

**To study the Project Management on Digital Experience by
understanding the assessment of silos and implementing EMR in
Hospital Setting.**

DISSERTATION SUBMITTED TO



The IIHMR University, Jaipur
for the partial fulfilment for the award of the degree of
Master of Business Administration (MBA)

in
Hospital and Health Management

by
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Roll no 1196

MBA HM 25

Under the Supervision and Guidance of

Col Dr Mahender Kumar

2022

DECLARATION

I hereby declare that this dissertation titled “To study the Project Management on Digital Experience by understanding the assessment of silos and implementing EMR in Hospital Setting” is a true record of the work I did for my initial study. I certify that it has not been applied for a degree or certificate from any other university or institution. Information that was taken from other people's published or unpublished work has been properly acknowledged in the text.

A handwritten signature in black ink, reading "SABattiwalla", with a horizontal line underneath.

(Signature)

Name of Student: Dr Sheryar A Battiwalla

Date: 29/06/2022

Internship Completion Letter

Internship Completion Letter

Date : 1st March to 19th June, 2022

Subject : Completion of Internship Letter

To Whomsoever It May Concern,

M16labs certifies that Dr. Sheryar A. Battiwalla successfully completed the internship program at our organization as a Project Management Intern.

During this time, Dr. Sheryar worked on the development of key health Information Technology projects.

By working on these projects, Dr. Sheryar acquired critical Project Management skills.

Dr. Sheryar displayed professional traits during his internship period and managed to complete all assigned tasks as requested. He was hardworking, dedicated, and committed. It was a pleasure having him with us in this period.


Yours sincerely,
Anil JJ

Founder & CEO

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Abstract

The administration of healthcare projects can be demanding. Because the stakes have been raised. Hospitals, like other companies, will benefit from lower costs and better outcomes if they employ efficient project management. However, patient well-being is also a concern, making project management in healthcare more complex—and critical. It is well worth the cost and effort to ensure that everything is done correctly since the hospital and patients will always benefit.

Skills in healthcare project management are becoming more and more important for businesses, especially in the healthcare domain, as they help with cost control, risk evaluation, and project outcomes. Organizations can use project management strategies to methodically plan, organise, and execute a collection of activities while optimising resources and accomplishing certain goals.

Project managers are concerned with increasing the effectiveness and efficiency of operations. They manage projects that are critical to the company's strategy, ensuring that they are completed on schedule and within budget.

Project managers, like everyone else, utilise the tools and techniques of process improvement and project management to create goals, choose team members, and steer projects to completion. They supervise staff, allocate assignments, and keep projects on track. They also keep executives updated on the status of initiatives.

These records are critical both monetarily (for Medicare payments, for example) and in improving patient outcomes by making these records available to healthcare workers on a constant basis.

Many of the projects involving project management in healthcare fail for the same reasons many projects fail. They include:

- Poor Communication
- A top-down approach
- Lack of people skills
- Juggling multiple projects
- Unrealistic expectations
- An inability to deal with unexpected challenges

Acknowledgements

I extend my warmest thanks to Mr Anil JJ, CEO of Meta16 Labs Healthcare and Analytics, for giving me the opportunity to learn, observe and train for my internship in his organization.

I convey my appreciation to the Head of Projects Mr Arnav Mahurkar and Chief Technical Officer Anmol Malik for their continual encouragement and support during my training in M16Labs. I thank them for their guidance, advice and expertise.

I also like to thank the entire Projects team for providing me with constant support an teamwork for the tasks assigned.

I express my sincere thanks to my mentor Col Dr Mahender Kumar, Professor and Dean, IIHMR University for his valuable guidance and timely suggestions as and when I was seeking them.

Last but not least, I'd want to thank my parents for their continual encouragement and trust in me throughout this journey.

I want to thank God, above all, for giving me the strength to handle the hardships I have encountered throughout this period.

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Abbreviations

HIS- Health Informatics System

CRM: Customer Relations Management

QMS- Queue Management System

EMR- Electronic Medical Record

OPD- Out-Patient Department

IPD- In-Patient Department

EPABX- Electronic Private Automatic Branch Exchange

IVRS - Interactive voice response systems

PROJECT REPORT

To study the Project Management on Digital Experience by understanding the assessment of silos and implementing EMR in Hospital Setting

Chapter 1: Introduction

The Project Management lifecycle, which is a sequential framework of best practises, directs a project through its many stages. It provides Project Managers with a structured strategy for organising, carrying out, and finishing a Project..

This project management method consists of four steps: initiating, planning, executing, and closing. Some may additionally include a fifth "monitoring and controlling" step between the executing and closing stages. By adhering to each step, a Project team's chances of success are boosted.

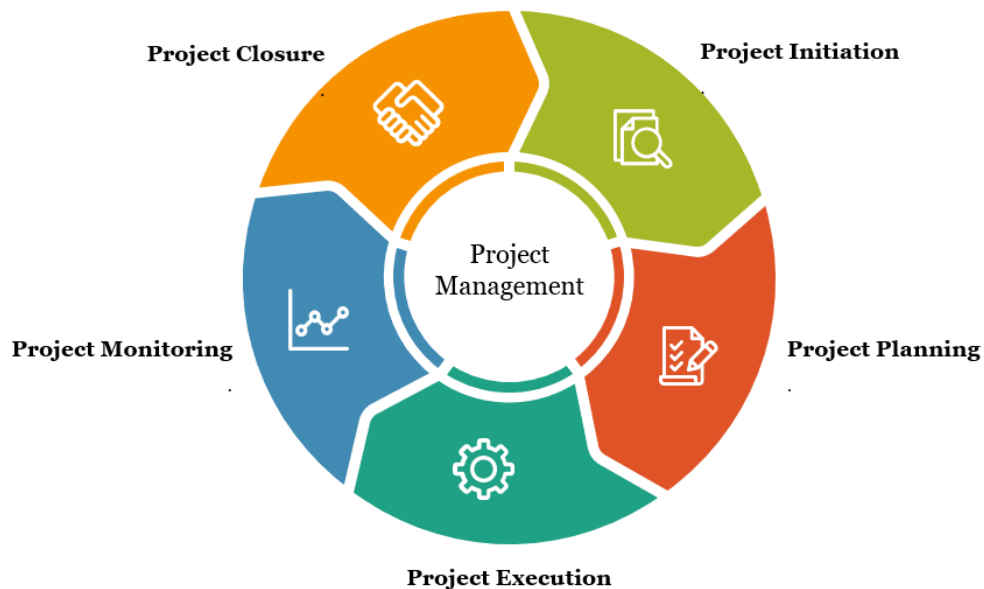


Figure1.1: Phases of Project Management process

Rationale:

With the advent of Digitization in the current markets, the healthcare industry is no stranger to the changes. In today's date patients are preferring for instant information, especially among the younger demographics and are demanding the same from their healthcare providers.

In response to this emerging opportunity Health IT companies have started customizing and building upon legacy systems to meet Patient demands. However implementation of new technology possess a challenge for Healthcare workers as they need to expand their Knowledge and horizons to meet the demands.

This paper aims to find out these hurdles and determine the extent to which these can be met from a Management standpoint.

OBJECTIVE:

1. To investigate the barriers encountered by stakeholders responsible for the implementation of Health systems in Hospital facilities.
2. To assess the use of EMR to help improve healthcare quality

SCOPE:

- To understand current workflows
- To present a future workflow
- To Present an as-is and to-be state
- Integration with Legacy systems and co-ordination with third party vendors

Chapter 2: Review of Literature

1. **Ajami S, Arab-Chadegani R. Barriers to implement Electronic Health Records (ehrs) [Internet]. Materia socio-medica. AVICENA, d.o.o., Sarajevo; 2013 [cited 2022Jul4]. Available from:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3804410/>

The deployment of electronic health records is fraught with difficulties and restrictions, despite the potential benefits they may provide., the majority of which are financial constraints, technical constraints, standardisation restrictions, psychological constraints affecting people's behaviour, and organisational constraints. Numerous studies show that reluctance to change is a more significant element than other implementation barriers for the EHR.

2. **Tsai CH, Eghdam A, Koch S. Effects of electronic health record implementation and barriers to adoption and use: A scoping review and qualitative analysis of the content [Internet]. Life (Basel, Switzerland). MDPI; 2020 [cited 2022Jun14]. Available from:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7761950/>

This literature review, which yielded conflicting findings, examined the effects of EHR deployments and ongoing barriers to EHR adoption and utilisation. While some of the negative impacts, such an increase in workload and dysfunctional workflows, seemed to remain consistent over time, there did seem to be an increase in the good benefits. This review did not adequately analyse the included publications, and there was also a lack of consistency in the definitions of EHRs used, as well as a lack of comprehensive contextual information about the research settings.

3. **Benedictis AD, Lettieri E, Gastaldi L, Masella C, Urgu A, Tartaglini D. Electronic Medical Records Implementation In Hospital: An empirical investigation of individual and organizational determinants [Internet]. PLOS ONE. Public Library of Science; [cited 2022Jul4]. Available from:** <https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0234108>

With an emphasis on EMRs, this study offers novel insights to advance the ongoing discussion on hospitals' digital transformation. Our findings indicate that individual and organisational variables interact to shape the intention of healthcare workers to utilise EMRs. The study revealed that normative (peer influence) and personal factors are the primary predictors of the desire to utilise EMRs (perceive usefulness).

- 4 **Kim S-H, Song H. How digital transformation can improve hospitals' operational decisions [Internet]. Harvard Business Review. 2022 [cited 2022Jul4]. Available from:** <https://hbr.org/2022/01/how-digital-transformation-can-improve-hospitals-operational-decisions>

The conviction that digital transformation can significantly enhance how hospitals make operational decisions, which can therefore increase the effectiveness and efficiency of treatment as well as patient access. This opinion is supported by both our own research and that of others, as well as the rapidly developing improvements in hospitals' use of data and technology.

Hospitals may leverage digital transformation to improve operational decision-making in four key areas: patient flow, personnel, planning, and supply chain.

Chapter 3: Methodology

RESEARCH QUESTION:

Study on Implementation of Digital experience and their benefits in regard to the current processes of Hospital systems

STUDY DESIGN

Primary research / Qualitative study

SETTING:

Meta16 labs and Healthcare Analytics

Product:

MetahOS Operating System

STUDY POPULATION

- Two 40 bedded Hospitals
- One 300 bedded Hospital

SAMPLE SIZE

132 End users broken down into

- 50 Front desk users
- 25 Doctor Secretaries
- 35 Call Centre Agents
- 12 Admission counter Users
- 10 Admin users

SAMPLING METHOD

Simple Random Sampling

INCLUSION CRITERIA

Call centre CRM (Customer relation Systems) /
OPD Front office systems

EXCLUSION CRITERIA

IPD/Telehealth

STUDY TOOLS

Excel

DURATION OF STUDY

3 months

OPERATIONAL DEFINITIONS:

HIS- Health Informatics System

CRM: Customer Relations Management

QMS- Queue Management System

DATA COLLECTION PROCEDURE

Assessments, E Workbooks, UAT Reports (User Acceptance test)

The UAT Report will be the Primary Source of Data collection as it directly involves the end users Acceptance to a Particular process conducted on the system

The UAT is customized by the Project manager to meet all scenarios faced by the end user and is reviewed by the Hospital Administration.

Each Scenario is further broken down into number of steps which the system has in its process , which is validated by the end user as Pass or Fail

Case ID	Cat-01	Description of case			
Creator		Reviewer		(Version)	1
Tester		Test Date		Use-Case (Pass/Fail/Not Executed)	
S.no	Prerequisites:	Comments	S.no	Test Data	
<u>Scenario</u>					
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					

Table 2.1: UAT (User Acceptance Test) Report format used for study:

DATA ANALYSIS PLAN:

2. Microsoft Excel-

Used for carrying out initial Assessments, charting out an E workbook with all the information required for the project and creating UAT spreadsheets used for surveys

3. Smart Task

Used for creating a Project plan, assigning tasks, creating Reports and analytics along with setting of timelines for the tasks to be completed

IMPLICATIONS OF RESEARCH:

- To improve upon preexisting systems by incorporating Digitization of processes using MetahOS solutions
- To identify integration points between Systems for better communication between departments
- To identify barriers in project implementation.

DATA ANALYSIS

The Data for the following study was analysed by conducting surveys and filling up UAT spreadsheets among Different stake holders from 3 departments of a Hospital

1. Call Center
2. OPD (Outpatient Department)
3. IPD (In Patient Department)

CALL CENTER (CRM AND WEBFORM)

- Medical practise call centres are accessible as an outsourced form of service to help grow a firm more successfully.
- The majority of call centres in healthcare facilities employ integrated webforms that open as I Frames on the Telecom Providers site.
- The webform is custom built and connected to the Doctor secretary's screen for booking of appointments
- The webform also incorporates fields for custom Dispositions that relate ot the practices of the Healthcare industry

Stake Holders

- Call Center Agents
- Call Center Manager
- Administration
- Telecom Provider

- UAT (User acceptance test) Spreadsheet used for the Department

Case ID	Cat-01	Description of case			
Creator		Reviewer		(Version)	1
Tester		Test Date		Use-Case (Pass/Fail/Not Executed)	
S.no	Prerequisites:	Comments	S.no	Test Data	
<u>Test Scenario</u>	Agent Login on entering User ID and password				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
<u>Test Scenario</u>	Patient Registration, Booking of Appointments, and billing for consultation				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
<u>Test Scenario</u>	Booking Appointments				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
<u>Test Scenario</u>	Confirm booking via sending Payment Link				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
<u>Test Scenario</u>	Manage Dispositions				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					

Table 2.2: UAT (User Acceptance Test) Report format used for study of Call centre Department

Figure 3.1: Patient journey on Legacy systems for Call Centre workflow, with touchpoints

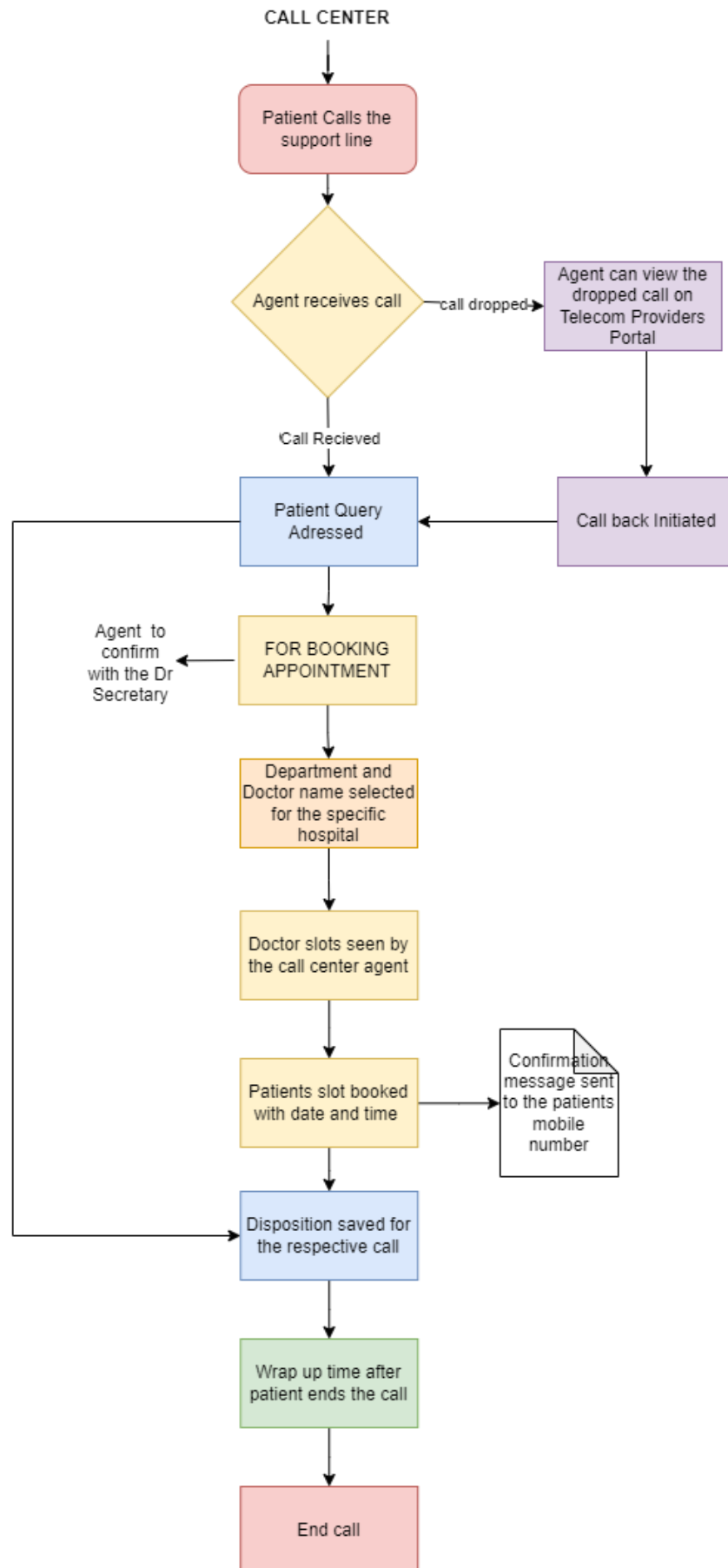
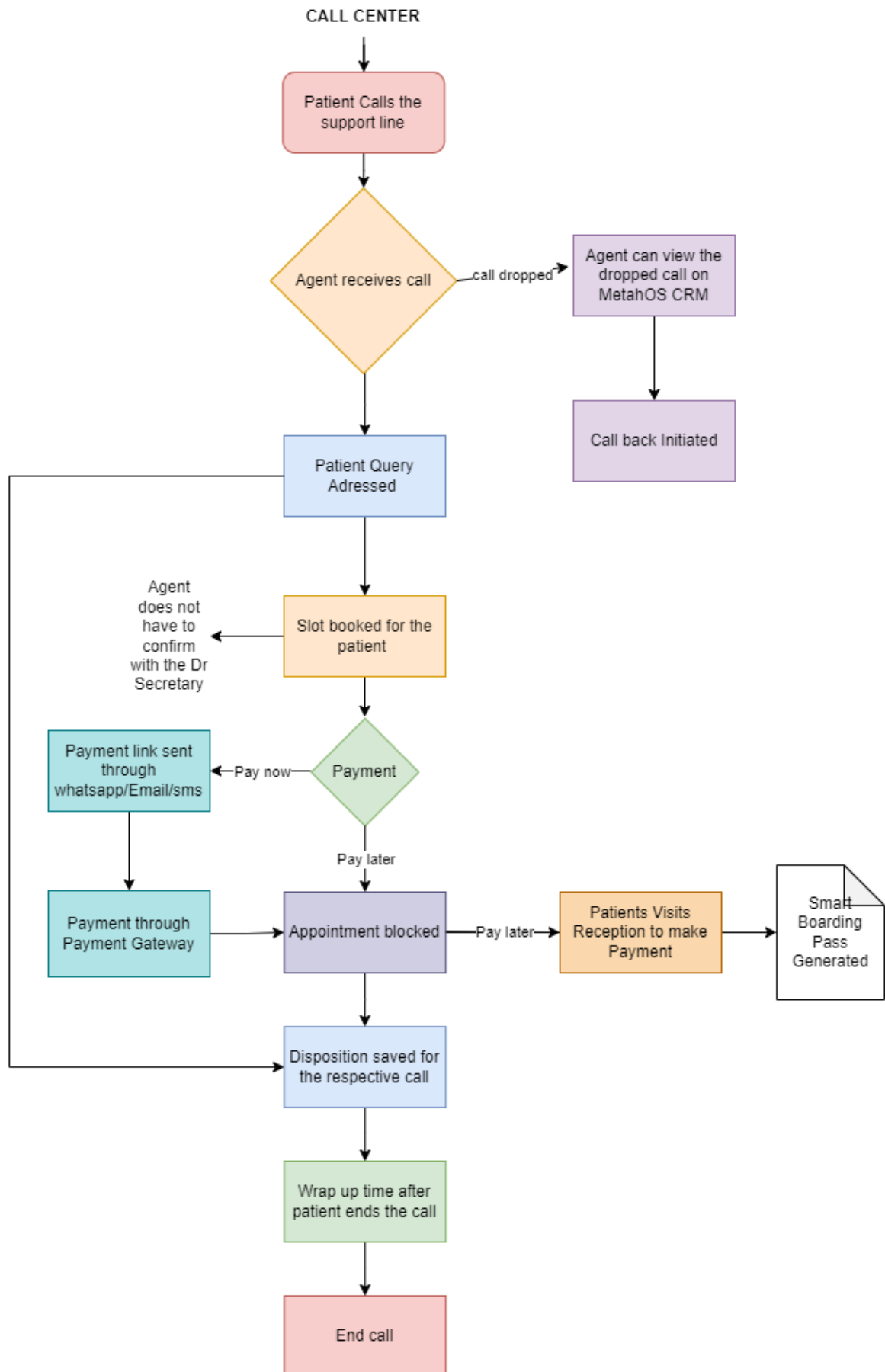


Figure 3.2: Digital Experience on patient journey on MetahOS system for Call Center workflow



OPD: REGISTRATION/BILLING & QUEUE MANAGEMENT

- The Out-Patient workflow consists of three major processes followed by Hospital before the Patient is taken in for consultation which are:
 - Registration: Pre-registration with demographics while signing up for first time
System use- HIS System
 - Billing: Bill generation for consultation, Lab tests and Radiology Tests
System use- HIS system
 - Queue Management: Managing Doctor Appointments from Call center and walk in patients
System use- QMS (Queue Management System)
- Stake Holders
 - Registration and Billing counter
 - Doctor secretary
 - OP Admins
 - OP Nurse
 - Laboratory and Radiology Technicians

UAT (User acceptance test) Spreadsheet used for the Department

Case ID	Cat-01	Description of case			
Creator		Reviewer		(Version)	1
Tester		Test Date		Use-Case (Pass/Fail/Not Executed)	
S.no	Prerequisites:	Comments	S.no	Test Data	
Test Scenario	Agent Login on entering User ID and password				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
Test Scenario	Patient Registration and billing for consultation				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
Test Scenario	Self check in and Scanning of QR Code				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
Test Scenario	Confirm booking via sending Payment Link				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					
Test Scenario	Manage Dispositions				
Step	Details	Anticipated Result's	Real Result's	Pass / Fail / Not executed / Suspended	
Authority signature:					
Remarks:					

Table 2.3: UAT (User Acceptance Test) Report format used for study of Out- Patient Department

Figure 3.3: Walkin Patient journey on Legacy systems for OPD workflow, with touchpoints

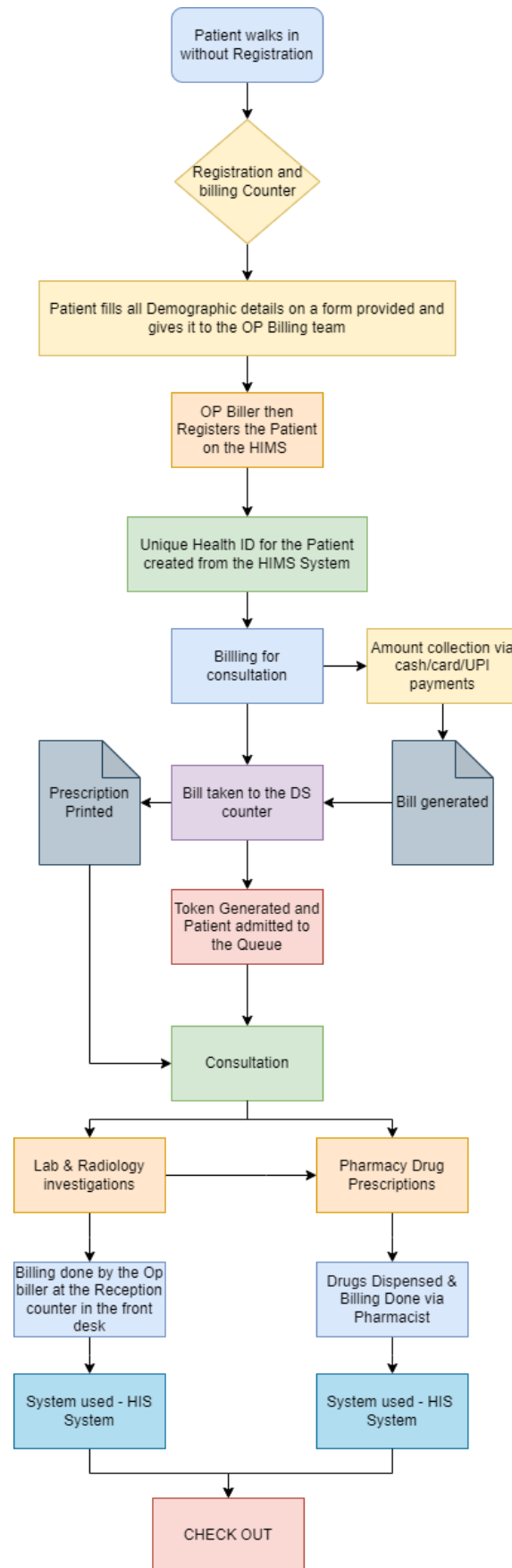
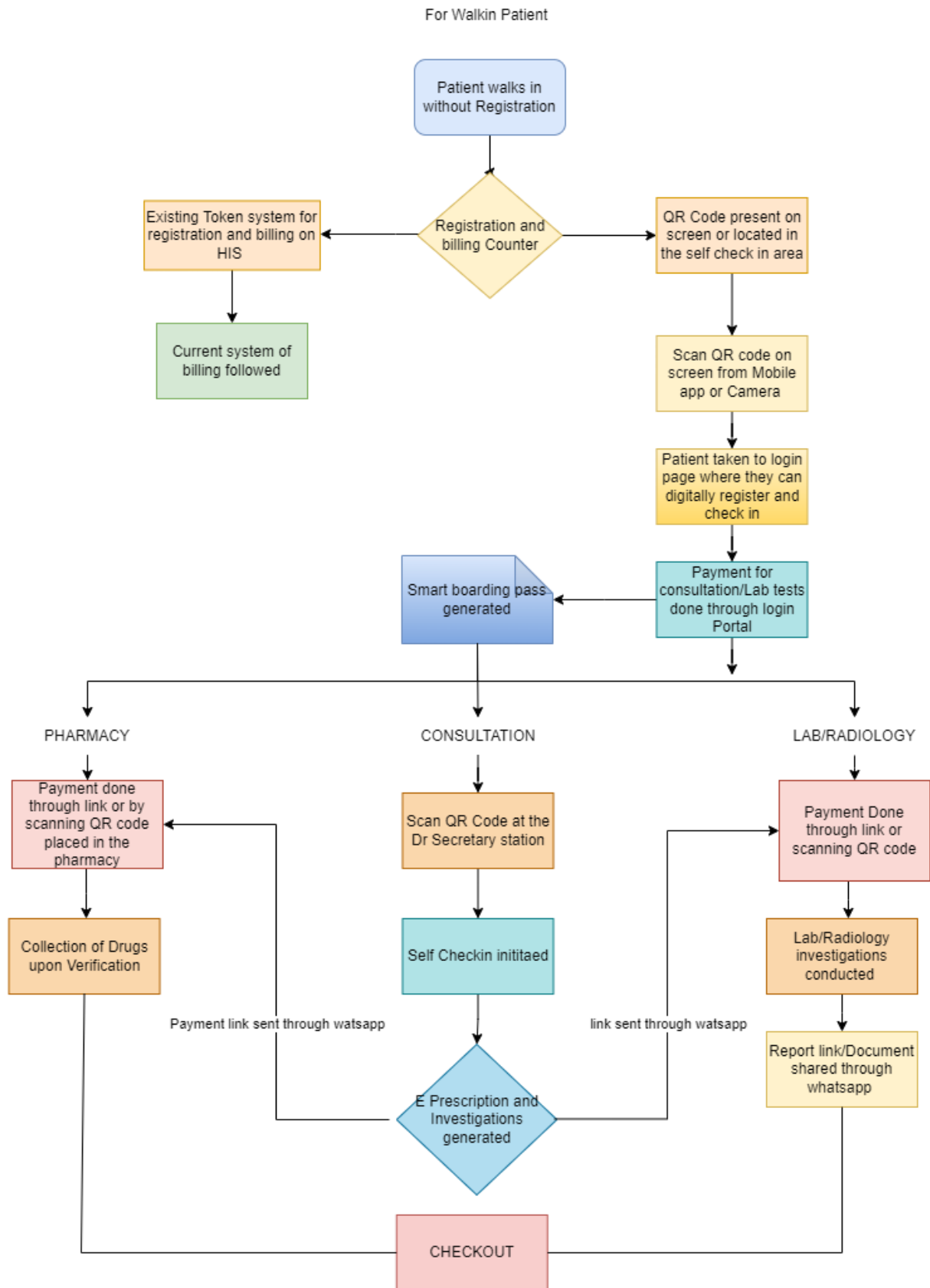


Figure 3.4: Digital Experience on walkin patient journey on MetahOS system for OPD workflow



Chapter 4: RESULTS

The following are the results generated from the study after consultations with various department stake holders

The results have been displayed in Charts and Figures for better understanding. The following Results of the analysis show us:

CALL CENTER (CRM AND WEBFORM)

Total sample size: 39

- Call Centre Agents: 35
- Call Centre Managers: 3
- Administrative staff :1

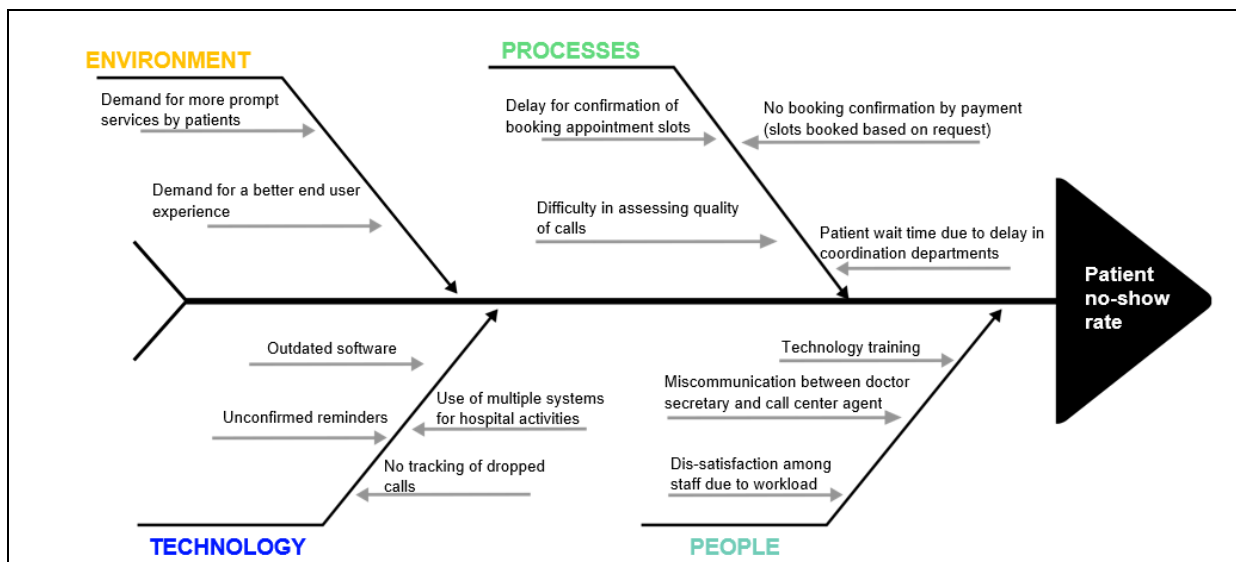


Figure 4.1: Fishbone Diagram for Current Call Centre Status

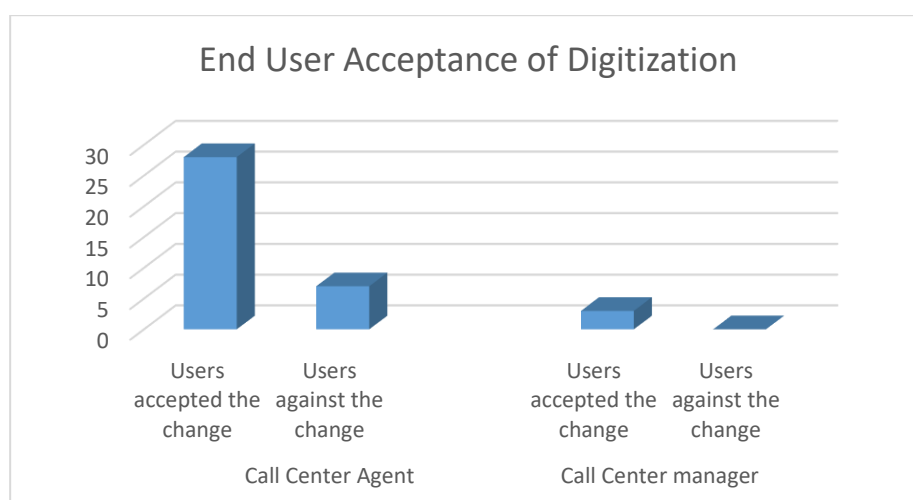


Figure 4.2: Acceptance of Digital patient experience among Call Centre workforce

UAT Test Findings

The UAT spreadsheet created is filled by all users related to that spreadsheet and gives the aggregated pass % of the processes involved in the new system which allows the tester to understand the Barriers faced in implementation of the new system.

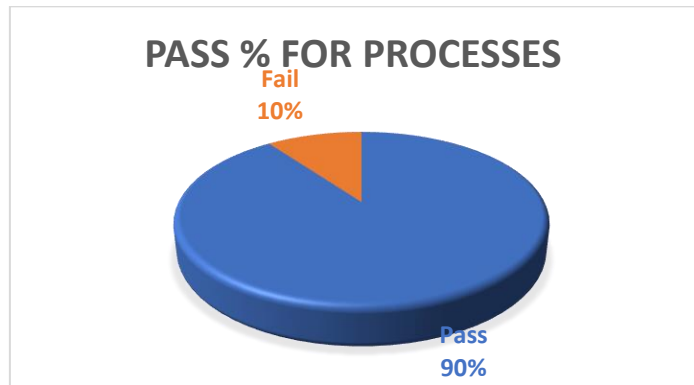


Figure 4.3: Pass% for UAT Processes- Call Center

BARRIERS FACED IN IMPLIMENTATION

PEOPLE	• Creation of training material for end users • Remote training for end users poses challenges • Agent allotment for soft Go live Difficult
PROCESS	• Intuitive systems with easy to understand process • Changes in workflow • Addition of new features can leads to higher chances of functional errors
TECHNOLOGY	• Integration with Telecom Operating system • Dependency on third party applications such as Telecom Provider and Patient Gateway portals

Table 4.1: Barriers faced in Implementation of new Call Center webform for Hospitals

Advantages of MetahOS webform over Pre-existing Webform

- Access to Analytics for Auditing
- Keep track of the patient calls
- Reduce No show rates
- Administration can track and monitor quality of service

OPD: REGISTRATION/BILLING & QUEUE MANAGEMENT

Total Sample size: 93

- Front desk User: 50
- Doctor secretary: 25
- Admission counter users: 12
- Administrative staff: 6

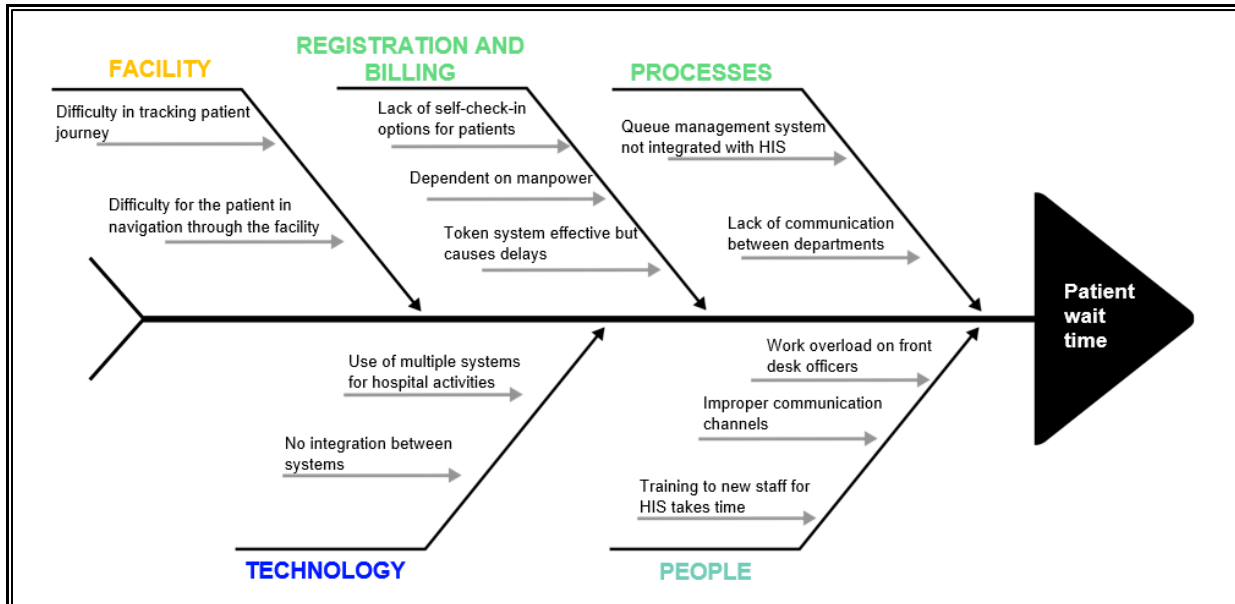


Figure 4.4: Fishbone Analysis for OPD workflow on Legacy system

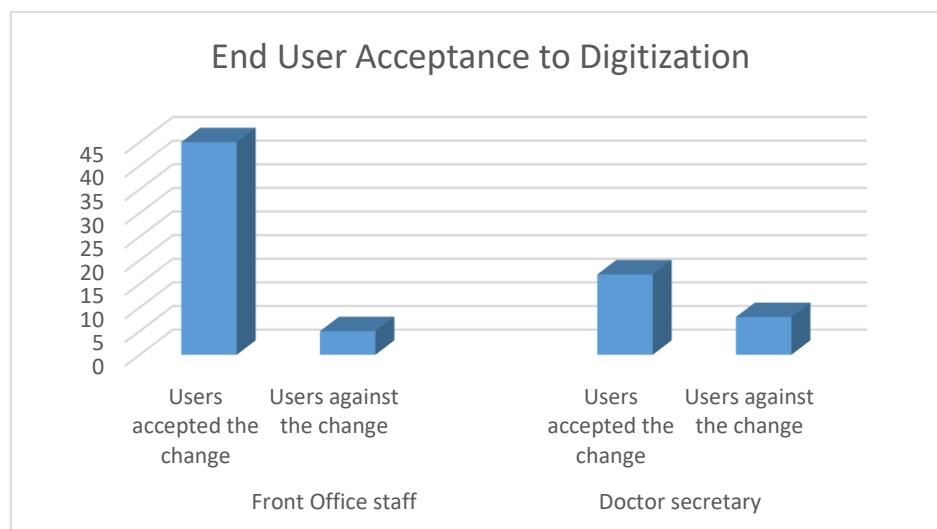


Figure 4.5: Acceptance of Digital patient experience among front office staff and DS

UAT Test Findings:

The UAT spreadsheet created is filled by all users related to that spreadsheet and gives the aggregated pass % of the processes involved in the new system which allows the tester to understand the Barriers faced in implementation of the new system.

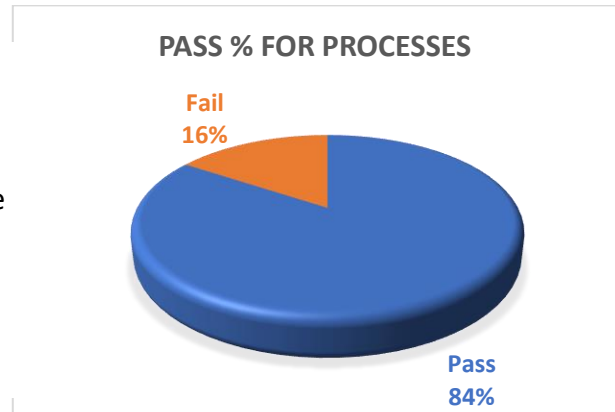


Figure 4.6: Pass % for UAT process of OPD

BARRIERS FACED IN IMPLIMENTATION

PEOPLE	• Creation of training material for end users • Remote training for end users poses challenges • Training needs to be conducted in line with implementation or end users may loose touch with the new systems • Change in terminology followed by previous software
PROCESS	• Intuitive systems with easy to understand process • Acceptance of new systems workflow • Difference in Billing through HIS system and self check in via payment gateway
TECHNOLOGY	• Integration with Pre existing HIS system • Dependency on third party applications such as HIS , CRM , Payment gateway portals

Table 4.2: Barriers faced in Implementation of new Self Checkin portal and Queue Management System for Hospitals

ADVANTAGES

- Reduce load on front office
- Reduce Patient waiting time
- Decrease Turnaround Time for OPD

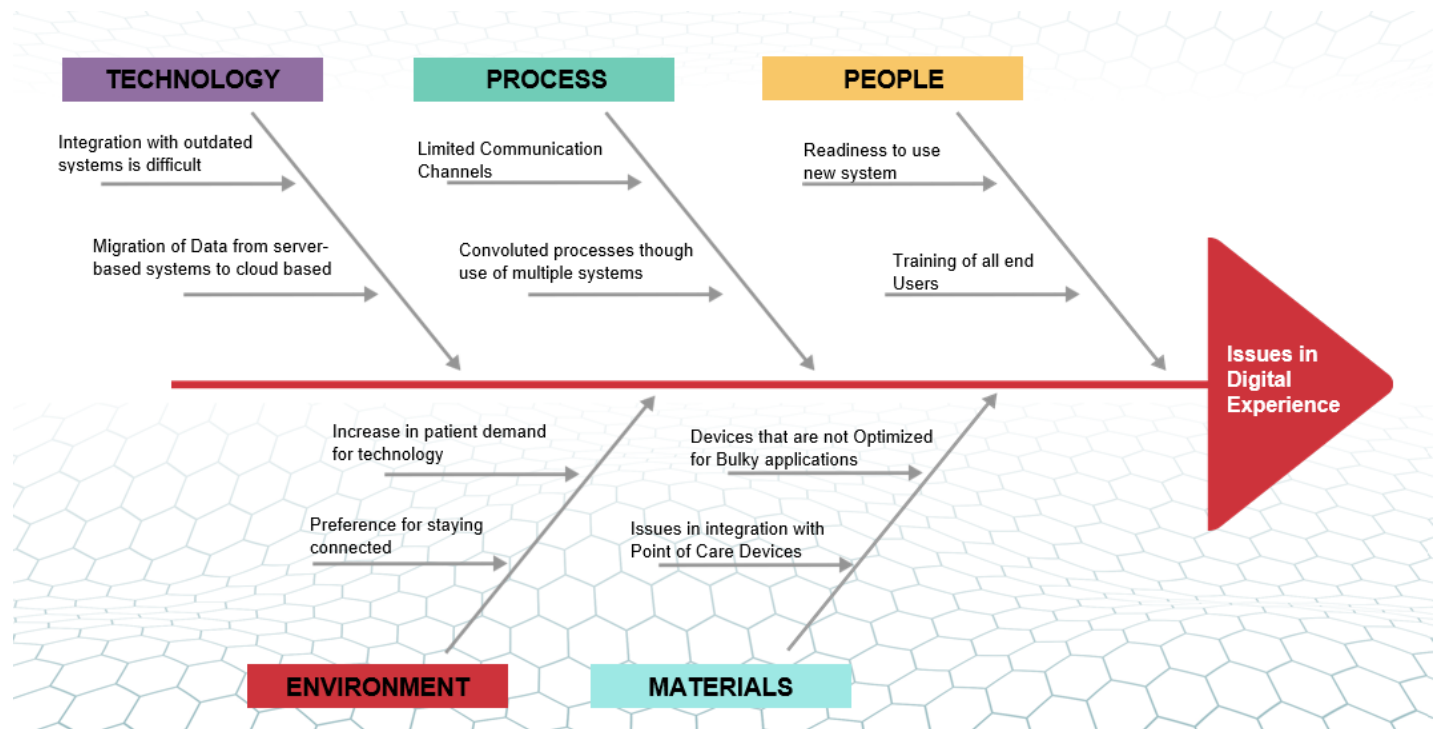


Figure 4.7: Fishbone Analysis of issues Faced during implementation of Digitization of Patient experience with regards to the processes followed in the hospital

Chapter 5: RECOMMENDATIONS

- During the initiation phase the project Charter needs to outline the requirements for the Hospital clients and Project plan along with timelines needs to be aligned with the scope of work given.
- Communications with multiple stake holders in the duration of the Project becomes tedious so a point of contact must be provided by the client during the initiation phase to supervise over the processes going on.
- Sometimes Clients may have requirements that can cause to be a pain point from an engineering perspective , these requirements should be discussed internally with the team before presenting it forward to the Development team.
- Acceptance to digital transformation between multiple stakeholders is difficult especially in Hospital settings, Hence functionality of the user interface should be kept as intuitive as possible
- Avoid Overlaps between functionalities of two systems or it may confuse the end user when both applications are provided to them
Example : HIS system should perform all functions of billing while EMR system should perform clinical as well as operative functionalities. Bills generated on EMR while keeping the HIS system would only further confuse the end user.
- Thorough Collection of Data during assessment phase needs to be carried out as hospital workflows are majorly interconnected with one another .
- Test every possible scenario that can occur on the new system and incorporate most if not all the functionalities present on the legacy systems.
- Testing needs to be done at the engineering side as well as from the Projects team as well before the system can go into production
- Test run even in Production phase with stakeholders should be performed for the overall acceptance of the product and its functionality.

Chapter 6: Conclusion

Healthcare moves quickly. Projects in health informatics and health IT frequently centre on gathering, using, and managing electronic medical records. Project managers may experience team members being pushed in numerous directions at once as a result, which presents a problem.

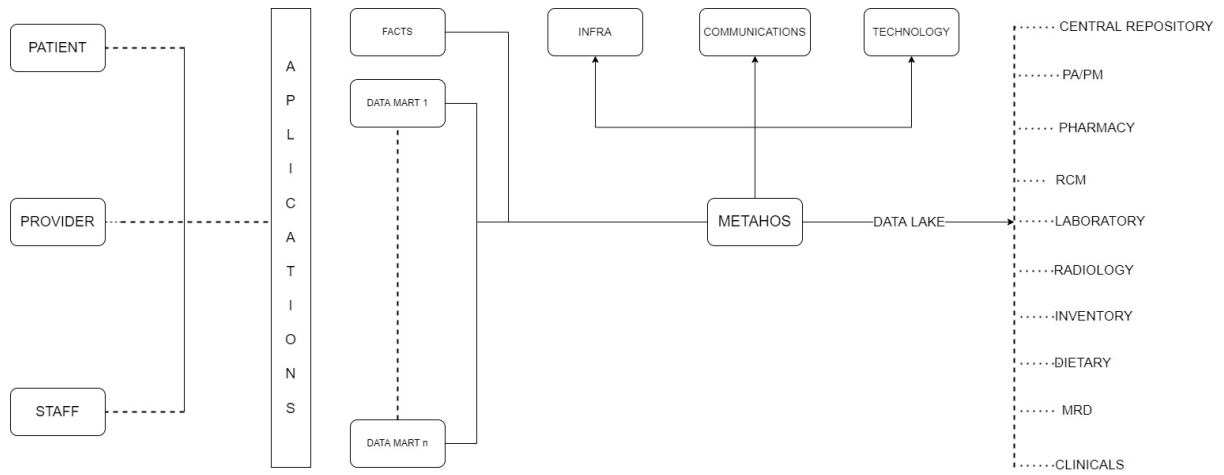
This research has taken into account aspects that organisations need to solve in order to successfully integrate technological solutions through the study technique in particular hospitals.

Complexity, a lack of infrastructure, and bad interface design are major hindrances in the technological environment. By enabling more cooperation between the vendor and healthcare professionals, these obstacles can be overcome.

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APPENDIX



MetahOS Data Lake structure

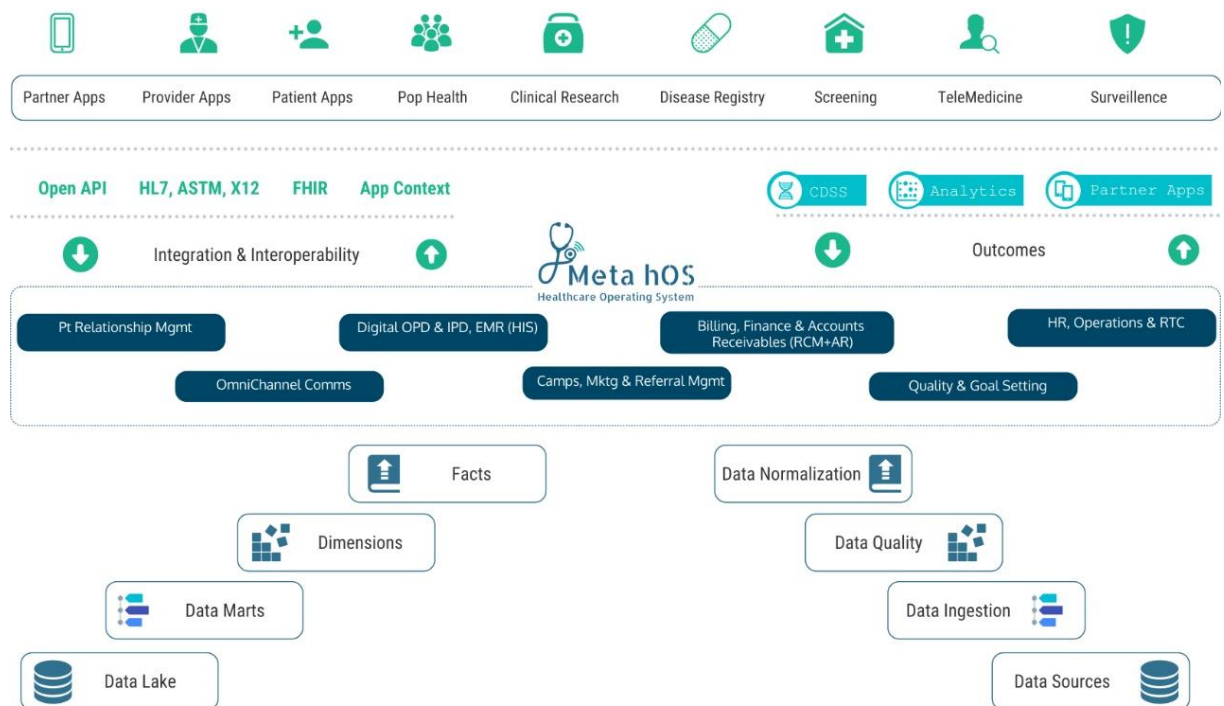


Figure 1.3: MetahOS Built in Health Stack