INTERNSHIP TRAINING

At

AKHIL SYSTEMS PVT. LTD., NEW DELHI

To identify the challenges to a successful Implementation of Hospital Information System

By

Sneha Khurana

PG/19/087

Health IT management

Under the guidance of: Dr. B.S. Singh

POST GRADUATE DIPLOMA IN HOSPITAL AND HEALTH MANANGEMENT

2019-21

International Institute of Health Management Research, New Delhi

Completion of Dissertation

The certificate is awarded to

Ms. Sneha Khurana

in recognition of having successfully completed her 3 months dissertation with effect from March 15, 2021 and has successfully completed her Project on

To identify the challenges to a successful Implementation of Hospital Information System

At

Akhil Systems Pvt. Ltd., New Delhi

She comes across as a committed, sincere & diligent person who has a strong drive & zeal for learning.

We wish her all the best for future endeavors.

Mrs. Shweta Gupta Vaish

Hr Akhil Systems

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This is to certify that **Ms. Sneha Khurana** student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at **Akhil Systems Pvt. Ltd., New Delhi** from **15th March to 15th June.**

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Dr. B.S. Singh

Associate Professor

IIHMR, New Delhi

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This is to certify that **Ms. Sneha Khurana,** a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. She is submitting this dissertation titled **"To identify the challenges to a successful Implementation of Hospital Information System"** at **"Akhil Systems Pvt. Ltd., New Delhi"** in partial fulfillment of the requirements for the award of the **PGDM (Hospital & Health Management).**

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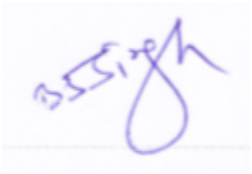

Dr. B.S. Singh
Associate Professor
IIHMR, New Delhi

Mrs. Ankita
Business Analyst
Akhil Systems Pvt. Ltd., New Delhi

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

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FEEDBACK FORM

Name of the Student: Sneha Khurana

Dissertation Organization: Akhil Systems Pvt. Ltd., New Delhi

Area of Dissertation: Documentation

Objectives achieved: Worked closely and understood the work of Akhil Systems, co-ordinating with Clients and support team, asking and resolving Requirements, Documentations of all the Important Modules including Mobile Applications, Business Requirement Documents, and so on.

Strengths: Sharp learning skills, handles tasks independently, Good Communication and writing skills

Suggestions for Improvement: She can improve a little more on her presentation skills

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

Core hospitals processes should be more explored by Healthcare IT students too.

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

Date: 19/06/2021

Place: Akhil Systems Pvt. Ltd., New Delhi

1. ABOUT THE ORGANIZATION

Akhil Systems Pvt. Ltd is one of the pioneer hospital information system (HIS/EMR) organization with more than **26 years** of experience in the single domain of healthcare. With such a vast experience in the single domain, we are proud to believe that we have specialized in delivering total health solutions for ***Hospitals, Medical Colleges, Diagnostics Centre, Pharmacy Chains and clinics.***

Since its inception in **1994**, Akhil Systems has become industry leader for offering comprehensive and cost effective healthcare software solutions by automating needs of clinical, administrative and financial areas in paperless environment.

With hundreds of successful implementations in India and overseas. Our presence can be felt in **Dubai, Myanmar, Bahrain, Qatar, Philippines, Bangladesh and many more countries**.

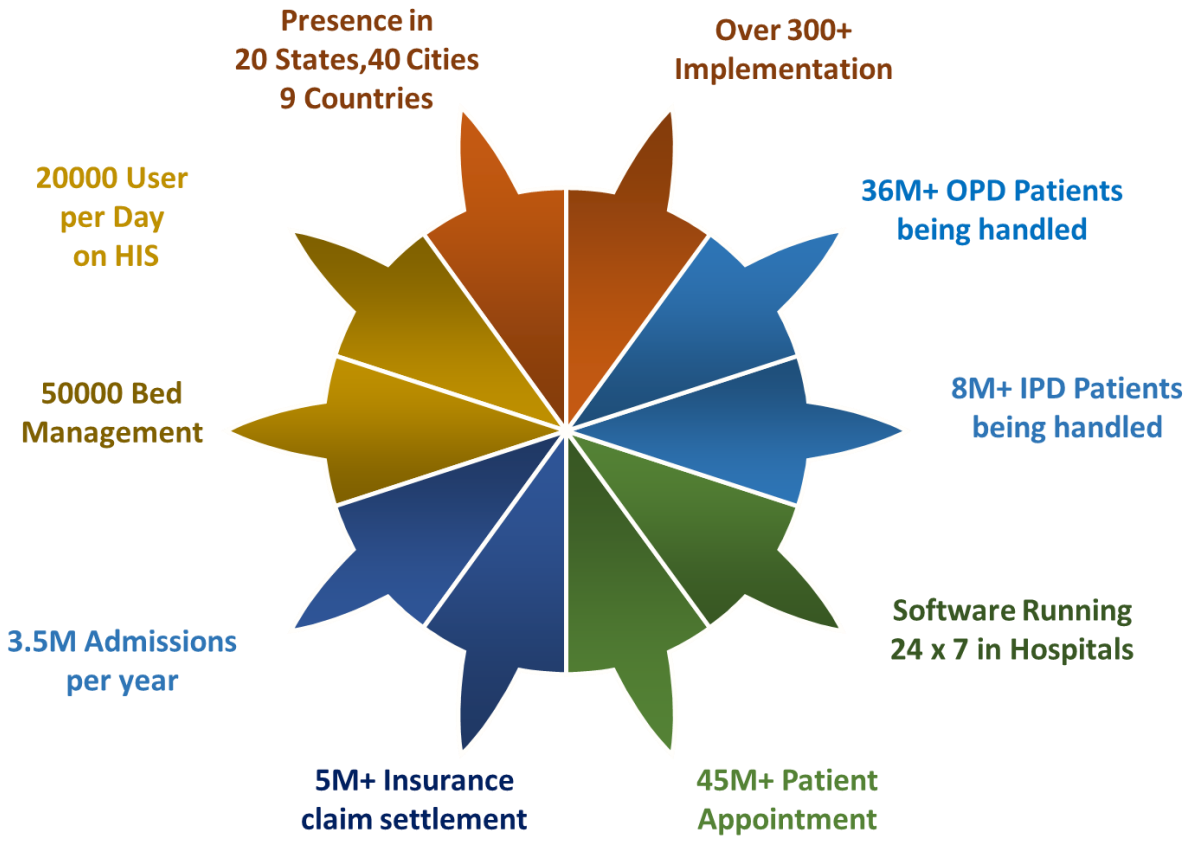


Figure-1: About the Organization

VISION

We intend to provide the best services to our clients and want to achieve worldwide excellence in Healthcare IT industry by providing our world-class Healthcare ERP solutions.

MISSION

To develop, innovate and provide robust Healthcare ERP solutions using latest technologies worldwide as per the client's vision with quick implementation and affordable cost.

JOURNEY SO FAR

- Highest No. of Successful HIS installations in India
- Provided solution from 20 Beds to 1800 Beds Hospital
- Software Running 24 x 7 in Hospitals for last 25 years
- Recognized as *20 Most Promising Solution for Healthcare* 2016 by Silicon India Magazine
- Awarded *"Best HIS & HMIS Provider of the Year"* at 4th Annual e-Health Healthcare Leaders Award on 12th March, 2015 at New Delhi
- Recognized as *"Company of the Year'14 – Healthcare HIS"* by CIO Review Magazine
- Winner of *"Best HIS and HIMS Provider of the Year – 2013"* by e-India Award

Figure-2: Awards and Accolades

Presence In Worldwide

Figure-3: Presence in Worldwide

1.1 MIRACLE HIS-OVERVIEW

Akhil Systems MIRACLE HIS is a comprehensive and complete solution designed that automates the clinical and administrative functions and enables the healthcare providers to improve their operational effectiveness, consequently reducing costs and medical errors, while enhancing quality of care. Our solution are designed to meet requirements of hospital of all sizes, medical colleges and nursing homes.

We understand the unique workflows and information needs of various care types, our product has been designed with modular architecture to cater to the requirements of the various departments and specialties of the hospital such as OPD, IPD, Emergency Care, Nursing Care, Pharmacy, Laboratory, Radiology, Inventory Management, Operation Theater and many more.

MIRACLE PRODUCT LINE

Figure-4: Miracle Product Line

INTERFACE WITH MIRACLE HIS

Our Akhil his is enabled for the following interfaces required by the hospital and offered to the hospital as per their requirements on chargeable basis:

- Interface with Laboratory Equipment
- Interface with Bar Code
- Interface with PACS
- Interface with SMS Technology
- Interface with Drug Database

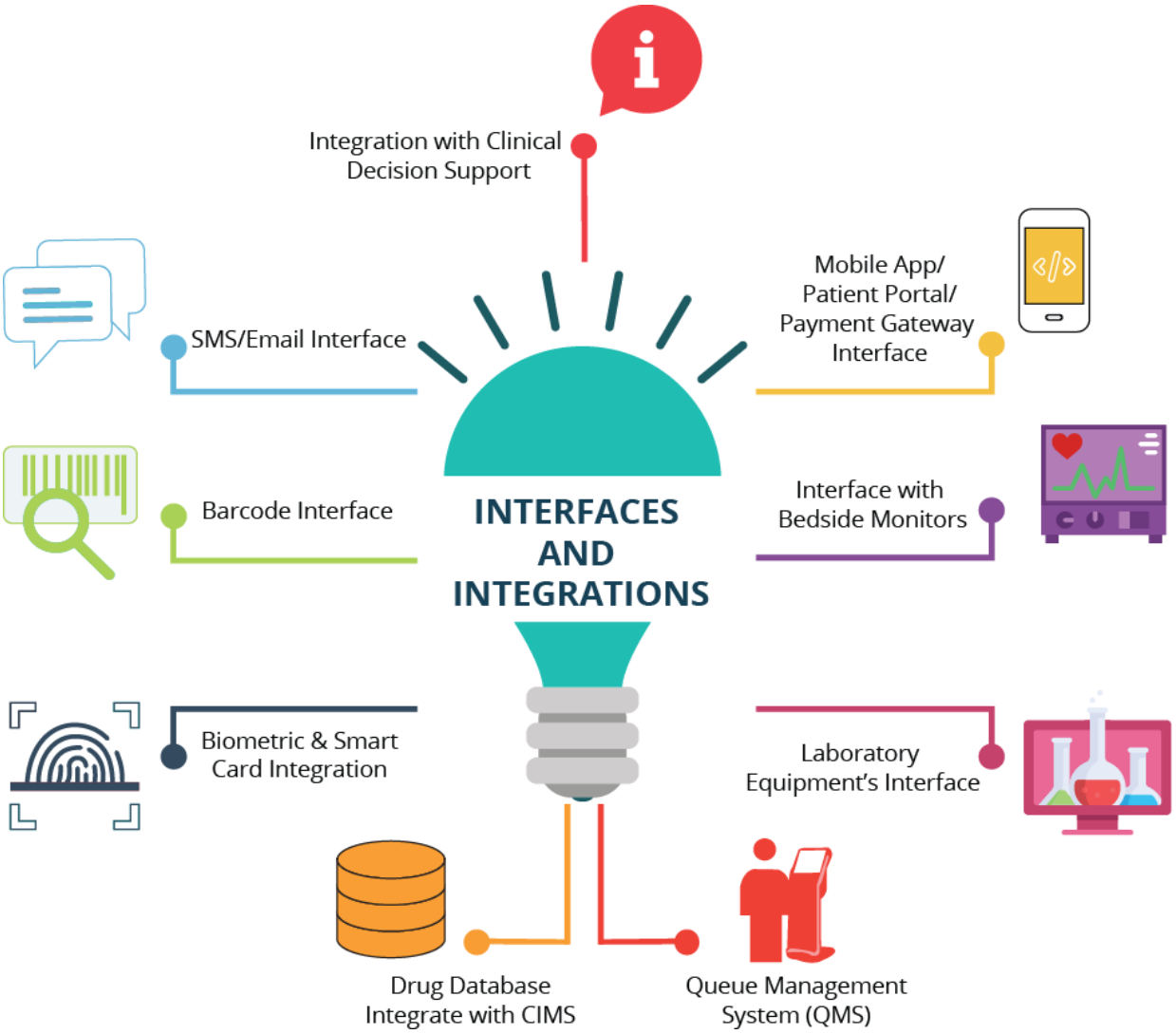
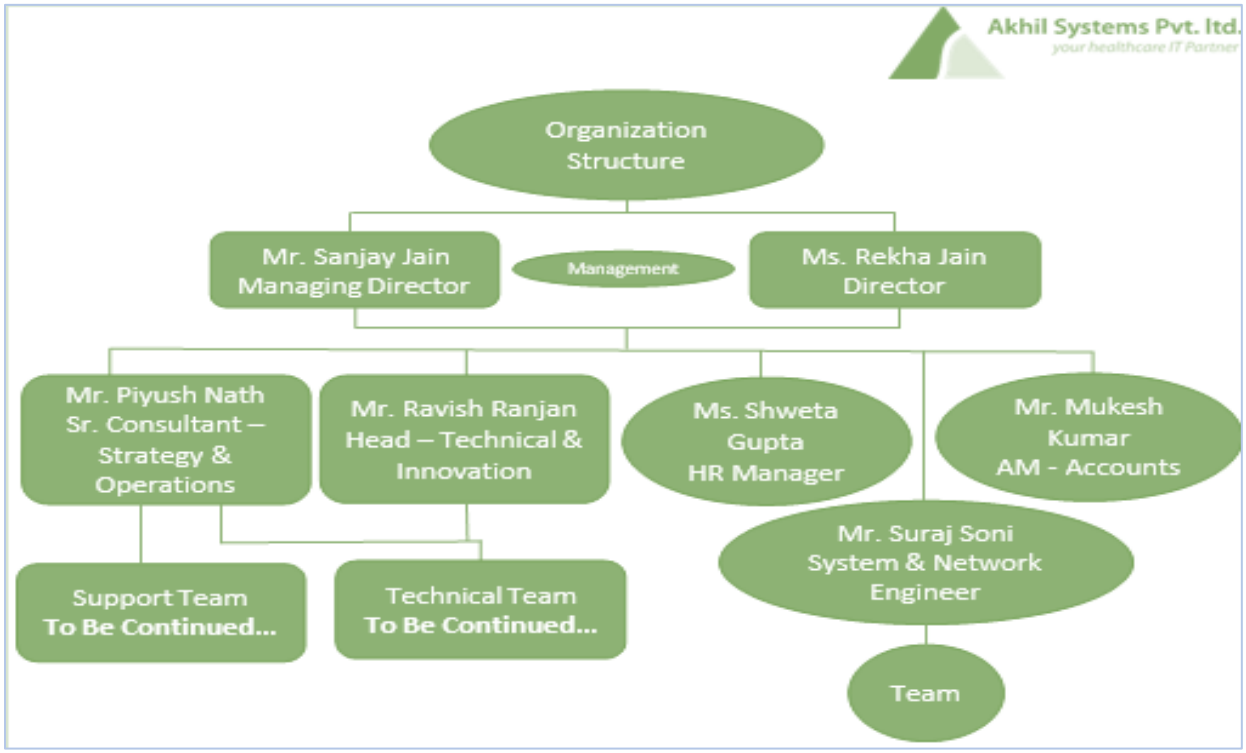


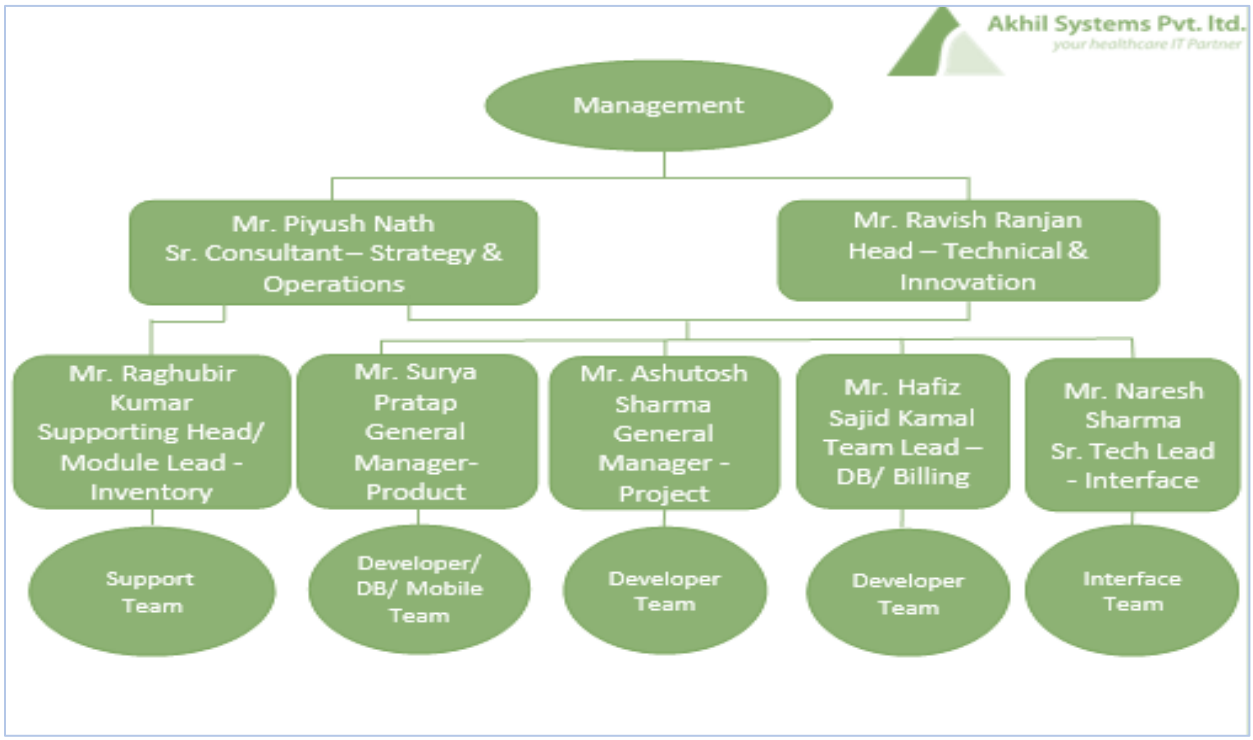
Figure-5: Interface and Integrations

1.1.1 OUR PRODUCTS

- Hospital Information System
- Clinics Management Systems
- Diagnostics (LIS/ RIS)
- CMS + EMR
- Patient Engagement
- RCM Insurance Gateway
- CDSS
- Business Analysis Suite
- RFID/ Barcode Solutions
- Mobility Solutions
- Medical Device Integration
- Health Portals
- Machin Interfacing
- IOT Device Integration
- Blood Bank Solutions

1.2 ORGANIZATION PROFILE





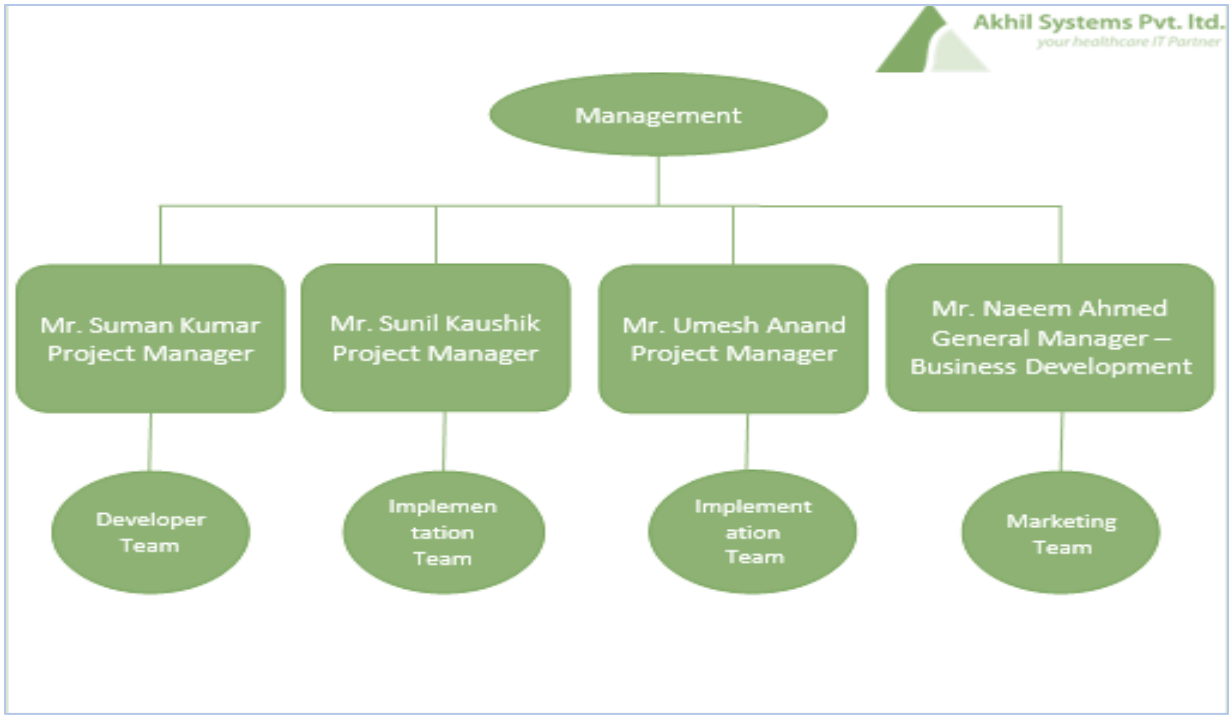


Figure-6: Organization Structure

2. Preface

2.1 Abstract

[Keywords- Hospitals, Challenges, Implementation, Hospital information systems, Health information systems, Barriers]

A hospital information system (HIS) is a complete, integrated information system that manages all elements of a hospital's business, including medical, administrative, and financial, as well as the processing of services. HIS is commonly made up of one or more software components, as well as a large number of sub-systems in various medical specialties. Laboratory information system (LIS), radiology information system (RIS), or Electronic Medical Record (EMR), Registration, Billing, Inventory, and so on are examples of specialized implementations. Hospital information systems (HIS) are commonly used to improve the quality of care as well as the efficiency and safety of medical services. However, there are a number of obstacles in the way of its successful implementation. Implementation needs to be executed in a way that one can trace what issues can arrive and their causes during live phase. Software development life cycle is a systematic process which includes these phases- **requirement analysis,** feasibility study, designing, coding, testing, deployment, training and maintenance. Itis so crucial to study and focus on each stage for the success of any implementation plan as it reduces the chances of errors and failure during going live phase of the implementation process.The purpose of this research is to conduct a qualitative evaluation of the hospital information system implementation process. The evaluation focuses on the nature of the challenges with HIS implementation in the selected hospitals. A questionnaire was used to assess the design, implementation, and level of integration of a hospital HIS, based on evidence that elements influencing the success or failure of a hospital HIS are not only technical, but also related to existing organizational models, education and management. The objective of this research is to address challenges to a successful Implementation of HIS. To determine the factors affecting the successful implementation of HIS. Most evolving hospitals lack the necessary infrastructure to adopt hospital information systems, such as technology, software, and skilled human resources. To enhance the utilization of current resources, careful planning is required. Evaluating the obstacles to hospital information system deployment and grading them in order of significance helps regulators in deciding which issues to prioritise. Implementing the HIS requires careful planning as well as significant financial, effort, and time commitments.

2.1.1 ACKNOWLEDGEMENT

I would like to render my sincere thanks to **Mr. Sanjay Jain and Mrs. Rekha Jain (Director, Akhil Systems, New Delhi)** for providing me the opportunity to complete my dissertation. Also, I would like to express my sincere and deep thanks to **Mrs. Ankita Banger (Business Analyst)** who helped me in every possible way and provided me best possible resources to complete my internship.

I'm thankful to **Ms. Shweta (HR), Mr. Gourav Seera, Mr. 'Piyush Nath'** and entire team of Akhil

Systems for always being so cooperative and facilitating me.

My institute, the International Institute of Health Management Research (IIHMR) Delhi, deserves the highest praise for allowing me to discover my potential. I'd want to express my gratitude to everyone on the IIHMR team for providing me with a professional platform, as well as for assisting me in developing all of my skills and giving me the confidence to work in the field of health care IT organizations. I would like to thank **Dr. Sutapa B. Neogi (Professor and Dean- Academics & Student Affairs), Mrs. Divya Aggarwal (Assistant Professor & Associate Dean Academics and Student Affairs), Dr. Preetha G.S. (Professor & Dean (Research)) Dr. Anandhi Ramachandran (Associate Professor & Controller of Examinations).**

I convey my gratitude to my mentor **Dr. B.S. Singh (Associate Professor, IIHMR – DELHI)** for his continuous support and assistance.

I am extremely grateful to my parents for their love, prayers, caring and sacrifices for educating and preparing us for our future.

Finally, my thanks to all the people who have supported me to complete the research work directly or indirectly.

Sneha Khurana

PG/19/087

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2.1.5 LIST OF ABBREVIATIONS

HIS	Hospital Information System
LIS	Laboratory Information System
RIS	Radiology Information System
EMR	Electronic Medical Record
HER	Electronic Health Record
UAT	User Acceptance Testing
HIT	Health Information Technology
IT	Information Technology
ICT	Information Communication Technology

2.2 DISSERTATION REPORT

2.2.1 Introduction

A hospital information system (HIS) is a complete, integrated information system that manages all elements of a hospital's business, including medical, administrative, and financial, as well as the processing of services. Hospital information system is commonly made up of one or more software components, as well as a large number of sub-systems in various medical specialties purchased from a multi-vendor market. Laboratory information system (LIS), radiology information system (RIS), or Electronic Medical Record (EMR), Registration, Billing, Inventory, and so on are examples of specialized implementations. Hospital information systems (HIS) are commonly used to improve the quality of care as well as the efficiency and safety of medical services. It has a lot of benefits in terms of patient care and hospital administration. HIS usage among hospitals has expanded significantly in recent years as a result of advances in technology and cost-effective solutions.

The HIS system aids in the management of all patient information, including personal data, comprehensive medical data, prior medical histories, diagnosis, treatments, investigations, and other medical decisions. Furthermore, HIS aids in the improvement of safety, quality, and is one of the most cost-effective choices accessible in the healthcare industry.

There are a variety of project management tools available that can aid with good planning and project monitoring. Despite careful planning and phased deployment, there is still worry about the problems encountered during HIS adoption and use.

Implementation needs to be executed in a way that one can trace what issues can arrive and their causes during live phase. Software development life cycle is a systematic process which includes these phases- **requirement analysis,** feasibility study, designing, coding, testing, deployment, training and maintenance. It is so crucial to study and focus on each stage for the success of any implementation plan as it reduces the chances of errors and failure during going live phase of the implementation process. Most evolving hospitals lack the necessary infrastructure to adopt hospital information systems, such as technology, software, and skilled human resources. To enhance the utilization of current resources, careful planning is required. Evaluating the obstacles to hospital information system deployment and grading them in order of significance helps

regulators in deciding which issues to prioritise. Implementing the HIS requires careful planning as well as significant financial, effort, and time commitments. This study will aid Implementers/Developers/Project managers when making HIS implementation decisions. To other upcoming hospitals' HIS implementation this study will help them avoid the various challenges that have been faced during the implementation in the hospitals.

The objectives of the current study are:

- To conduct a qualitative evaluation of the hospital information system implementation process.
- To determine challenges to a successful Implementation of HIS.

Background of HIS Implementation:

Implementation is an important phase to study and focus for the successful implementation of any software as it reduces the chances of errors and failure during going live phase of the implementation process. Implementation needs to be executed in a way that one can trace what issues can arrive and their causes during live phase.

The implementation stage is the most time-consuming and automation phase of the project. It entails a variety of tasks, including

1. Planning and requirement analysis:

The planning phase of a Miracle HIS project entails forming a project team and creating comprehensive system requirements. The project team comprises of a wide range of tasks linked to the implementation, including laying out the project plan and deadlines, ensuring enough resources are assigned, making product and design decisions, and managing the project on a day-to-day basis. In this phase, all the requirements are gathered for the development according to the customer`s needs; detailed information about the project is gathered and what is the need forthis project and in depth understanding related to the project is examined. In this new requirements of the HIS software gets developed keeping in mind requirements given by hospital and the end users are nurses, and the purpose for this project is to merge the features in HIS for smooth functioning of HIS process and workflow. After requirement gathering is done, feasibility for the development of the project is examinedand SRS (software requirement specification) documentation for the same has to be done and should be understood by the developers.Solution mapping is done to give the best possible solution to client matching their requirement. It is done basically to fill the gaps between the requirements given by the client and best solution vendor can provide with.

2. Designing the project architecture:

In this phase, overall system architecture is designed according to SRS document. Brief description about the module, an outline about the functionality of the module, architect diagrams with technology details, functional logic of the module, inputs and outputs for the module, designing for the visuals of application, which includes template design & format, various tabs and buttons it should have, screen layouts i.e. how the particular template shouldlook like-font & color, features &operations system should have and designing workflow that could be accomplished

3. Development:

In this phase, coding is done by the developer for the new requirements. The software design is translated into source code. In designing phase only blueprint of IT infrastructure is provided whereas in the developing phasing, the actual purchase and installation of software is done to support the ITinfrastructure. Creation of database and coding is done on the basis of specific requirements.Developers build the system by writing codes using the programming language and they needto follow some predefined coding guidelines to implement the code.

4. Testing:

Once the software is developed, it is deployed in the testing environment i.e. UAT (replica of the production environment).Testing is a crucial part of the implementation process. To ensure quality software, regress testing is important and it is the next phase of the process. Testing scenarios are developed and testing is done in a systematic way to find the bugs and issues in the software to verify if the software developed is operating correctly. All the code flaws missed by the developer can be detected by testing and reported to the developer for fixing them. Testing process should be followed until the software workflow is stable. This is done to ensure that the new system has no minimal errors before a roll out. A system has to be tested to ensure that it meets the user requirements. Any errors identified are debugged (corrected).Testing should involve the system users as their input is vital to the testing process and system.

5. Deployment:

After the testing phase is over and no errors or issues are left then the deployment phase begins and the software is deployed in the production environment and testing is done to review the system. This ensures that the old system's data files are compatible with the new system. The old files are sometimes updated to fit the new system's format. If the system is bug-free and meets the requirements, the sign-off to go live is given.

6. Go-live phase:

The system is launched and rolled out for use once it has been thoroughly tested and verified to be completely functional as necessary. Installation, testing, and change management are the three key activities of this stage. New errors may appear after the system is operational, possibly requiring developer assistance. As a result, a post-implementation team is being formed to address any errors

or issues that develop. The final stage of the SDLC is implementation, which is when the system is handed over to the end user. It involves user acceptability testing, training, formal handover, data file setup, and work process and documentation delivery.

7. Training to the end users:

After the software is deployed, training is provided to the users for operating the system software .User training is also a crucial part of the implementation process. As implementing new software system is a big change for the staff, training the users about the software is necessary to be productive in long run and reduce human errors. Learning a new software system of their own can hinder the organization to see the efficiencies of the upgraded or newsoftware system. Therefore investing in training can be highly beneficial. Training is necessaryto avoid any kind of doubts, misunderstandings, errors and other problems; also it help the users who are hesitant of change to help with any kind of resistance.

8. Maintenance:

After the software is deployed and new system is in use, support is provided and software maintenance is done for the future reference. Software Improvement and enhancement i.e. adding new features is provided by the vendor.

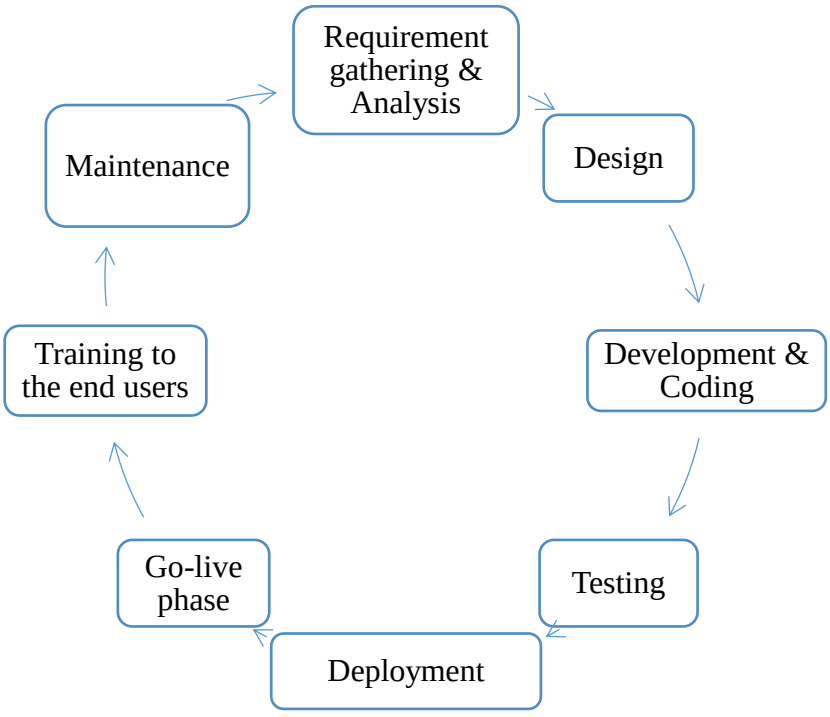

Figure-7: Schematic workflow of HIS implementation

2.2.2 Review of literature

A literature review provides us with the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. It is the first step for any research work. Literature review brings us at par with the current status of our research as well as provides us with the problems left unsolved laying the ground work for new research.

Table 2.2.2.1- List of previously reported salient findings related to barriers in HIS implementation

Source Author (Country)	Year	Methodology (Study design & sample size)	Findings	Recommendations
Chinecherem Umezuruike, Wilson Nwankwo, Margaret Kareyo (Nigeria)	2017	Systematic secondary research was done, 150 published articles were analyzed	Inadequate Information and Communication Technology facilities Knowledge Gap Lack of Trained Professionals Resistance to Change	An in-depth assessment of the infrastructure at all levels of the healthcare delivery system is required.
Florin STAMATIAN, Cătălin Ovidiu BABA, Mara Paula TIMOFE (USA)	2013	Quantitative study	Inadequate EHR training for employees, work-flow adjustments, a shortage of IT personnel, clinical staff collaboration with health IT adoption and use, and leaders' or executives' cooperation with health IT adoption and usage.	To assess their impact on the successful implementation of a health information system, more research is needed.
Winny Setyonugroho, Almira D Puspitarini Yu nita C Kirana, Muha mmad Ardiansyah	2020	Secondary research	The lack of training, the lack of IT support, and the lack of electricity.	HIS implementation should be planned thoroughly and carefully, covering the aspect of hardware-software, data, users, and also policy.

Leila Ahmadian & Reza Khajouei & Simin Salehi Nejad & Maryam Ebrahimzadeh & Somayeh Ezhari Nikkar	2014	cross-sectional descriptive and analytic study	Users' lack of understanding on how to work with the system, There is no evidence of the system's utility. End-users were not involved in the design process. Organizational training deficiency.	Implementing a health information system necessitates careful preparation and a significant investment of money, effort, and time.
Sandra hakiemafrizal[a] putu wurihandayani[b] achmad nizarhidayanto[b] triseryando[a] meiwitabudiharsana[a] evimartha[a]	2019	Qualitative study	Lack of User's computer skills, Lack of planning, project management, Lack of training in IT Resistance of change,	

2.2.3 Methodology:

Key Research Question: To address challenges to a successful Implementation of HIS.

Study design and setting:

- It is a descriptive cross sectional study using primary and secondary data.

Study instrument:

- A questionnaire was used as the instrument. Data was collected through google form link and analysed by using the Microsoft Excel 2016.

Study sample:

- Sample Size: N=51 (Total=100)
- Target population: Implementers, Developers, Testers and Project Managers of Akhil Systems
- The online link was disseminated to all the employees of Akhil System through WhatsApp, text messages and e-mails.

Duration of the Study:

- March- May 2021

Inclusion criteria:

- Implementers, Developers, Testers, Project Managers who are the main source of Akhil's HIS Implementation.

Exclusion criteria:

- Other's who have not implemented or involved in Akhil's HIS Implementation.

Limitations:

- Due to lack of resources the sample has been limited to people responded until June 8'2021.
- The survey only addressed people who have been involved in the HIS Implementation.

Ethical Considerations:

- Confidentiality was ensured and was explicitly stated in the consent form.
- During the process of data collection and data entry due data security was followed.
- Google forms were collected and stored securely.

2.2.4 Results:

In India, there is a dearth of information about the adoption rate and success rate of HIS implementation. The respondents of the current study were mainly men, belonging largely to the 26-30 years age window. The demographics are concordant with the 91.5:8.5 ratio reported by Liu (2021). Also, the young people prefer tech-savvy establishments. Most of the respondents were implementers, the final end of our workflow. Nearly 21.5% of respondents have a workable knowledge base for HIS, lacking in-depth insights into the software built. In all, 88.2% of the respondents consider the software user-friendly. This is indicative of the fact that the algorithm fabricated ease out data entry, data processing and data retrieval. 92% of the respondents believe

that the software caters to the needs of the end users, which is a good sign for the acceptance of HIS. However, 34% of the participants pointed lack of in-depth understanding of the project prior to its implementation in the hospital settings. 64% of the respondents are satisfied with software testing and debugging. 26% of the respondents pointed that they do not get the necessary support from the hospital settings, in regard to the management of master data. Statistics suggest the need to hire more manpower, especially in the implementation and Go-live phase. A tripod response was obtained regarding investing more in automated software's, one third chunk of the respondents welcome more investment in this section, one third are reluctant while the other one third only suggest meagre investments in automation.

A majority of respondents approved the current hardware's, infrastructure and training. However, the users are unavailable at the time of training and all forms of training were equally effective in this regard.

From the above findings, it is conclusive that the hospital settings should amalgamate automation into their model, to uplift the quality and quantity of work, with special focus on imparting in-depth technical know-hows as well as ensuring presence of end-users at training. This can be done by phasing in more manpower in the workforce handling data and ensuring data management for the deployment of modules, while giving room to software testing and debugging. The findings should be instrumental in catalysing the rational dialogue among the concerned stakeholders, necessary for the multifarious uses of HIS. This study may pave way for better amendments and debugging of HIS, especially in the Indian environment.

The below table shows some Challenges Implementation team faces during an implementation of Hospital Information System in Hospitals, mentioned with the parameters assessed by the questionnaire survey.

Table: 2.4.1: List of challenges encountered in implementation of HIS, in the current study

S.No.	Types of Challenges	Remarks	Solutions
1	Human Challenges	Shortage of health IT professionals who are well capable of implementing the techniques. Lack of in-depth knowledge for execution of HIS Users are reluctant to attend the training sessions timely	Recruitment of personnel who can resolve the issues at ground level. Regular hands-on training sessions should be held in the organization. Reminder/alerts can be sent to the users to remind them before starting the training sessions.
2	Technical Challenges	Recurrent of the same requirements. Lack of extensive testing of software before implementation	Emphasis should be given in documentation Automation testing can be incorporated
3	Managerial Challenges	Lack of Master data management. Negligible investments on automation in some hospital settings. Time lag in software execution.	Sharing of Master data amongst the hospital setting should be encouraged. Cost benefit analysis should be carried out to make them aware that the automation of the hospitals is beneficial and worthy. Routine debugging should be encouraged so that the project can be closed timely.

2.2.5 Discussion

As per the results of this study, the most important elements and difficulties determining the effective adoption of health information systems in hospitals are as follows: Identifying the challenges aids health-care personnels in determining their first area of concentration and the relative relevance of criteria within that area. Most of the respondents were implementers, as they are the main source for implementing the HIS software. Nearly 21.5% of respondents have a workable knowledge base for HIS, lacking in-depth insights into the software built. This in in concordance to the findings of Umezuruike et al. (2017) where they reported lack of ICT facilities and Knowledge gap among the developers and implementers. However, the end-users were reluctant to adopt the technology. This is in contrast with our findings where the users find the technique technically feasible and user friendly. In all, 88.2% of the respondents consider the software user-friendly. This is indicative of the fact that the algorithm fabricated ease out data entry, data processing and data retrieval. 92% of the respondents believe that the software caters to the needs of the end users, which is a good sign for the acceptance of HIS. However, 34% of the participants pointed lack of in-depth understanding of the project prior to its implementation in the hospital settings. Stamatian et al. (2013) reported inadequate training and lack of enough manpower as the main hurdles in the implementation of HIS. This is in conjunction with Indian hospital set-ups. In addition, they also reported in availability of internet connectivity, which is bearing contrast to current hospital settings. 64% of the respondents are satisfied with software testing and debugging. 26% of the respondents pointed that they do not get the necessary support from the hospital settings, in regard to the management of master data. Setyonugroho et al. (2020) reported deficit of IT support, training and electricity as factors posing challenges to HIS software. However, in the current study electricity is not a threat due to ample power-backup in Hospital facilities, although stress was laid on IT support, as was conclusive from the survey. Madison (2014) and Sandra et al. (2019) reviewed the outcomes of implementation of HIS and inferred that resistance among the consumers was detrimental to the adoption rates of HIS and allied software's in the United States of America. However, the present study revealed that the software is user friendly, easy to use, widely acceptable and flexible as per the needs of end-users in India. On similar grounds, Madison (2014) also emphasised on the need to bridge the knowledge gap. Statistics suggest the need to hire more manpower, especially in the implementation and Go-live phase. A tripod response was obtained regarding investing more in automated software's, one third

chunk of the respondents welcome more investment in this section, one third are reluctant while the other one third only suggest meagre investments in automation. A majority of respondents approved the current hardware's, infrastructure and training. However, the users are unavailable at the time of training and all forms of training were equally effective in this regard.

The results of this study provide useful information for officials and experts on a variety of issues dealing with the implementation of the HIS. The current study's limitations include a limited sample size, certain officials' lack of awareness of questionnaire items, and their reluctance to cooperate in completing the questionnaire. This can assist authorities in making good planning decisions by allocating adequate time to each of the barriers.

2.2.6 Conclusion

The implementation of HIS has a significant impact on the organization from technology point of view as well as from patient, staff, and process perspectives. Therefore, planning is the most important step for any projects` success. Based on the observations of the study it can be concluded that, User requirement is the base for designing any software. However,consistency in decision making with respect to the user requirement helps in clarity with product design and timely completion of the project. Furthermore feasibility study for the project in terms of economy, legally, operational feasibility, technically and scheduled time is an important aspect to consider. Rigorous testing after the development of software is necessary step to review the functionality of the software to meet the client expectations. Equal distribution of task allotment to team members is important for managing the workload balance. Every step before the final implementation has its own importance as it reduces the chances of failure for the implementation of the project.

2.2.7 Recommendations:

I. Recommendations for Developers

- More manpower should be involved in development team.
- Recruitment of personnel who can resolve the issues at ground level.
- Regular hands-on training sessions should be held in the organization.

II. Recommendations for Testers

- Automation testing can be incorporated
- Routine debugging

III. Recommendations for Implementers

- Reminder/alerts can be sent to the users to remind them before starting the training sessions.

IV. Recommendations for Project Managers

- Consistency in decision making with respect to user requirement
- Scheduling of tasks to complete the project in time.
- Sharing of Master data amongst the hospital setting should be encouraged.
- Cost benefit analysis should be carried out to make them aware that the automation of the hospitals is beneficial and worthy.
- Routine debugging should be encouraged so that the project can be closed timely.

2.2 References

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