requirement analysis.

In HIS implementation, requirement gathering, or analysis involves identifying gaps between user expectations and system capabilities. In this study 5 different clinical departments are taken into the consideration.

- Physician
- Nurse
- Laboratory and Radiology
- Blood Bank
- Pharmacy

Method:

The study is conducted using qualitative and qualitative tools. The tool used in this study primarily includes the new requirement, years of experience and the department of the healthcare staff. Assessment of the requirement change is analyzed by analyzing the self-structured questionnaire and interview method. Inclusion criteria – Healthcare sector staff currently working in the various departments of hospital and the staff who is going to use the e-health function.

Result:

According to the study, amongst the healthcare sector departments, Blood bank and Nurse resulted high number of requirement changes compared to others. From one facility to another facility the number of new requirements increases. Changes in requirements during this phase can have significant effects on the overall implementation. Such key effects:

- Scope creep
- Resource Allocation
- Project Timeline
- Quality Assurance
- User Satisfaction
- System Integration
- Documentation and Training

Conclusion:

In conclusion, while the dynamic nature of requirements poses challenges, it also presents opportunities to refine and optimize the HIS to better serve its users.

On average there are 10 requirement changes which need to be refined in the first place based on their severity level so that the process of implementation can be better mitigated. It is found that, with every 5th facility visit the requirement changes in same department, which is a clear identification of different sets of ongoing clinical flow, this needs to be taken care by the facility to enhance the efficiency overall as well as user acceptability.

For mitigating the changes in requirement, the documentation and validation of requirement should be according to the users not as per the department.

By strategically managing changes and prioritizing critical needs, hospitals can implement a robust, user-friendly HIS that enhances operational efficiency, improves patient care, and adapts to the evolving demands of the healthcare environment.

Introduction

The healthcare sector is undergoing a significant transformation driven by the integration of information and communication technologies (ICT). This integration, often referred to as e-health, includes a broad spectrum of applications that strengthen the technology to improve healthcare delivery, patient engagement, and overall health outcomes. At the national level, e-health implementation presents a opportunity to address challenges in healthcare systems, including:

Improved access to care: E-health can bridge geographical and socio-economic disparities by enabling remote consultations, telemedicine services, and dissemination of health information to underserved communities.

Enhanced efficiency and cost-effectiveness: Electronic health records (EHRs), e-prescriptions, and telehealth platforms can streamline the processes, reduce paperwork, and optimize resource allocation within healthcare systems.

Enhanced patients' engagement: E-health solutions can engage patients by providing them with secure access to their medical records, educational resources, and self-management tools, stimulate greater engagement in their health journey.

However, the successful implementation of e-health at the country level requires a broad and detailed approach. This research deals into the critical role of requirement gathering within the Software Development Life Cycle (SDLC) for e-health initiative.

Requirement Gathering in the SDLC

Effective requirement gathering forms the foundation of any successful software development project. In the context of e-health, this phase assumes even greater significance. E-health solutions cater to a complex ecosystem encompassing healthcare professionals, patients, government agencies, and potentially private sector partners. Each stakeholder group possesses unique needs, workflows, and expectations.

Requirement gathering ensures that these diverse perspectives are captured and translated into a software solution that is:

User-centric: Designed to meet the specific needs and workflows of intended users, optimizing usability and promoting adoption.

Functionally sound: Delivers the core functionalities required to achieve the e-health initiative's objectives.

Technically feasible: Developed with consideration for the existing infrastructure and technological capabilities within the country.

This thesis will examine the specific challenges associated with gathering requirements from diverse stakeholders in the healthcare domain. Through this analysis, we will propose a framework for effective requirement gathering that optimizes the success of e-health implementation at the country level.

Scope of Project

The Ministry of Health and Wellness wishes to implement an integrated digital health solution across all Government health facilities in Mauritius, including Regional Hospitals, Mediclinic's. Area Health Centres, & Community Health Centres. It is expected that the solution will support a wide range of patient administration, clinical record, and supporting facility management requirements when fully implemented. At a minimum, the following core functional areas have been identified as necessary.

- Outpatient Management (OPD) – Patient registration, scheduling of consultations and clinical tests, wait-list management, prescription management, reporting/analytics, file management, clinical notes, including the handling of unsorted and sorted patient workflows
- Accident and Emergency (AED) as a special case of outpatient management
- Inpatient Management (IPD) - Patient registration, admission of patients, bed/ward management, scheduling of consultations and clinical tests, clinical notes, discharge, reporting/analytics, including the handling of ICU workflows and functions
- Operating Theatre Management (OTM)
- Electronic Medical Records (EMR) – support for recording coded and free-text clinical details, including the outputs of diagnostic instruments or scanned documents, clinical decision support, Paper Medical Record tracking and management must be supported (across facilities) as an interim until such time as full electronic records are available and implemented.

Scope of Project for TrioTree:

- Customization of Product (HIS Tree) to MOHW requirements
- Implementation of HMIS in 157 different Regional Hospitals, District Hospitals, Specialized Hospitals, Community Hospitals, Specialized Services, Mediclinic, Area Health Centres, and Community Health Centres in phase 1.
- Change Management and training of users
- Stabilization support
- Handholding support
- Operations and Support for Software (HIS Tree) components for six months post go-live.

Review of Literature

The healthcare industry is undergoing a significant transformation with the introduction of HIS and digital health technologies. These technologies offer a vast range of benefits, including Improved patient record management, provide continuity of care, increased efficiency, and reduced costs. (1) However, the successful adoption of HIS requires effective change management strategies to address the challenges associated with the implementation process. With any new technology, there is a need to manage change and ensure that it is implemented safely and effectively. (2) Change control and management is a process that is commonly used in other industries to manage change, and it can also be applied to the field of digital health to ensure that changes are implemented in a controlled and safe manner. (3,4) Age and education also plays a crucial role in uptake of digital solutions. (5).

According to the journal of healthcare information management, implementation process of HIS at large scale depends on the support by the important actors necessitated for different problematization strategy, which includes the design, development and training.

Reference:

1. Charles JT Butcher, Wajid Hussain. Digital healthcare: the future, Future Healthcare Journal-Royal College of Physicians. 2022 Jul; 9(2): 113–117.
2. C. M. Cato, M. M. Williams, and C. M. Short, "The implementation of electronic health records and change management: A literature review," Journal of Healthcare Management, vol. 63, no. 1, pp. 10-22, Jan/Feb 2018.
3. J. Chen, Y. Xue, and Y. Chen. A Change Control Process for Health Information Systems," in 2018 IEEE International Conference on Healthcare Informatics (ICHI), New York, NY, USA, 2018, pp. 69-73. doi: 10.1109/ICHI.2018.00019.
4. M. P. Roach, J. K. Albeiruti, J. K. Ledbetter, and S. J. Galvan, "Change management considerations for the implementation of telehealth programs," Journal of Healthcare Information Management, vol. 28, no. 4, pp. 9-15, Fall 2014.
5. M. B. Nelson, A. J. Whitman, and M. A. Whitman. Change management strategies for successful EMR implementation," Journal of Healthcare Information Management, vol. 22, no. 2, pp. 38-44, Spring 2008.
6. S. K. Srinivasan, S. H. Nguyen, and R. K. Bali, "Change control management for safe implementation of electronic health records," in 2017 IEEE International Conference on Big Data (Big Data), Boston, MA, USA, 2017, pp. 3914-3918. doi: 10.1109/BigData.2017.8258412.
7. Boundaries and e-health implementation in health and social care Gerry King 1, Catherine O'Donnell, David Boddy, Fiona Smith, David Heaney, Frances S Mair DOI: 10.1186/1472-6947-12-100

Methodology

Problem Statement: The change in requirement from one actor to another at the time of requirement gathering.

Study area: The study is conducted in a government facilities of the Mauritius

Sample size & Study duration: Healthcare professionals across hospitals. In this study the 40 facilities are included.

Study type& Tools Used: The study is conducted using qualitative and qualitative tools. The tool used in this study primarily includes the new requirement, years of experience and the department of the healthcare staff. Assessment of the requirement change is analyzed by analyzing the self- structured questionnaire and interview method.

Inclusion criteria – Healthcare sector staff currently working in the various departments of the hospital and the staff who are going to use the e-health function.

Departments included in this study are,

- Physicians
- Nurse
- Lab & Radiology
- Pharmacy
- Blood bank

Data Collection Procedure: Official permission is taken from the concerned authorities for the collection of the data. Participants are educated about the reason of the study. Information on these variables is collected through interview methods. While conducting the interview, information is collected with strict confidentiality.

Data Analysis: The information gathered from the tools is statistically analysed to understand the possible reason for change in the requirement.

Objectives:

Primary Objective

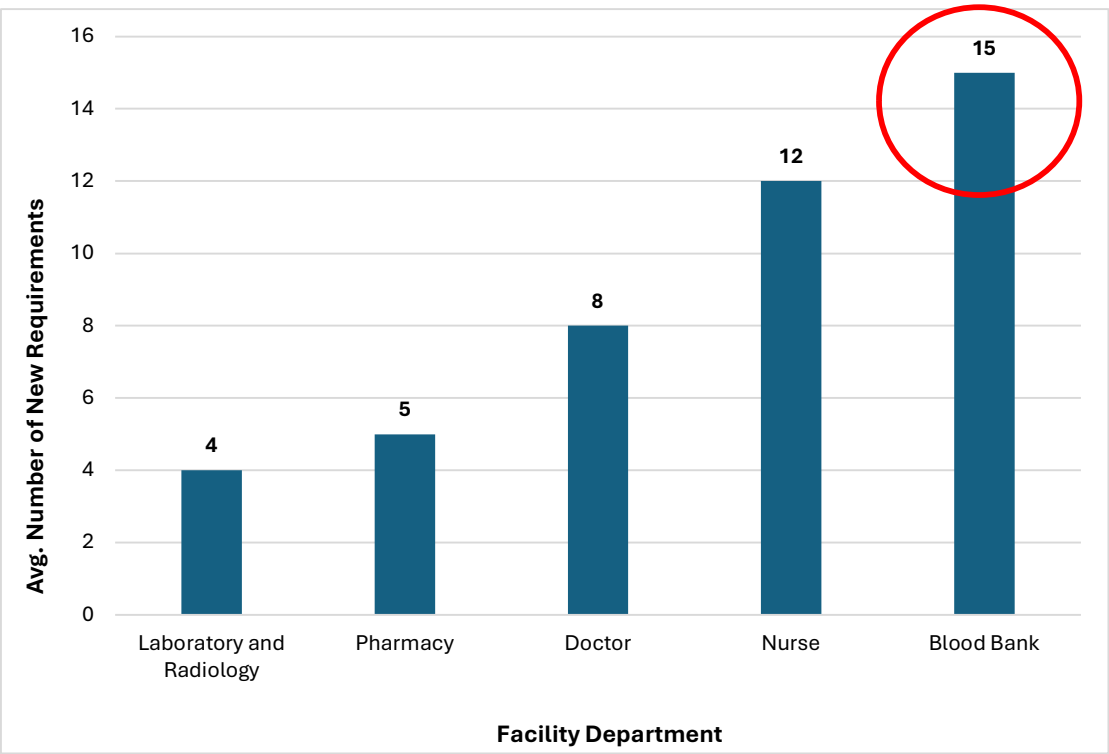
- Effect of dynamic requirements affecting clinical modules in terms of Hospital Information System (HIS) implementation.

Secondary Objective

- Planning strategy to increase user acceptance towards HIS.
- To recommend a course of action for implementation of effective change management interventions.

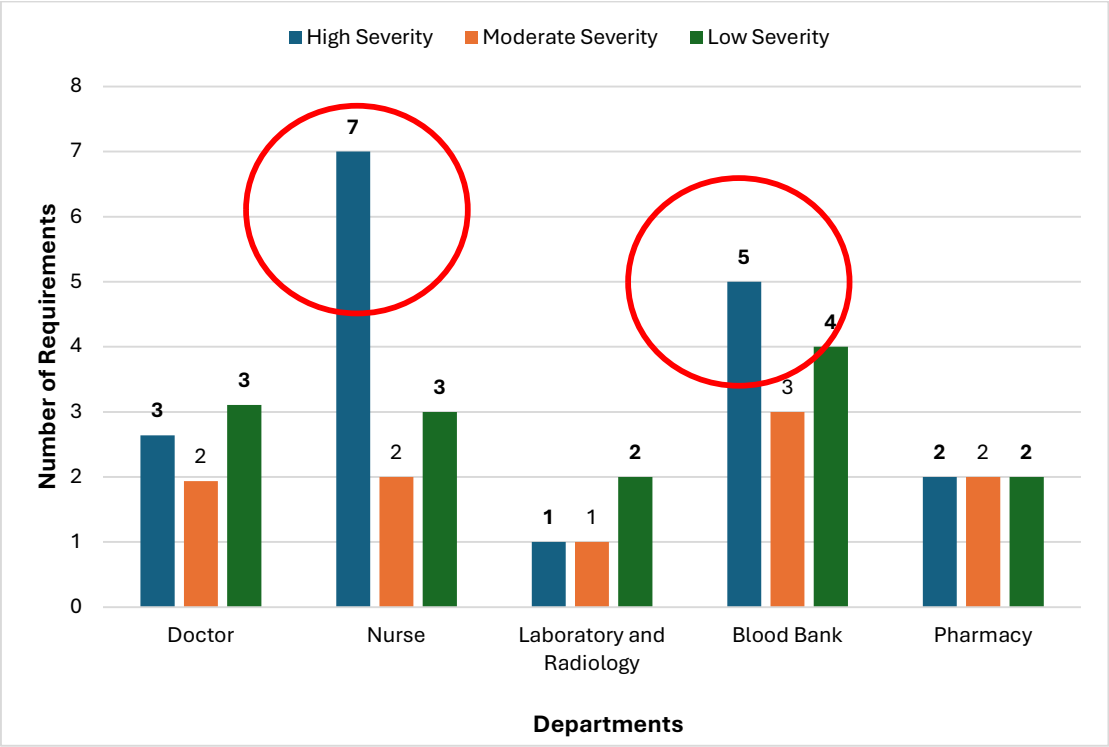
Result:

Finding 1:



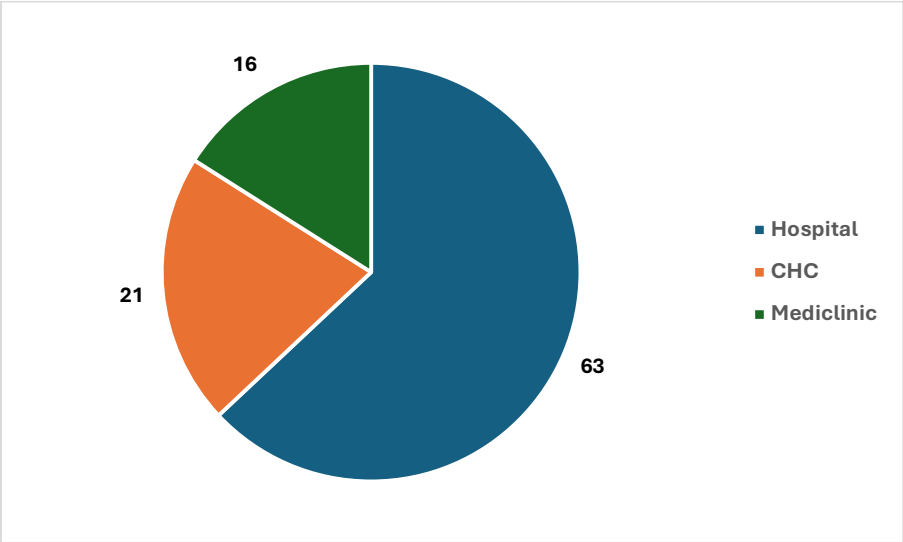
As Compare with other departments, Blood bank resulted high number of requirement changes.

Finding 2:



As per requirement severity level, compared with other clinical module ***Nurse*** and ***Blood bank*** resulted high number of requirement changes.

Finding 3:



Hospital across the facility resulted overall high number of % change in requirement compared to CHC and Mediciline.

Discussion:

1. Blood bank and Nurse resulted in a high number of requirement changes compared to others.

2. Most of the nurses who give the maximum requirements are **5 to 10 years** experienced.

3. These nurses require a high number of requirements change in the current process as they are resistant to adopting new workflows and prefer to stick with the traditional, non-standardized approach.

4. They also expressed dissatisfaction with the policies surrounding changes to the process flow, particularly given their familiarity with the current system for the past ten years.

5. Regional hospitals present a greater challenge in designing a single solution due to their multi-specialty nature. Each specialty has unique requirements for managing appointments, follow-ups, vital sign capture, and surgery planning, making standardization difficult.

6. The lack of standardized workflows by the Ministry of Health (MOHW) leads to significant changes in requirements, particularly for high-priority tasks. This ultimately increases project timelines and scope due to the variations in workflows across hospitals based on their available resources.

7. The project faces challenges in achieving widespread acceptance for a single process flow due to the current mix of facilities. Some already utilize a digital system, while others maintain patient records and workflows manually. This lack of uniformity creates resistance to adopting a standardized approach.

8. The project suffers from requirement creep due to the absence of a designated process owner. Without a central point of contact, individual users submit requirements based on their own preferences, which may not align with the overall workflow.

9. The process of requirements gathering for Hospital Information System (HIS) implementation is critical, as it defines the scope, functionality, and usability of the system. Changes in requirements during this phase can have significant effects on the overall implementation. The effects are:

    a) Scope creep: Scope creep is also known as “requirement creep” or “feature creep” refers to how a project’s requirements tend to increase over a project lifecycle.

    Scope creep is typically caused by key project stakeholders changing requirements or sometimes by internal miscommunication and disagreements.

    b) Resource Allocation: The project suffers from scope creep due to ongoing changes in requirements. This disrupts the resource allocation defined in the initial project plan. As the project scope expands, the originally allocated resources become insufficient, creating challenges for the implementation team.

c) Project Timeline: The project timeline is significantly impacted by the extended requirement gathering and finalization phase. This is primarily due to continuous changes in requirements.

d) Quality Assurance: Unclear requirements and ongoing changes significantly impact the delivered product's quality. This makes it difficult to establish a standardized workflow, ultimately leading to inconsistencies in the final product.

e) User Satisfaction: Requirement changes can have a complex impact on user satisfaction. Here's a breakdown of the potential effects:

- Confusion and frustration
- Delayed Feature
- Unmet expectations

f) System Integration: Requirement changes can have significant effects on system integration, impacting both the process and the outcome. The effects are:

- Increased complexity
- Incompatibility issues
- Incomplete functionality

g) Documentation and Training: The dynamic nature of requirements makes documentation and validation challenging. Incomplete or inaccurate documentation can lead to unimplemented requirements, ultimately impacting system acceptance. Therefore, it causes:

- Incomplete System: Undocumented or unvalidated requirements may not be incorporated into the final system, leading to functionality gaps and ultimately affecting user acceptance.
- Rework and Delays: Discovering missing requirements late in the development process can necessitate costly rework and project delays.

To mitigate these effects, it is essential to adopt strategies such as:

a) Clear initial requirement documentation
b) A robust change control process
c) Continuous stakeholder involvement
d) Agile methodologies
e) Thorough impact analyses.

Effective communication and flexible budgeting also play critical roles in managing requirement changes.

Conclusion:

The study conducted can be concluded by the following factors:

- In conclusion, while the dynamic nature of requirements poses challenges, it also presents opportunities to refine and optimize the HIS to better serve its users.
- Average there are 10 requirement changes which needs to be refined in first place based on their severity level so that the process of implementation can be better mitigated.
- It is found that, with every 5th facility visit the requirement changes in same department, which is a clear identification of different sets of ongoing clinical flow, this needs to be taken care by the facility to enhance the efficiency overall as well as user acceptability.
- For mitigating the changes in requirement, the documentation and validation of requirement should be according to the users not as per the department.
- By strategically managing changes and prioritizing critical needs, hospitals can implement a robust, user-friendly HIS that enhances operational efficiency, improves patient care, and adapts to the evolving demands of the healthcare environment.
- This study identifies the need for user training as within same department of one facility flow is different from another facility.
- This study also found that variation in bed numbers in one facility compared to other facility resulted in change in requirement which is also a clear identification of need of a single flow across the facilities.

Managing scope creep boils down to controlling those changes in scope via a change control process. This involves:

- Monitoring the project's status and baseline scope
- Comparing actual work performance measurements with the baseline scope using variance analysis, i.e., "How different is the current project from the original plan?"
- Determining the cause and degree of the changes found
- Deciding on change requests, i.e., whether corrective or preventive action is needed
- Managing all change requests and recommended actions (whether corrective or preventive actions) via the Perform Integrated Change Control process.

Supplementary

Instrumentation- Qustionnaire

INTRODUCTION AND INFORMED CONSENT

Namaste! My name is _____. I am a postgraduate student at International Institute of Health Management Research, Delhi and currently working as Associate Business Analyst (Intern) at TrioTree Technologies Private Limited. The purpose of this study is to find out the Effect of Requirement Analysis in terms of Hospital Information System (HIS) Implementation

If you agree to participate in this study, you will be asked some questions. You are selected randomly for this study, and this will usually take about 15 - 20 minutes.

Your privacy is of utmost importance. All personal information collected during this study will be kept confidential and will only be accessible to the researcher and authorized personnel. Your identity will be protected by assigning a unique identifier to your data.

Your participation in this study is entirely voluntary. You may choose to withdraw at any time without penalty. However, we hope that you will participate in this study since your participation and information is important for us. At this time, do you want to ask me anything about the study?

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I asked has been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Name of Participant : _____

Date of Interview : _____ / _____ / _____

Signature : _____

Name of participant	
Age	
Sex	
Experience in Implementation (In Yrs.)	☐ 0-5 ☐ 5-10 ☐ More than 10
Implementation Site (India / Outside India)	☐ India ☐ Outside India
Rate your answer	
Rate your hospital's current technological infrastructure in terms of compatibility with Health Information Systems (HIS) and digital health solutions.	[ ] Poor [ ] Fair [ ] Good [ ] Excellent
What are the key components of your hospital's technological infrastructure? (Open-ended)	
Evaluate the level of digital literacy and IT skills among healthcare staff	[ ] Low [ ] Moderate [ ] High
Are there dedicated IT support staff available to assist with HIS and digital health implementation?	[ ] Yes [ ] No
Assess the level of leadership support and commitment to HIS and digital health initiatives within the hospital	[ ] Low [ ] Moderate [ ] High

Describe any specific actions or initiatives undertaken by hospital leadership to promote digital health adoption. (Open-ended)	
Identify any technical challenges or limitations hindering the adoption of HIS and digital health solutions within the hospital. (Open-ended)	
Rate the severity of technical barriers on a scale of 1 to 5 (1 = Not significant, 5 = Extremely significant).	
Rate the extent to which organizational barriers impact digital health adoption.	[ ] Low [ ] Moderate [ ] High
Please use this space to provide any additional comments, suggestions, or insights related to HIS and digital health adoption within your hospital. (Open-ended)	

Bibliography

1. Mars, M., & Scott, R. E. (2022). Electronic Patient-Generated Health Data for Healthcare. In Exon Publications eBooks (pp. 1–16). https://doi.org/10.36255/exon-publications-digital-health-patient-generated-health-data
2. Bowolaksono, A., Lestari, F., Satyawardhani, S. A., Kadir, A., Maharani, C. F., & Paramitasari, D. (2021). Analysis of Bio-Risk Management System implementation in Indonesian Higher Education Laboratory. *International Journal of Environmental Research and Public Health/International Journal of Environmental Research and Public Health*, *18*(10), 5076. https://doi.org/10.3390/ijerph18105076
3. Charles JT Butcher, Wajid Hussain. Digital healthcare: the future, Future Healthcare Journal-Royal College of Physicians. 2022 Jul; 9(2): 113–117.
4. C. M. Cato, M. M. Williams, and C. M. Short, "The implementation of electronic health records and change management: A literature review," Journal of Healthcare Management, vol. 63, no. 1, pp. 10-22, Jan/Feb 2018.
5. J. Chen, Y. Xue, and Y. Chen. A Change Control Process for Health Information Systems," in 2018 IEEE International Conference on Healthcare Informatics (ICHI), New York, NY, USA, 2018, pp. 69-73. doi: 10.1109/ICHI.2018.00019.
6. M. P. Roach, J. K. Albeiruti, J. K. Ledbetter, and S. J. Galvan, "Change management considerations for the implementation of telehealth programs," Journal of Healthcare Information Management, vol. 28, no. 4, pp. 9-15, Fall 2014.
7. M. B. Nelson, A. J. Whitman, and M. A. Whitman. Change management strategies for successful EMR implementation," Journal of Healthcare Information Management, vol. 22, no. 2, pp. 38-44, Spring 2008.
8. S. K. Srinivasan, S. H. Nguyen, and R. K. Bali, "Change control management for safe implementation of electronic health records," in 2017 IEEE International Conference on Big Data (Big Data), Boston, MA, USA, 2017, pp. 3914-3918. doi: 10.1109/BigData.2017.8258412.
9. Boundaries and e-health implementation in health and social care Gerry King 1, Catherine O'Donnell, David Boddy, Fiona Smith, David Heaney, Frances S Mair

a. DOI: 10.1186/1472-6947-12-100

Plagiarism Report

Shakshi Gupta D1

ORIGINALITY REPORT

14%	12%	5%	10%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	triotree.com Internet Source	3%
2	www.wrike.com Internet Source	2%
3	Patel, Kamalesh Kumar. "Marital Happiness and Social Support Among Newly Married Individuals in Varanasi District, Uttar Pradesh, India.", International Institute for Population Sciences University, 2021 Publication	1%
4	wiredspace.wits.ac.za Internet Source	1%
5	Submitted to University Of Tasmania Student Paper	1%
6	www.dixdecoeur.com Internet Source	1%
7	survey.unisa.ac.za Internet Source	1%
8	Submitted to Zikura International College Student Paper	