Internship Training
at

KareXpert Technologies Pvt. Ltd.

"Challenges Faced In Implementing HMIS Software in Hospitals"

BY

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PG/20/101

Health IT management

Under the Guidance of

Dr. Nitish Dogra (Associate Professor, IIHMR, New Delhi)

PGDM (Hospital and Health Management)

2020-22

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The certificate is awarded to

Dr. Urvashi Sethi

in recognition of having successfully completed her internship in the department of

Product Delivery

and has successfully completed her Project on

Challenges Faced in Implementing HIMS Software in Hospitals

3rd Feb to 30th April 2022

KareXpert Technologies Pvt. Ltd.

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.

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms.**Urvashi Sethi** student of PGDM (Hospital & Health Management) from International Institute of Health Management Research; New Delhi has undergone internship training at **KareXpert Technologies Pvt. Ltd.** from **3rd Feb 22** to **30th April 22.**

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.

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

Dr. Nitish Dogra
Associate Professor
IIHMR, New Delhi

Certificate of Approval

The following dissertation titled **"Challenges Faced In Implementing HIMS Software In Hospitals"** at **"KareXpert Technologies Pvt. Ltd."** 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 PANKAJ GUPTA	
Dr. Sumant Swain	
Dr. Mukesh Rai Raushan	

Certificate from Dissertation Advisory Committee

This is to certify that **Ms. Urvashi Sethi**, a graduate student of **the PGDM (Hospital & Health Management)** has worked under our guidance and supervision. She is submitting this dissertation titled **Challenges Faced in Implementing HIMS Software in Hospitals** at **KareXpert Technologies 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. Nitish Dogra
Assistant Professor
IIHMR, New Delhi

Mrs. Sonia Dhanuk
Healthcare Product Specialist
KareXpert Technologies

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled Nurses' Knowledge, Attitude and Perceived Barriers towards Electronic Health Record and submitted by **Ms. Urvashi Sethi** Enrollment No. PG/20/101 under the supervision of Dr. Nitish Dogra for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from 3rd Feb 22 to 30th April 22.

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

FEEDBACK FORM

Name of the Student: Ms. Urvashi Sethi

Name of the Organisation in Which Dissertation has been completed: KareXpert Technologies Pvt. Ltd

Area of Dissertation: Product Delivery

Attendance: 100 %

Objectives achieved: She is Hard Working and great learner, achieved client satisfaction.

Starting from Implementation till operational issues handled accounts Single Handedly

Well knowledgeable and have great understanding of all the modules

Deliverables: Met all the timelines for production movement, handled all development points well

Strengths: Good communicator, Multitasker**,** Leadership, Problem Solver, Fast learner

Suggestions for Improvement: None, Training on Technical Skills

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

Mrs. Sonia Dhanuk

Senior Manager Product Delivery

Date: 12th Aug 2022

Place: Gurugram

CERTIFICATE ON PLAGIARISM CHECK

Enrollment/Roll No.	PG/20/101	**Batch Year**	2020-22
Course Specialization (Choose one)			Healthcare IT
Name of Guide/Supervisor	Dr. Nitish Dogra		
Title of the Dissertation/Summer Assignment	Challenges Faced in Implementing HIMS Software in Hospitals		
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Signature:

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ORGANIZATION BACKGROUND

The Reliance funded start-up *KareXpert* founded in 2018 provides artificial intelligence and cloud-based digital healthcare platform for hospital. Aimed at digitally transforming one lakh hospitals by 2026. Amid the COVID-19 crisis, healthcare, starting from doctor consultation and diagnostics tests to getting medicines, shifted online almost overnight. the lack of digital services for doctors, KareXpert pivoted to focus on building B2B solutions. In 2018, Nidhi launched **KareXpert**, which is aimed at digitalising hospitals by providing a **SaaS based digital healthcare platform** to fulfil its mission of digitally transforming 100,000 hospitals in India and across the world in the next five years.

Besides disruptive technology and SaaS based commercial model, KareXpert has also built the holistic Managed Services model for the Hospitals serving both onsite and offsite support needs bringing complete peace of mind to the customer

With 50+ modules and 450+ applications, KareXpert is the first Indian company to offer a most exhaustive portfolio for hospitals. The service includes advanced HIMS, EMR/EHR, LIMS, RIS/PACS, pharmacy, connected ambulance, advanced BI, MIS, e-Claim, telemedicine, inventory & SCM, queue management, counselling, and branded mobile apps as a pre-integrated stack.

Using its Patient-First and Mobile-first approach, the Digital Healthcare Platform will revolutionize the Hospital IT as it brings the speed of business with innovation using most modern software technologies at a fraction of cost. The platform is already being used in some of the top hospitals across India, helping them streamline their operations.

INTRODUCTION

Healthcare plays a key role to our community, medical management is imperative for allocated to do their work in a well organized and competent manner. Every working hour couple of hundreds grand of patients get in medical assistance amenities thought provoking the administration to manage the performance efficiently. Employees have to supervise and merged medical, economical and operational information that expand with the training. In the past manually, data was conducted, that was time consuming and missed to provide the required grade of productivity. Most professionally operate hospitals and clinics now depends on **hospital information systems (HIS)** that assist and regulate all their clinical and organizational information.(1)

HIS is all inclusive information system dealing with all prospectus of details which is processing in the hospital. Which include individual (and paper based) report processing as well as data processing apparatus. In field of health check informatics, the goal of HIS is to accomplish the best attainable encouraging toward care of patient and administration through electronic information processing. It includes one or few software mechanism with peculiarity and specific extension along with large variety of so-called sub-system in clinical specialties (e.g., laboratory information integrated, computer assisted system destined to reserve, in hospital system manipulation and retrieve information concerned with administrative and clinical aspects of providing medical services , and radiology information system).(2)

Information processing cuts over disciplines which comprise but not limited to medical management, manufacture, advertising, finance, authorized, and administration.However, this research resides the challenges employee encountered during HIMS implementation, this paper does not deal with the every aspect of domain of information processing applied to the several domains mentioned above. (3)

Health information is an versatile research of the design, progress, approval and application of Information Technology (IT)-based innovations in healthcare facilities delivery, management and organization. Health Systems have been advanced and implemented in various regions for patient's management. Health information has been applied to the domain

of nursing, clinical medicine, dentistry, pharmacy, public health, occupational therapy, physical therapy, biomedical research, and alternative medicine and has greatly increased the reporting of disease outbreaks, management of diseases, patient care and cognitive functioning. Ngafeeson identified six different transitions/domain in the development of a health care management information system.(4)

These areas are:

Paper-based System to Computer-based System;

Local health system to Global Health Information System(GHIS)

Healthcare Professional-centred System to Patient-centred System

Numeric data to Complex data forms(4)

Health Management Information System (HMIS)

HMIS is one of the fundamental constituents for reinforcement any healthcare system whether community or individual irrespective of the condition. A typical HMIS may not be completely digital, it is often designed to provide planning, management, and decision making in healthcare amenities and administration through adequate data collection and evaluation. HMIS has an automated system for patient report management, decision support and organization of healthcare programs, etc. That would increase productive and competent healthcare delivery. (5)

According to World Health Organization: design and development of a HMIS must adhere to certain fundamental steps which include

- Review of the existing system
- Definition of the data needs of relevant units within the health system
- Determination of the most appropriate and effective data flow
- Designing of the data collection and reporting tools
- Monitoring and evaluation of the deployed system
- Development of effective data dissemination and feedback mechanisms
- Enhancement of the HMIS As simple as the steps defined sounds, it has been a difficult task implementing HMIS in developing countries owing to a myriad of factors

ranging from poor socio-economic conditions, funding, governance, corruption, poor legal framework among others. These challenges constitute the hallmark of this study.(2)

A **hospital information system (HIS)** is essentially a electronic system that can supervise all the data to allow health care suppliers to do their works effectively. These organizations have been around since they were first introduced in the 1960s and have advanced with time and the innovated healthcare amenities. The electronics system was not as fast in those days, and they were not able to support data in present time as they do today. The staff applied them primarily for managing billing and hospital inventory. All this has transformed now, and today hospital information systems comprises with the integration of all medical, financial, and organizational equipments.(6)

The main feature of the fourth and the current generation of HIS, which has started in 1980s, is known as the integration facility of HIS with other third party systems combined financial and other departmental services.(6)

HIS implementation and modification in hospitals is a difficult task contrast to other information systems in different business domain. System infrastructure design, requirement specification, master data collection and definition, integration with other systems, localization, and training and final system test are the main activities of implementation phase. During HIS implementation phase, it is highly possible that administration may encountered many obstacles.

- According to the studies about HIS implementation (Ash et al., 2004; Ball. 2003; Berg. 2001; Hard. 1992; Littlejohns et al., 2003; Memel et al., 2001; Tonnesen et al.,1999; Wetzel. 2001). implementation difficulties are formed to be related to:
    - Infrastructure, application and organization of the implementation processes
- Management of end user contribution
    - Inclusion of various data systems, external systems and independent physician groups
    - Contending with balance among several departments and end users
    - Redundant, inaccurate, misinformative or confusing master data
    - Standardization of data definitions, representation and vocabulary

- Technical requirements planning
- End user profile and resistance
- End user training
- Software immaturity
- Support after implementation
- Lack of information about HIS implementation
- Ignorance of administrative needs of hospital(3)

To prevent implementation difficulties of HIS, recommendations stated in previous studies (Ash et al., 2004; Hersh, 2002; Memel et al., 2001; Hard, 1992) are as follows:

- Needs and expectations of stakeholders should be understood and planning should be started accordingly.
- Experiences in other HIS implementation projects should be utilized; their methodologies, pain areas and achievement or failure reasons should always be taken into consideration.
- There should be always a balance between organizational targets and regional governmental needs. Some of the organizational targets do not match regional and governmental needs.
- Information technology training of end users is essential for a successful HIS implementation. This should include continuing education of physicians, nurses and department secretaries. Training should link information systems to actual clinical scenario.
- Physicians' resistance should be overcome by using several techniques such as encouraging physicians to use system for inquiring result reporting and patient information instead of order entry, providing personal computer lormge of physician and devoting one person for one-by-one training of physicians.
- End users should be involved in the implementation process and features of benefit should be provided to them.
- Hardware infrastructure should be planned effectively during HIS implementation(3)

Need of the Study

To check the challenges by the employees of KareXpert in implementing the HMIS software, in order to analyses the gap and increase the productivity.

Objective/ Aim of the Study

- To analyses the challenges faced by employees of KareXpert in various teams of the kareXpert
- To check how many employees are aware of the working process of implementation?
- To find out possible solutions to improve the efficiently of the employees.

REVIEW OF LITERATURE

A study by Ozge Sagiroglu and Meltem Ozturan , 2006. Implementation challenges of Hospital Information Systems. This study looks for potential sources of implementation difficulties of hospital information system in a private hospital in Turkey offer recommendations to prevent these difficulties. Increasing cost of patient care delivery and the difficulties faced during the improvement evaluation of data quality and data access have increased the pressure for the use of information systems in healthcare administration. In this study, in order to find out the possible implementation difficulties, a survey was administered in a private hospital in Turkey which was just in the level of implementing a hospital information system.

Techniques of interview, observation and questionnaire were applied for data collection. Data was analyzed by using descriptive and factor analyses. The results of these analyses showed that the potential sources of hospital information system implementation difficulties were related to organizational issues, end user profile, integration of different systems, inconsistency among different workflows of different departments and training issues whereas there was no major implementation problem which is related to software, hardware, planning, support, security and solution provider. (5)

Uganda has shown accomplishment with the application of Health Management Information System (HMIS) in the region of disease surveillance reporting and supervision. The success however, is relative and has critical challenges encountering it. There is no gainsaying that a successfully implemented HMIS in the entire public healthcare has enormous benefits: such as cost reduction, structured and integrated information processing and restoring, enhanced decision making and research, etc. Having regard to the aforementioned benefits and more, this study has adopted a systematic review and desk approach to identify various challenges that had hindered the full implementation of HMIS in Uganda.

Also presented are the potential solutions that can help overcome the attendant challenges. It is submitted that the adoption of these solutions would to a large extent enable and improve the cost-effective implementation of HMIS in various health facilities in Uganda especially the public health facilities.(1)

Hospitals in Kenya are adopting and implementing ICT in order to improve transparency, efficiency and effectiveness in service provide through the implementation of Hospital Management Systems (HMIS).The main objective of this survey was to establish the extent to which hospitals in Nairobi are using HMIS and establish encounters of implementing HMIS in hospitals in Nairobi. This study has survey design methodology.

The main device for data collection was a questionnaire which was administered to IT officers in the hospitals. In this study for conclusions descriptive statistics was used. The study found that the following challenges are faced by Kenyan hospitals in HMISs implementation. These include the challenge of support from the employees, financial resources, internal communication, and training of users, changeover methods and long procurement processes.

The study concludes that to improve the success of HMIS implementation in hospitals, the study recommends; improving planning and coordination of HMISs projects, capacity building through user training, knowledge and skills transfer, transparency in procurement of information systems, involvement of users in system requirement definition, involvement of managers at all levels, sufficient software & hardware evaluation and use of change agents in implementation.(7)

This study was done by health affairs. The survey asked critical-access hospitals to report the extent to which they were experiencing twelve commonly cited challenges to EHR implementation and use. The challenges were divided into four domains. The first domain, financial, had three challenges: broadband implementation costs, EHR implementation costs, and the availability of grants or loans to support EHR adoption and use. The second domain, work flow and staffing, had five challenges: inadequate EHR training for employees, work-flow changes, lack of IT personnel, clinical staffs' cooperation with health IT adoption and use, and leaders' or executives' cooperation with health IT adoption and use.

There were three technical challenges: unavailable or insufficient broadband, selecting a vendor or the usability of the EHR, and lack of technical support from the vendor. And there was one challenge in the final domain, security and privacy: security and privacy risks. Thirty-two percent of the critical-access hospitals that responded to the survey were owned by a hospital system. Half of the hospitals reported that they were not for profit. The majority had upload speeds greater than three megabytes per second and had at least two Internet service providers in

their market from which to choose. In terms of support for health IT, 31 percent of the hospitals stated that the system that owned them was responsible for their EHR purchasing decisions. Thirty-three percent of the hospitals pooled resources with other critical-access hospitals or small rural hospitals to acquire or implement EHRs or health information exchange in a group purchasing arrangement.

Only 12 percent of the critical-access hospitals stated that they did not rely on any outside technical assistance to implement their EHR system. In contrast, the majority of the hospitals reported that their primary sources were their system owner or a third-party vendor. For each of the twelve challenges, we created a variable that was equal to 1 if the hospital reported that the challenge was significant (6 or 7 on a seven-point Likert scale) and equal to 0 otherwise. We also created a summary variable for each of the four domain areas, equal to 1 if the hospital reported that any of the challenges in the domain was significant and equal to 0 otherwise.

A study conducted on Challenges of using Hospital Information Systems by nurses: comparing academic and non-academic hospitals This is a cross-sectional study in 2015. The statistical population in this study consisted of the nurses who had been working in the academic and non-academic hospitals in Kerman. A questionnaire consisting of two sections was used. The first section consisted of the demographic information of the participants and the second section comprised 34 questions about the challenges of HIS use.

Data were analyzed by the descriptive and statistical analysis (t-test, and ANOVA) using SPSS 19 software. The most common and important challenges in the academic hospitals were about human environment factors, particularly “negative attitude of society toward using HIS”. In the non-academic hospitals, the most common and important challenges were related to human factors, and among them, “no incentive to use system” was the main factor.

The results of the t-test method revealed that there was a significant relationship between gender and the mean score of challenges related to the organizational environment category in the academic hospitals and between familiarity with HIS and mean score of human environment factors ($p<0.05$).

The results of the ANOVA test also revealed that the educational degree and work experience in the healthcare environment (years) in the academic hospitals have a significant relationship with the mean score related to the hardware challenges, as well, experience with HIS has a significant relationship, with the mean score related to the human challenges ($p<0.05$). The most important challenges in using the information systems are the factors related to the human environment and the human factors.(2)

METHODOLOGY

- Study Design – Cross Sectional Study
- Study Duration – 3 months 03rd Feb 2022 till 30th April 2022
- Study Location – KareXpert Technologies, Gurgaon
- Study Setting – KareXpert Technologies, Gurgaon
- Type of Data- Primary research
- Sampling Technique – Convenience Sampling
- Total population – 125 Employees
- Sample Size – 95
- Test of significance of proportions- $N= z^2pq/e^2$

  N= Sample size

  Z=Confidence level at 95%

  Pq= variance of population

  E= Allowable error

  Result – Confidence interval at 95%

  Margin of Error 5%

  Population proportion- 50%

  Population Size- 125

  Sample Size- 95

- Selection Criteria
  - Inclusion

1) Employees of different team in KarXpert
2) All permanent employees are included
3) Both male and female employees
4) Employees of all age group
   - Exclusion

1) Trainees are excluded from study

➢ **Data Collection Procedure**

Employees both male and female of all age group, irrelevant of working experience were recruited for the study. Sampling (Convenience sampling) was done according to departments taken into consideration for the study. Out of total of 140 employees, 95 employees were recruited for the study. Questionnaire was send to the employees. Employees from different teams/department are targeted, defined below:

- OPS
- Developers
- Service Delivery
- QA
- Product Expert

Teams	Total Number
QA	12
Developers	30
Service Delivery	40
Product Expert	15
Total	97

Figure 1: Total number of Team Members

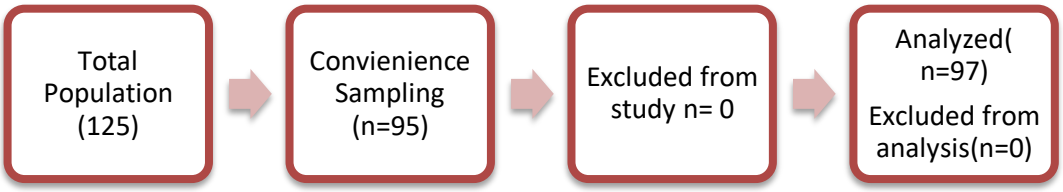


Figure 2: Total number of analyzed participant

➢ STUDY PROCEDURE

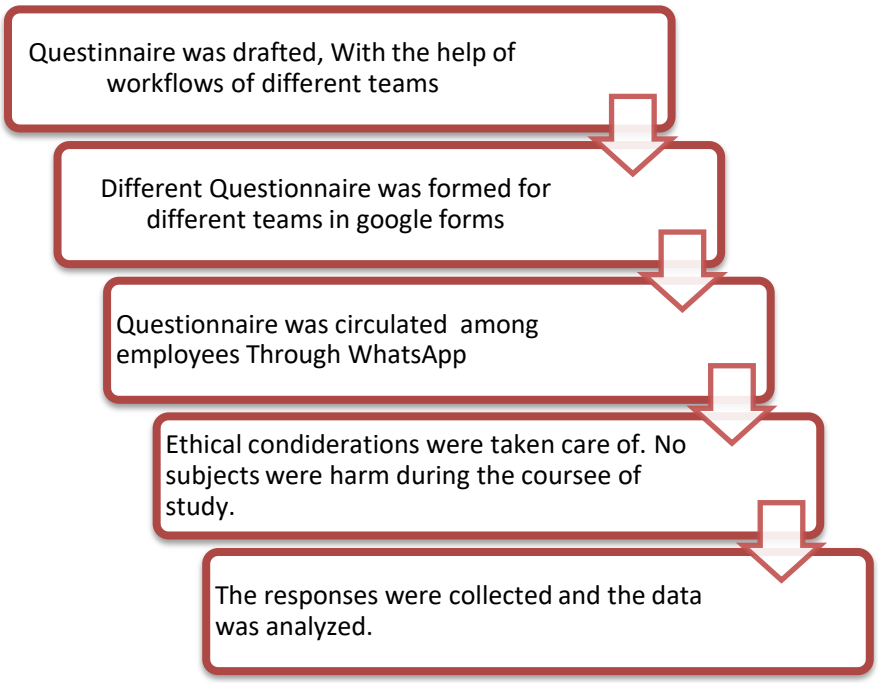


Figure 3: Study Procedure

Data analysis – Data analysis will be done using MS Excel to find out the percentage of responses represented in the form of Bar charts, Pie Charts against Yes, No, Not sure

Ethical Considerations:

Since the research ethics is a core of any research work, following aspects have been kept in mind while preparing questionnaires for employees.

- Specific search questions have been designed to gauge the challenges faced by employees in carrying out workflow.
- The identity of all the participants was kept anonymous.
- The participation of the individuals will be purely on voluntary basis and informed consent will be obtained before they participate in the survey.
- The confidentiality aspect of the participants will be strictly adhered to.
- No risk or harm will be caused to any of the participants during the course of the study

DATA ANALYSIS AND RESULTS

1) Challenges Faced by Product Team

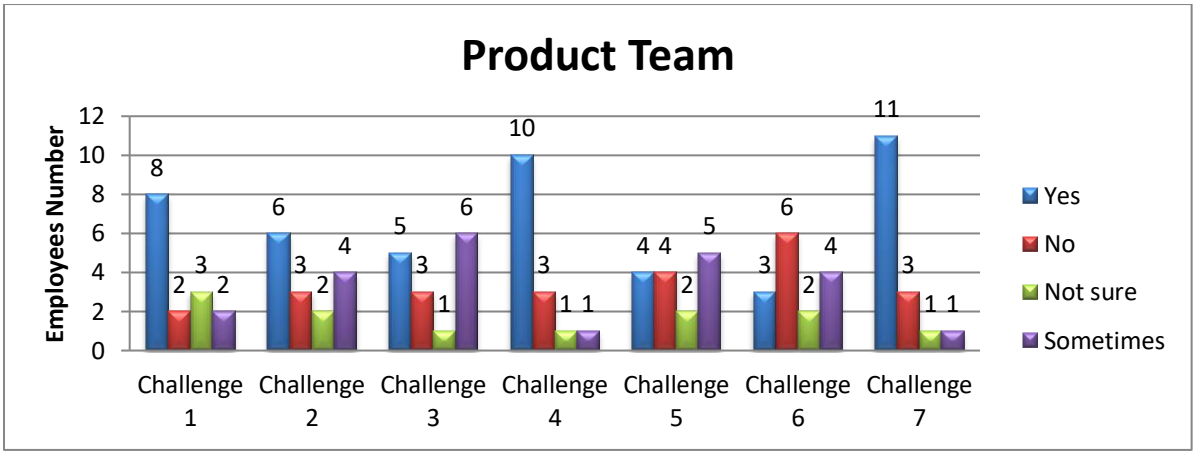


Figure 4: Challenges faced by Product Team

Analysis – ***The highest challenge*** faced by product team is in use cases where multiple changes are been made, they face problem in data break of other HIMS modules, ***followed*** by configuring a new feature in one particular hospital as development cost is affected.

The problem encountered sometimes faces the challenge of stability of new feature.

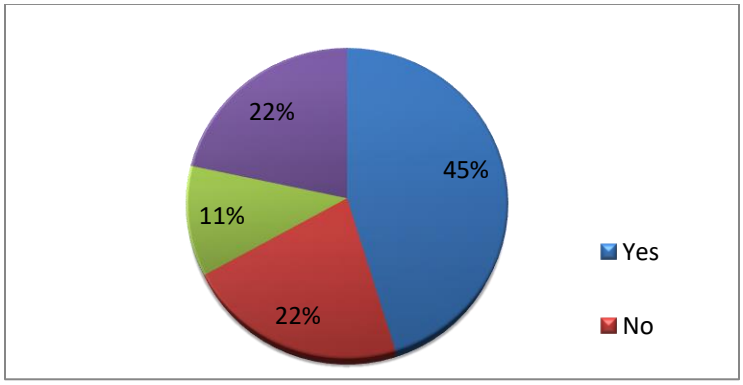


Figure 5: Overall Percentage faced by Product Team

45% of Employees face challenge in product team, 22% of employees faces problems sometimes, and while same average of employees do not any challenge. 11% of the employees are not sure of the challenge.

2) Challenges Faced by Developers

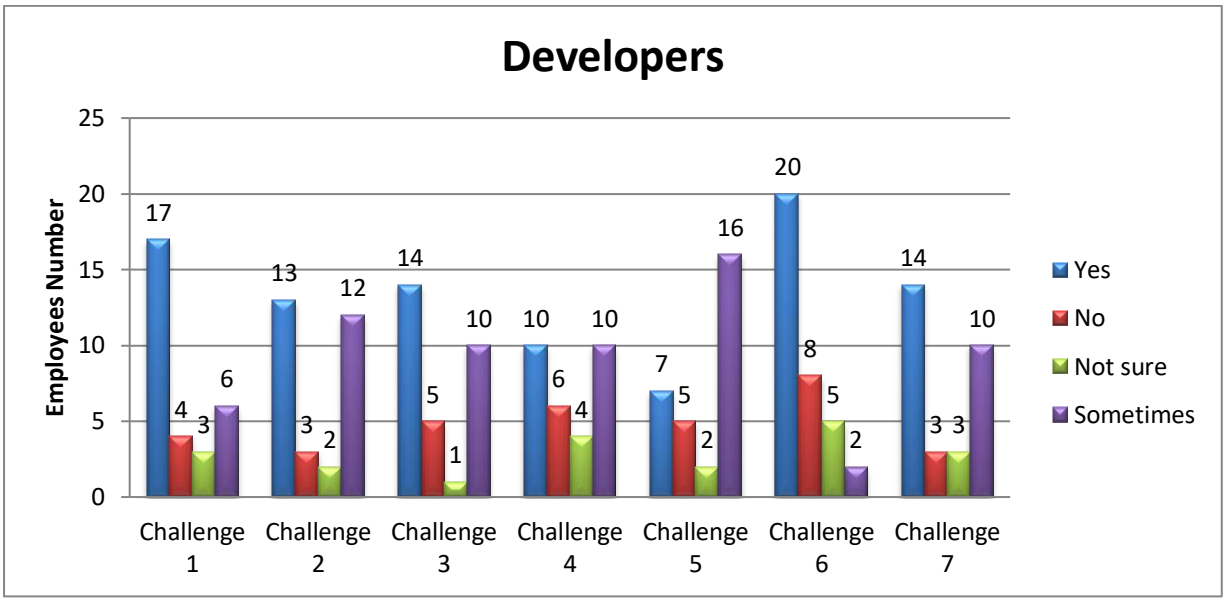
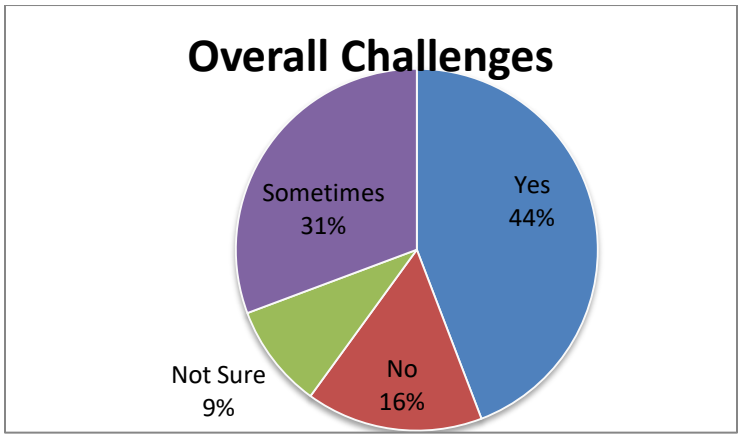


Figure 6: Challenges faced by Developers

Major problem faced by developers are in making platform independent, should be compatible with browsers and technology ***Highest faced*** challenge sometimes, is making sure proper logs, should be readable for proper debugging



44% of Developers face challenge, 31% of employees face challenge sometimes, while 16% of employees do not face any challenge and 9% is not sure of the challenges stated.

Figure 7: Overall Percentage faced by Developers

3) **Challenges Faced by OA**

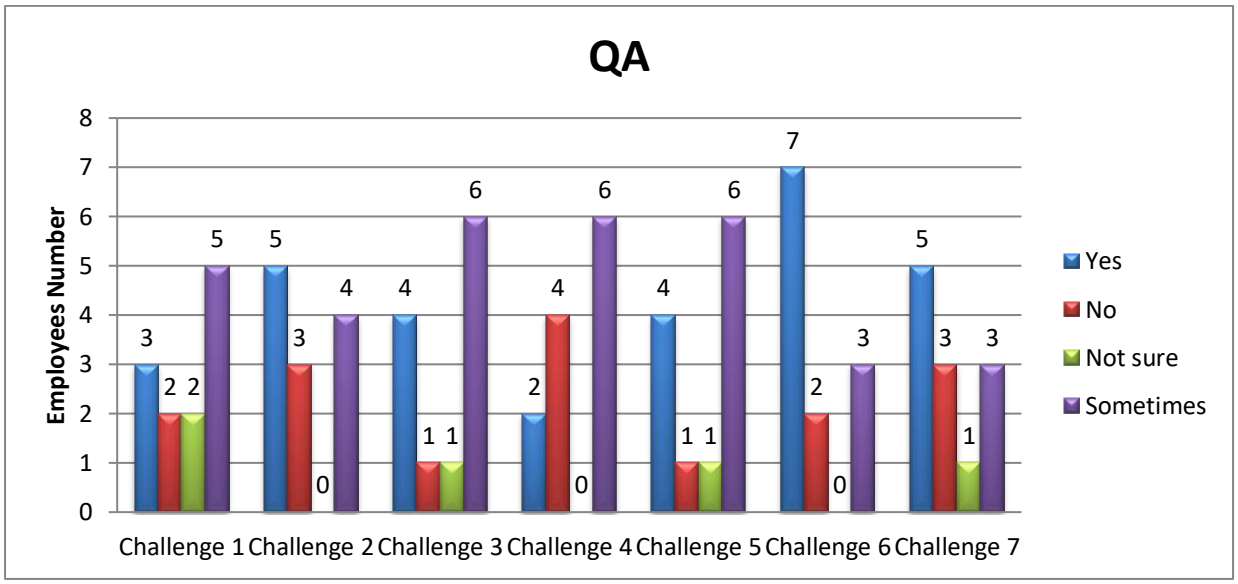
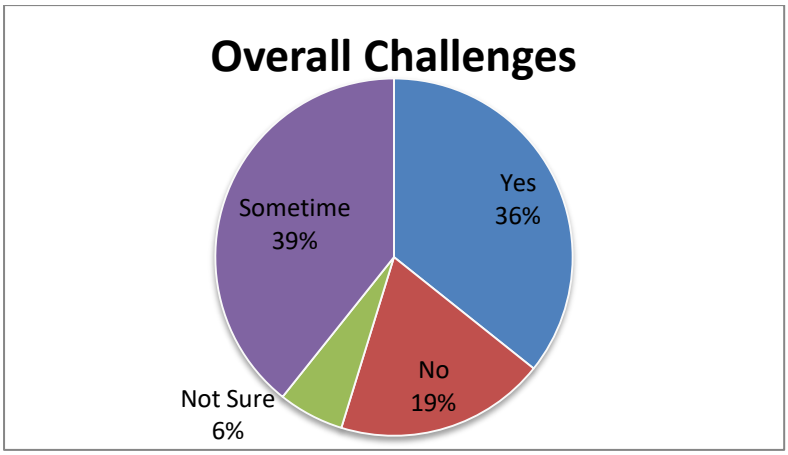


Figure 8: Challenges faced by QA

Major problem is faced in retesting and regression of the bug closed by developer Issue faced in incorrect explanation of bug, for eg missing screenshots is ***not a major issue*** by QA team.

Problems faced sometimes are Performing RAC of the product.



39% of employees face challenges sometimes, while 36% have given responses as yes. 19% are not sure of the questions

Figure 9: Overall Percentage faced by QA

4) **Challenges Faced by Service Delivery**

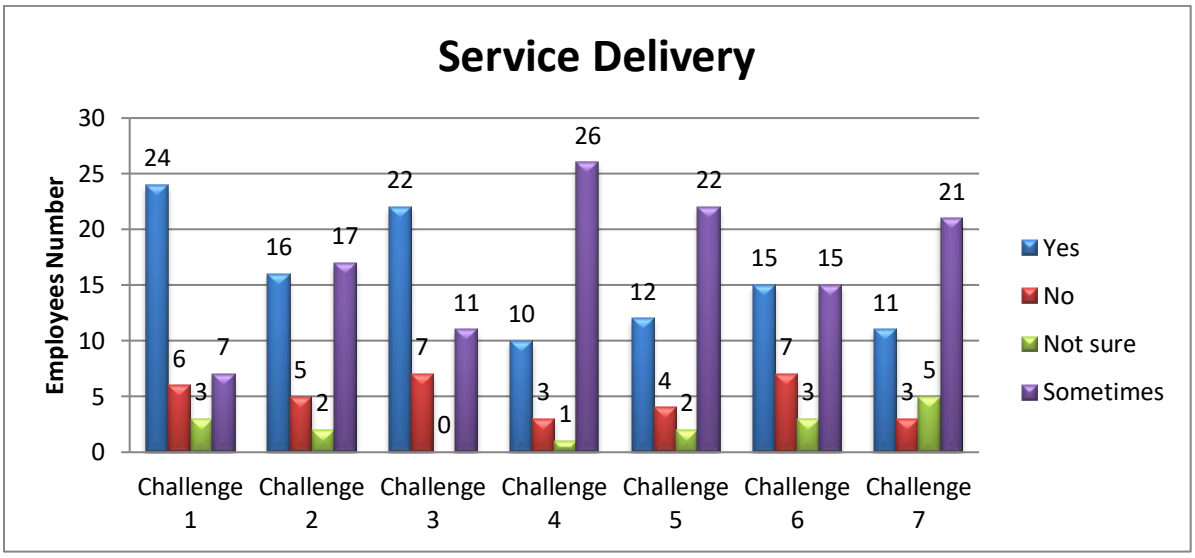


Figure 10: Challenges faced by Service Delivery

A large number of employees sometimes face challenge in setting up the environment for HMIS delivery

A sure challenge is faced in getting complete information of the document/SOW of the hospital

Rarely faced problem is passing bug to the QA team

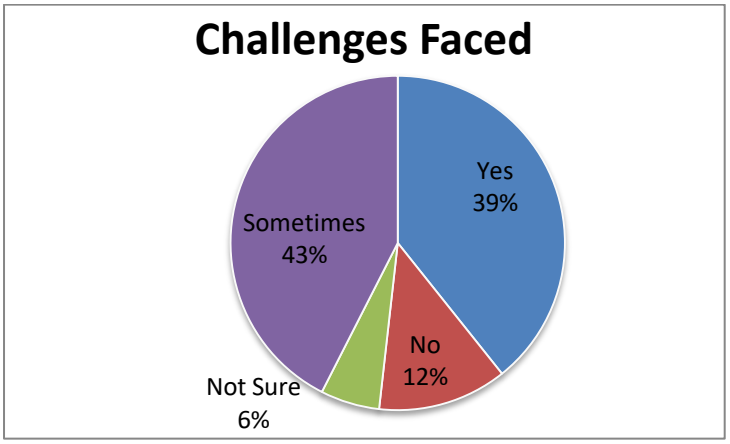


Figure 11: Overall Percentage faced by Service Delivery

43% of Service delivery team face challenge sometimes, 39% employees are in yes category, 12% don't faced any challenge while 6% are not sure about the questions.

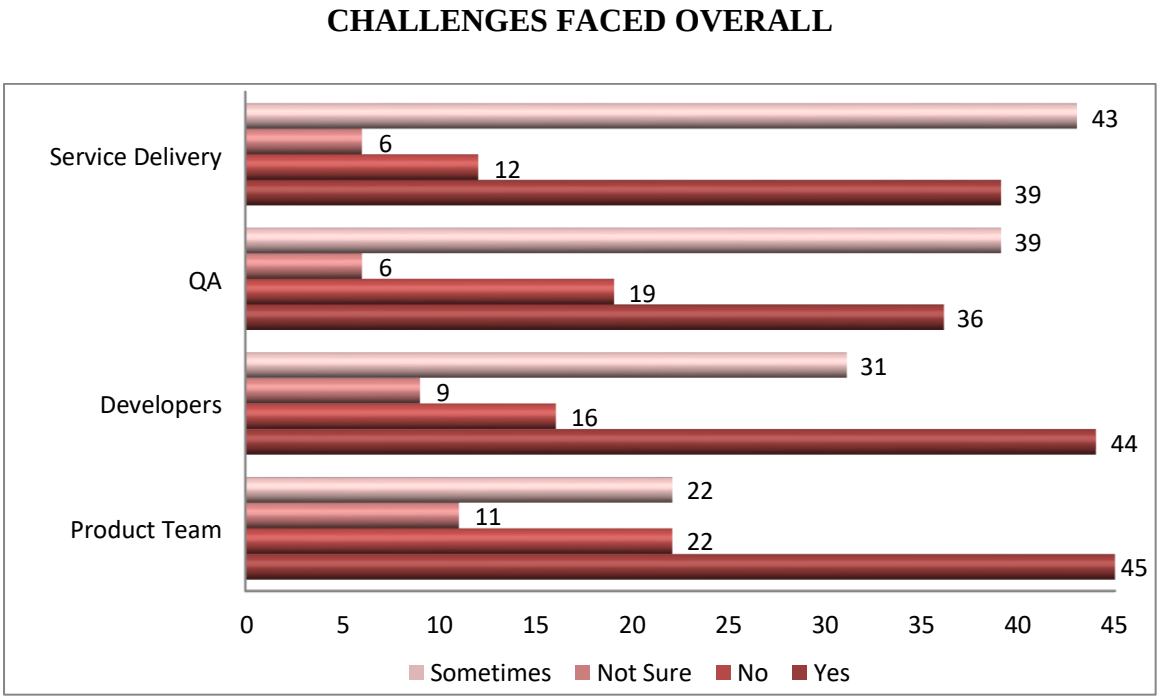


Figure 12: Overall Challenges Faced by Employees in all Team

Product team faces major challenges followed by Developers, Service Delivery and QA.QA and Service Delivery team sometime experiences problems followed by Developers and product team

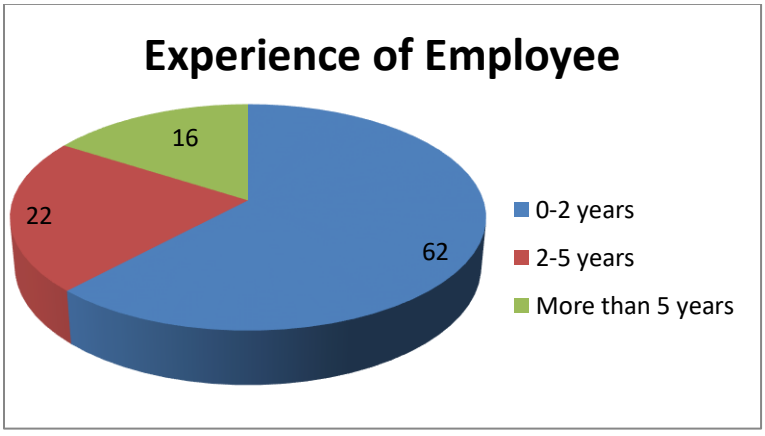


Figure 13: Experience of Employees

A average of 16% employees have experience of more than 5 years. 22% of employees have 2-5 years of experience, major distribution if of 62% of employees having 0-2 years of experience.

DISCUSSION

To the best of our knowledge, this is the first study done on KareXpert Technologies which identified the challenges faced by Different departments of the organization; the departments included in the study are Product team, Developers, Service Delivery team and QA team.

Experience of the employees are taken in the study, the result seen was majority of the employees have experience of 0-2 years, they have recently joined the organization. Followed by experience of 2-5 years. Very less proportion of employees falls in category of, more than 5 years

The cycle of the implementation is lead by sales team as new hospital takes the software. The first step is handled by service delivery team, which is responsible for the customization of the product according the facility requirements and demands. The service team is basically responsible the product and client end to end discussion. The major challenge faced by delivery team is setting up environment of HIMS delivery.

As discussed in a study there are technical problems of system, compatibility of system the facility is using, difficulty in working with the system, low speed of the internet, loss of confidentially if information, getting requirement/SoW of particular hospitals and the other major challenge faced is getting requirement from the client/understanding SOW of particular facility. This can be because, lack of information or incomplete information presentation of the team, or information is not ready at the client (in case of new hospitals), or the spoke person does not have proper understanding the hospital system.(1)

The other team taken in the study is Product team, which is responsible in identifying new-product opportunities, creating competitive strategy for the product for long term and recommends product changes, enhancements and introductions The major challenge faced by product team is in use cases where multiple changes are been made, they face problem in data break of other HIMS modules. Due to new releases/addition of features in software there is possibility of breakdown of integrity of other modules/ breach of continuity is seen in different modules other the one in which changes are been made The major problem is seen in configuring

a new feature in one particular hospital as development cost is affected, in cases where that particular enhancement matches for one hospital(7)

Third team which is included in the study is developers, which are responsible for the designing the new features of the product identifying, designing, installing and testing a software system Once software developers have delivered the final software system, they will also help in maintaining and updating the programmer to ensure that all security problems are fixed, and it operates with new databases. The major challenge faced by this team is in making platform independent, should be compatible with browsers and technology Highest faced challenge sometimes, is making sure proper logs, should be readable for proper debugging(4)

The last team in the study is QA Team; Quality Assurance helps the software development team to recognize the problems early by performing rigorous testing, in order to guarantee a quality product to the end-user. The QA analyzes and executes the products in all possible logical way for a quality product. The challenges faced by Quality Assurance team are in retesting and regression of the bug closed by developer and Problems faced sometimes are Performing RAC of the product. This in seen in cases of finding the root cause of bugs and or issue stated by the facility. (3)

Product team faces major challenges followed by Developers, Service Delivery and QA. This can be due to long working hours, incompatibility of computers used in the hospitals. QA and Service Delivery team sometime experiences problems followed by Developers and product team

CONCLUSION

This study highlights the challenges faced by different teams of KareXpert.

The major challenges faced across the team are:

Making sure proper coding is done for particular event ensuring proper logs. Configuring the enhancement/feature for one particular hospital as it can result in data break of other HIMS modules, which further involves retesting of all Modules and for all hospitals there is a lot of wastage of time, also the development cost is affected, After the enhancement is done Setting up environment for delivery as the compatibility needs to be ensured.

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SUPPLEMENTARY

Instrument - Questionnaire

"CHALLENGES FACED IN IMPLEMENTING HMIS SOFTWARE IN HOSPITALS"

SECTION A:

Experience of the Employee:

Department of the Employee:

Designation of the Employee

SECTION B

1) CHALLENGES FOR **PRODUCT EXPERT**

Questions	Yes	No	Not Sure
Challenge in providing timely ETR for client?			
Issue with wrong assignee from service delivery team?			
Challenge in gathering of requirements in case of incomplete requirements?			
Challenges in configuring new feature for one hospital, as cost is affected?			
Issue with proper explanation of requirement?			
Challenge with stability of the new feature?			
If case of multiple changes, challenge with data break in other modules?			

2) CHALLENGES FOR **DEVELOPERS**

Questions	Yes	No	Not Sure
Challenge faced with SRS (Software requirement specification) is incomplete, wrong?			
Issue faced when right requirement is not shared?			
Challenge in matching the developed feature with product requirement?			
Challenge is ensuring feature working with other modules in place?			
Challenge in making sure of proper logs, should be readable for proper debugging?			
Challenge in making platform independent, should be compatible with leading browsers and technology?			
Challenge in assuring the feature is running well in all hospitals?			

3) CHALLENGES FOR **QA**

Questions	Yes	No	Not Sure
Challenge in making sure test cases are in place for particular module?			
Issue in matching of test cases and features?			
Ensuring Proper communication to developers with right severity and priority related to bug?			
Challenge in performing proper RAC of product?			
Issue faced in incorrect explanation of bug, for eg missing screenshots?			
Challenge faced in retesting and regression of the bug closed by developer?			
Challenge in explanation of the feature release on UAT/ Production?			

4) Challenges For **Service Delivery**

Questions	Yes	No	Not Sure
Challenge in getting complete Information of the document/SOW of the hospital?			
Challenge in testing feature before delivery it to the client?			
Challenge in passing bug to the QA team?			
Challenge in setting up environment for HMIS delivery?			
Challenge in colleting correct/complete master data for integration of the HMIS?			
Challenge in involvement of client in process of integration setup of HMIS?			
Challenge in lack of understanding of client during training of modules?			

CONSENT FORM

Benefits of participation: The Employee will be benefited by participating in the study. Employees will be able to express the challenges faced by them, which will further help the organization to work efficiently and at the same time improve the productivity

Risk of Participation: There are no risks involved in the study.

Right to Withdraw from the Study: Employees have the right to withdraw from the research at any point of time.

Confidentially: All the information about the employee would be kept confidential and limited to me. The collected data from the employees will be used for thesis or publication in the journal.

Contact person: URVASHI SETHI **Email:** urvashisethi28@gmail.com

Declaration

I…… voluntarily agree to participate in the study titled "**CHALLENGES FACED IN IMPLEMENTING HMIS SOFTWARE IN HOSPITALS**".

I reserve my right to withdraw from the study at any point of time. I understand that the participation in this study is voluntary and refusal to participate will have no penalty or loss of benefits to me.

Participant's name…….

Participant's signature……...

Date……

Declaration:

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and consents freely.

Researcher's name: URVASHI SETHI

Researcher's signature…….

Date……..

Researcher's contact details:

URVASHI SETHI

Urvashi Sethi report

ORIGINALITY REPORT

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