

**Analysis the Need for change of Existing Hospital  
Information System to New Hospital Information System  
in Eye-Q(A chain of Super Specialty Eye Hospitals)**

A dissertation submitted in partial fulfillment of the requirements for the award of

**POST-GRADUATE PROGRAMME IN HOSPITAL and HEALTH  
MANAGEMENT, NEW DELHI**

BY

**NIRANJAN BULCHANDANI**

**(2011-13)**



**International Institute of Health Management Research**

**New Delhi -110075**

**May, 2013**

**COMPREHENSIVE EYE EXAMINATIONS & LATEST FACILITIES FOR**

- PHACO (STICHLESS CATARACT SURGERY)
- ZYOPTIX LASIK LASER (SPECTACLE REMOVAL)
- PHAKIC IOL
- TRAUMA
- CONTACT LENSES

**SUPER-SPECIALITY CLINIC FOR**

- CORNEA
- RETINA
- GLAUCOMA
- SQUINT & OCULOPLASTY
- PAEDIATRIC & NEURO. OPHTHALMOLOGY



**EYE-Q**  
SUPER-SPECIALITY  
EYE HOSPITALS

**CERTIFICATE OF DISSERTATION COMPLETION**

**TO WHOM IT MAY CONCERN**

This is to certify that **Niranjan Bulchandani**, a student of IIMMR Delhi has successfully completed his dissertation in our organization from January 23, 2013 to April 27, 2013. During this dissertation he has worked on “Analysis the need for change of existing HIS(Hospital Information System) to New HIS in Eye-Q Vision(A chain of Superspeciality Eye Hospitals)”

(Signature)

Rahul Kumar (Name)

Manager IT Designation

**Certificate of Approval**

The following dissertation titled "**To analyze the need for change of existing Hospital Information System to New Hospital Information System in Eye-Q( A Chain of Super speciality Eye Hospitals)**" is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post-Graduate Diploma in Health and Hospital 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

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*Aranish K. Singh*  
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**Certificate from Dissertation Advisory Committee**

This is to certify that **Niranjan Bulchandani**, a graduate student of the **Post- Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision.

He is submitting this dissertation titled **"Analysis the need for change of existing Hospital Information System to New Hospital Information System in Eye-Q Vision(A chain of Super Specialty Eye Hospitals"**

In partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital 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.



Faculty Mentor

  
Designation

IIHMR

New Delhi

Date



Organizational Advisor

  
Designation  
Organization

Address

Date

**Certificate of Approval**

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Dissertation Examination Committee for evaluation of dissertation

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### FEEDBACK FORM

Name of the Student: *Niranjan Bulchandani*

Dissertation Organisation: *Eye-O Vision Pvt. Ltd.*

Area of Dissertation: *Hospital Information System*

Attendance: *100%*

Objectives achieved: *Satisfactory*

Deliverables: *Well Organized and Completed the task within  
timeframe*

Strengths: *Hardworking, sincere & honest*

Suggestions for Improvement: *Self Initiation*



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

Date:

Place:

## **ACKNOWLEDGEMENT:**

I hereby take this opportunity to thank Mr. Subhash Bansiwala, CHRO (Eye-Q Vision) for giving me the opportunity to do my Dissertation in **Eye-Q Vision**, Gurgaon and involving me in training part of the project.

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## **Abbreviations and Keywords**

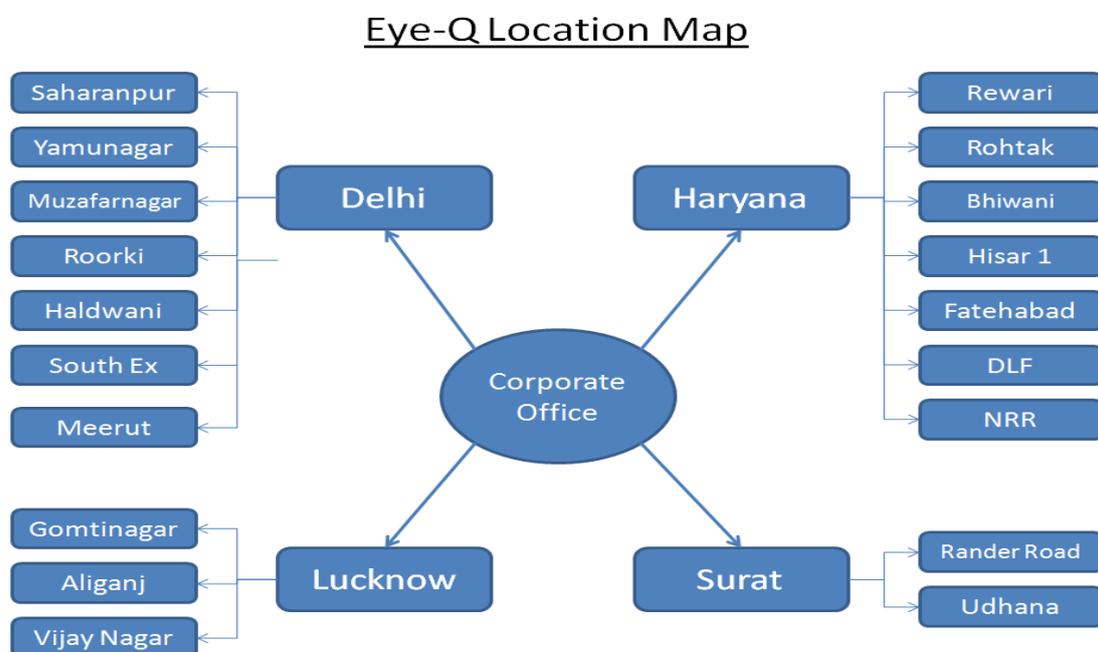
- HIS- Hospital Information System
- IPD- In-patient Department
- OPD- Out-patient Department
- Electronic medical record
- Database management system.

## Introduction

### **1.EYE-Q PROFILE:**

Eye-Q is the dynamic new code in super-speciality eye care. It covers everything, from maintaining optimum vision, preventing deterioration to correcting vision related problems. All this through its exceptional array of preventive and corrective procedures and cutting-edge practices.

EYE-Q VISOIN IS an ISO 9001-2000 registered organization operating under the leadership of our Founder and CMD- Dr. Ajay Sharma- one of the most renowned eye surgeons in India, aided by a team of specialists with rich experience in their respective specialties from top hospitals across the country.



### **Hospital Information System:**

One of the most important issues is health services. Hospitals provide a medical assistance to people. The best introduction for hospital information systems has been made in 2011 International Conference on Social Science and Humanity.

Hospital Information Systems can be defined as massive, integrated a system that supports the comprehensive information requirements of hospitals, including patient, clinical, ancillary and financial management. Hospitals are extremely complex institutions with large

departments and units coordinate care for patients. Hospitals are becoming more reliant on the ability of hospital information system (HIS) to assist in the diagnosis, management and education for better and improved services and practices. In health organization such as hospitals, implementation of HIS inevitable due to many mediating and dominating factors such as organization, people and technology.

## **2. Current IT Enviournment in Eye-Q:-**

Eye Q is a Chain of Super specialty Eye-Hospitals. Its chain hospitals are located in different parts of the Country. Being a chain of eye hospital its data is shared across the centers and locations.

In Eye-Q Hospital the Hospital Information software was developed by Lekhi Soft Pvt. Ltd. for billing, OPD/IPD management and patient registration.

It also helps in ordering pharmacy orders, acknowledging/issuing drugs and consumables, thereby stock management and billing. It also helps in result generation, retrieving results as or when required by physician.

The Hospital Information System has been implemented 4 years ago in one of the Eye-Q Center. It is developed by using SQL and LAN network novel. Database that is used to record the transaction and patient data, uses internal database structure of SQL (.mdf and .ldf files). The database size is 1-2 GB. Patient data is recorded in the database by using an unique patient registration number, e.g. 01896209, which the last 2 digits indicate the year. Registration number can be used to access different databases.

The HIS (Hospital Information System) runs in client-server system. The Lekhi (HIS) consists of several sub systems developed for each division in Eye-Q Hospital. However, the database of each sub system is integrated to central database server. Sub systems are as follows:

1. Registration Sub System
2. Appointment Sub System
3. Outpatient Sub System
4. Pharmacy Sub System
5. Medical Billing Sub System
6. Administration Sub System
7. Reports Sub System

## 8. Inventory Sub System

### 3. Problem Statement

Eye-Q Vision is growing chain of super specialty Eye hospitals. Being a growing and having various centers at different locations, the database of patients needs to be maintained centrally for decision making and other factors.

Currently the Database is not maintained centrally for that the management has realized the need of change so that potential benefits can be obtained and information can be generated centrally.

### 4. Objective

**General Research objective:** To analyze the need of change in the existing Hospital information System at Eye-Q vision Hospital.

**Specific Objective of the project:**

- To study the existing Hospital Information System.
- To identify the shortcomings, if any, in the existing Hospital Information System in the various modules.
- Scope of improvement in the existing Hospital Information System.
- Identify need of improvement or replacement of existing Hospital Information System.

**5. Literature review:** Hospital Information records and documents, LEKHI software user manual, Case study at general Hospital of RAA Soewondo.

**6. Methodology:** This research uses case study of organizations, engaged in health care. The method used is combination of quantitative and qualitative approach. The quantitative method is used to assess the performed of employees and HIS and qualitative method is used to assess the need of change or scope of improvement in the current HIS.

**6.1 Study Design-** Analytical.

**6.2 Data Collection Method:** There are two types of data collected in this study, primary data and secondary data. Primary data is taken directly from employees and management of

Eye- Q Hospital, Gurgaon. While secondary data is collected from documents owned by the Eye- Q Hospital, Gurgaon. Primary data was obtained in the following manner:

- **Interview:** Interviews were conducted with the hospital staff of two chains in Gurgaon, Haryana.
- **Observation:** The hospital environment in daily activities. This method is used to determine the situation on the ground to the process of patient consultation to departure.
- **Questionnaire:** Questionnaire is given to hospital employees, especially in the divisions that have funds and information flow. There are three categories of questions in this questionnaire, namely: knowledge on organizing hospital, tasks and functions of information technology of respondents.

The secondary data was obtained from the existing documentation. Data was also taken from reference books and journals related to the purpose of research.

### **6.3 SWOT analysis**

**6.4 Sampling:** Total 24 respondents (Administrator- 3, Commercials 6(including 2 opticians), Optometrist- 4, Pharmacy- 2, Doctors- 3, Patient Relationship Executive 6) have been chosen for the study from two hospitals in Gurgaon.

**6.5 Procedure and time frame:** This study has been conducted in the time span of 3 months. Primary data has been collected in 15 days. Hospital records have been observed and analyzed for secondary data and primary data was collected through questionnaire.

**6.6 Study Population:-**The study population has taken from employees, who are working more than one year in the hospital.

## 7. GENERAL FINDINGS:

### 7.1 ABOUT Existing HIS



In Eye-Q Hospital the Hospital Information software was developed by LekhiSoft Pvt. Ltd. for billing, OPD/IPD management and Patient registration.

It also helps in ordering pharmacy orders, acknowledging/issuing drugs and consumables, thereby stock management and billing. It also helps in result generation, retrieving results as or when required by physician.

#### Features:

**Appointment:-**This module is use to give the appointment to patients. With the help of this module we can book the appointment slot for the patients.

Weekday	SU	M	TU	W	TH	F	SA	SU	M	TU	W	TH	F	SA	SU	M	TU	W	TH	F	SA	SU	M	TU	0							
Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	T
10:30:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
11:00:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	

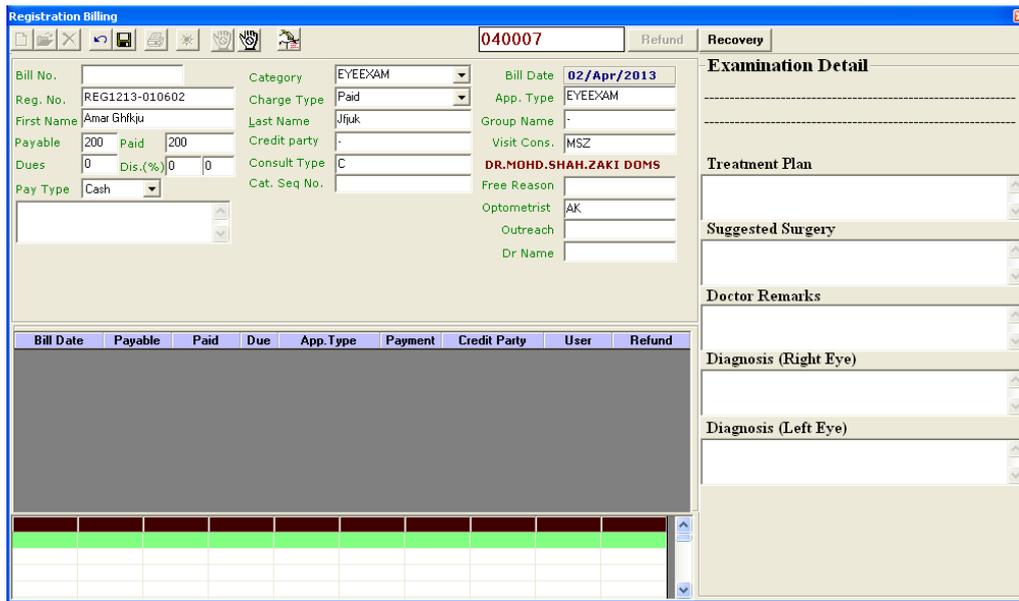
SNo	FirstName	LastName	RptTime	AR	OP	DR	CON	PH	Proc	Category	OPT	DR	CON	PPN	MRNo	Seq	Remarks	A.R. Time	Wt	PD	Dilated	VIP
53	Yakub		03:35 PM							CAMP PATIE	AJ	AKA			037936	-					N	0
57	Rukya		02:23 PM							CAMP PATIE	AJ	AKA			037935	-					N	0
56	Jamila		02:25 PM							EYEEEXAM	AK	AKA			037955	-	DONE				N	0
55	Bisambai		02:25 PM							EYEEEXAM	AFR	AKA			037953	-	DONE				N	0
54	Maksood		02:25 PM							EYEEEXAM	AJ	AKA			037927	-	DONE				N	0
53	Bull Devi		02:22 PM							EYEEEXAM	AJ	AKA			037959	-	DONE				N	0
52	Jeri		02:22 PM							EYEEEXAM	AJ	AKA			037988	-	DONE				N	0
51	Amannah		02:22 PM							EYEEEXAM	AFR	AKA			037805	-	DONE				N	0
50	Aksh		02:22 PM							EYEEEXAM	AJ	AKA			037319	-	DONE				N	0
49	Meena		02:22 PM							EYEEEXAM	AFR	AKA			037809	-	DONE				N	0
48	Harpal		02:22 PM							EYEEEXAM	AJ	AKA			037958	-	DONE				N	0
47	Baldai		02:22 PM							EYEEEXAM	AJ	AKA			037950	-	DONE				N	0
46	Waheeda		02:22 PM							EYEEEXAM	AJ	AKA			037985	-	DONE				N	0
45	Savitri		02:09 PM							CAMP PATIE	AFR	AKA			037934	-					N	0
44	Vinda	Garg	01:54 PM							EYEEEXAM	AK	AKA			037933	-					N	0
43	Jagnita		01:34 PM							EYEEEXAM	AK	AKA			037932	-					N	0
42	Salish Kumar		01:04 PM							CAMP PATIE	AFR	AKA			037931	-					N	0
41	J.P	Singhal	12:44 PM							EYEEEXAM	AK	AKA			031727	-	DONE				N	0
40	Vivek	Kumar	12:36 PM							EYEEEXAM	AK	AKA			037920	-	DONE				N	0
39	Anwari		12:30 PM							CAMP PATIE	CH	AKA			037929	-					N	0
38	Nasima		12:27 PM							CAMP PATIE	AK	AKA			037928	-	DONE				N	0
37	Phoolo		12:24 PM							CAMP PATIE	AK	AKA			037927	-	DONE				N	0
36	Champa	Devi	12:15 PM							EYEEEXAM	AJ	AKA			038899	-	DONE				N	0
35	Raja	Devi	12:02 PM							CAMP PATIE	AJ	AKA			037926	-	DONE				N	0
34	Prakshi		11:58 AM							EYEEEXAM	AJ	AKA			037925	-	DONE				N	0
33	Anshi		11:57 AM							EYEEEXAM	AJ	AKA			037924	-	DONE				N	0
32	Usha	Devi	11:44 AM							EYEEEXAM	AJ	AKA			037451	-	DONE				N	0
31	Renu	Tyagi	11:43 AM							EYEEEXAM	IC	AKA			034722	-	DONE				N	0
30	Parveen	Agarwal	11:40 AM							EYEEEXAM	IC	AKA	VFA		016332	-	DONE				N	0
29	Mohsin		11:38 AM							EYEEEXAM	AK	AKA			037923	-	DONE				N	0
28	Ramber Naing		11:32 AM							EYEEEXAM	AJ	AKA			031678	-	DONE				N	0
27	Shahid	Ph...	11:25 AM							EYEEEXAM	AFI	AKA			036244	-	DONE				N	0

**New Patient Registration:**

This module is helpful in Registration of New and old patient.

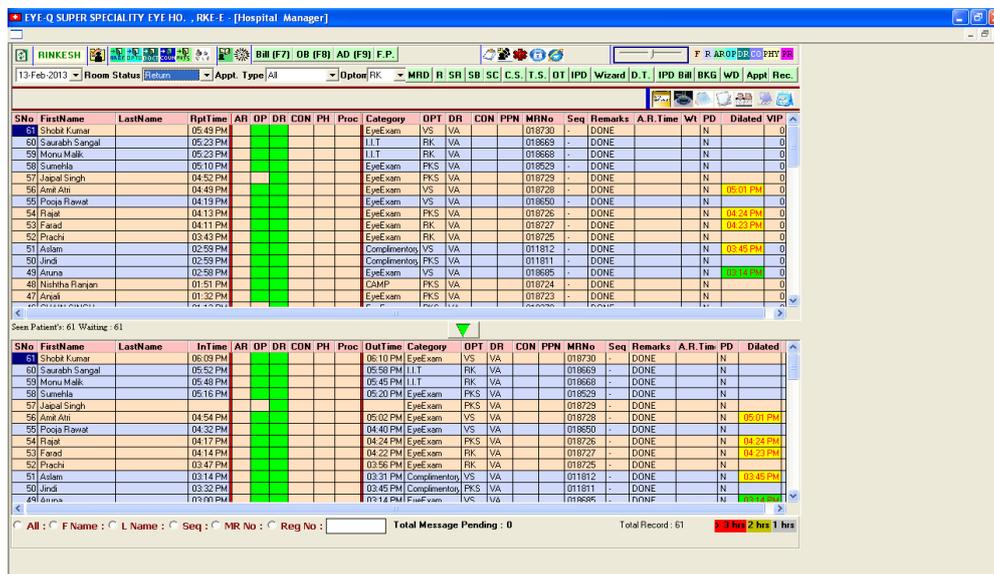
With this module we can take old patient and appointment patient data also.

This module is helpful in giving receipt for registration charges according to Consultant.



This is the screen that will show the all patient data that PRE has sent to their chamber

Characteristics:-The major characteristics of this module is that optometrist can select patient to enter the data.



This screen appears when optometrist will double click or select the patient information. In this section the optometrist will fill his/her observation and records. This page includes all the data like:

- Present complaints
- Past Ocular history
- Surgeries
- Systemic diseases if any
- Family history
- Current ocular medicine
- Allergies etc.

Optometrist File of: Monu Malik : 24/Male ,Reg No:- REG1213-007970,Details on:13/Feb/2013

Auto Ref Transfer AR Retinoscopy AGT IOP Eye Doctor Post-OP Sheet Appt Booking RK

Exam Record 1 | Exam Record 2 |

Visit Date	UCVA				BCVA				WITH GLASS				IOP	
	DISTANCE		NEAR		DISTANCE		NEAR		DISTANCE		NEAR		OD	OS
	DATE	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS	
13/Feb/2013	6/6	6/6	N6	N6	-	-	-	-	-	-	-	0	0	
11/Feb/2013	6/6	6/6	N6	N6	-	-	-	-	-	-	-	0	0	

**Present Complaints :** \*\*\*  
Complaint: FOR PMT, Dura: Unit, Site: BE

**Past Ocular History :**

**Current Ocular Medication :**

**Family History :**  
 Glaucoma  Con. Cat.  DM  
 HTN  Ret. Disease  Par. Con.  
 Whether Pregnant

**Surgeries:**

Surgey Name	Eye	Surge Date	Surgeon Nam	Result
none				

**Systemic Diseases:**

Disease Name	Dur.	Unit	Control	Medication
none				

**Old Glasses**

Type of Glass	<R>	Sph	Cyl	Axis	<L>	Sph	Cyl	Axis
Use								
Add.								

**Allergies** - General - Medicine - Adverse Reaction

Delayed Remarks: [ ] If Dialated: [ ]

Anti-Glaucoma Rx:  OD  OS

B.P.: [ ] Birth History: [ ]

Check by Opto / Student: RINKESH

Exam 2: This page includes patient's data like:

- Refraction details
- NCT Details
- Vision of the patient without glasses, with glass, with pin hole, best correct
- Procedure details like-A scan, B scan, C lens, Squint, IOL power, Opto test,

Test Details e.g.- Duchrome Test, WFDT test, Convergence, Shirmer test, Cover Test,

Optometrist File of: Monu Malik : 24/Male ,Reg No: - REG1213-007970,Details on:13/Feb/2013

Auto Ref Transfer AR Retinoscopy AGT IOP Eye Doctor Post-OP Sheet Appt Booking RK

Exam Record	1	Exam Record	2	B-Scan	PI/PR	Right Eye	Left Eye	Dilated Acceptance
Distance	OD OS	OD OS	OD OS	A-Scan				Spl. Cyl. Axis V/A Sp
Unaided	6/6 6/6	6/6 6/6	N6 N6	C Lens				OD OS
With Glass	- -	- -	- -	Squint				Remarks
With Pinhole	- -	- -	- -	IOL Power				
Best Correct	- -	- -	- -	Occ-Prosthesis				
Remarks				Low Vision				
ENGLISH				Opto Test				
Is Post Op.	None							
Test Name	Right Eye							
Pupillary Diameter								
Scotopic								
Photopic								
Spacular Microscopy								
EOM								
Amuler Grid								
Color Vision								
Pachymetry								
RAPD								
KI(Reading)								
Undilated	OD OS							
Remarks	NEEDS DILATED R R							
For Dist.	Spl. Cyl. Axis V/A Prism NV							
Add								
In.M.Dist								
Retiackage Error								
Fogging	Sph Cyl Axis V/A							
Dist	+0.50							
Near	6/6 +0.50							
Glasses Prescription	Spl. Cyl. Axis Prism V/A							
For Dist.								
Add								
In M.Dist								
Use								

Eye Examinations Details Of Monu Malik (REG1213-007970) - 24 / Male

SCR AR OptFile O.S. Summary S.All S S.W. OLD SUMM EOM Booking Post OP Diabetic(Y/N)

DATE	UCVA				BCVA				WITH GLASS				IOP			
	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS
13/Feb/13	6/6	6/6	N6	N6	-	-	-	-	-	-	-	-	0	0		
11/Feb/13	6/6	6/6	N6	N6	-	-	-	-	-	-	-	-	0	0		

Complaints: VA VA

Surgical History/Diseases

Provisional Diagnosis: Right Side C Both Left Side C Advice

Ex. Finding

	N	RE	N	LE	C
Lid					
Adnexa					
Conjunctiva					
Sclera					
Ant.Chmb.					
Cornea					
Iris					
Pupil					
Lens					
Fundus					
Vitreous					
Retina					
Opt.Ne /CDR					
Macula					
Tension	0		0		
Syrringing					
Image					

Prognosis: Nutritional advice Referred to Other Consultant Remarks English IOL

Collection Report	
<b>From</b> <input checked="" type="checkbox"/> 02-Apr-2013 <b>To</b> <input checked="" type="checkbox"/> 02-Apr-2013	
<input type="radio"/> OPD Patient Summary <input type="radio"/> Both Source Wise <input type="radio"/> Chargewise <input type="radio"/> Category user wise <input type="radio"/> Category wise <input type="radio"/> GenderWise <input type="radio"/> Adults/Paediatric <input type="radio"/> Adults / Paediatric Individual <input type="radio"/> OptometristWise <input type="radio"/> OptometristWise Summary <input type="radio"/> Optometrist Wise (LOGIN) <input type="radio"/> OptometristWise Summary (LOGIN) <input type="radio"/> Unseen Patients <input type="radio"/> Cons-Cross Cons Report <input type="radio"/> Trainee Consuting Report <input type="radio"/> Cons Wise Summary <input type="radio"/> Cons-Cross Cons Detail <input type="radio"/> Remark Not Given	<input type="radio"/> OPD Reporting Datewise <input type="radio"/> OPD Reporting Opto Wise <input type="radio"/> OPD Reporting DCT wise <input type="radio"/> OPD Reporting Conswise <input type="radio"/> OPD Reporting Phywise <input type="radio"/> Followup Collection Date Wise <input type="radio"/> Patient Tracking Record <input type="radio"/> Patient Tracking Summary <input type="radio"/> Patient Wise Tracking <input type="radio"/> Patient Wise Tracking History <input type="radio"/> User Wise Tracking <input type="radio"/> User wise Collection <input type="radio"/> User wise Collection Detail <input type="radio"/> Free Reason (Consultancy)
<input type="radio"/> OPD Final Disease <input type="radio"/> OPD Final Disease Detail <input type="radio"/> OPD Remark Department Wise <input type="radio"/> DoctorWise <input type="radio"/> OPD Diabetic List <input type="radio"/> Opd Pediatric With Injury <input type="radio"/> Opd Pediatric With Non-Injury <input type="radio"/> Opd Adult With Injury <input type="radio"/> Opd Adult With Non-Injury	<input type="radio"/> Diagnosis Wise Detail <input type="radio"/> Diagnosis Wise Summary <input type="radio"/> Diagnosis Detail Dr Wise <input type="radio"/> Diagnosis Summary Dr Wise <input type="radio"/> Diagnosis Head wise Summary <input type="radio"/> Diagnosis Summary Monthly  <b>ICD CODE</b> <input type="text"/>
<b>Final Disease Name</b> <input type="text"/>	<input type="button" value="Today Collection Detail Wise"/>
<input type="button" value="Show"/> <input type="button" value="Cancel"/>	<input type="button" value="Today Collection"/>

## **7.2 SWOT Analysis**

SWOT Analysis includes Strengths, Weaknesses, Opportunities and Threats. Strength and Weakness are internal factors within the organization. Meanwhile, Opportunity and Threats are factors that come from outside the organization. Obtained SWOT results can be used to formulate a systematic strategy of the organization. In this case, the results of the SWOT analysis will be used as a strategy of need for change the existing and implementation of the new Hospital Information System.

### **Strengths that exist at hospital are:**

1. The sharing of information is habit in employees.
2. Organization has enough time for doing socialization and HIS implementation activity.
3. The existence of clear standard operating procedures (SOP).
4. The existence of activity review by supervisors.

### **Weaknesses that exist at hospital are:**

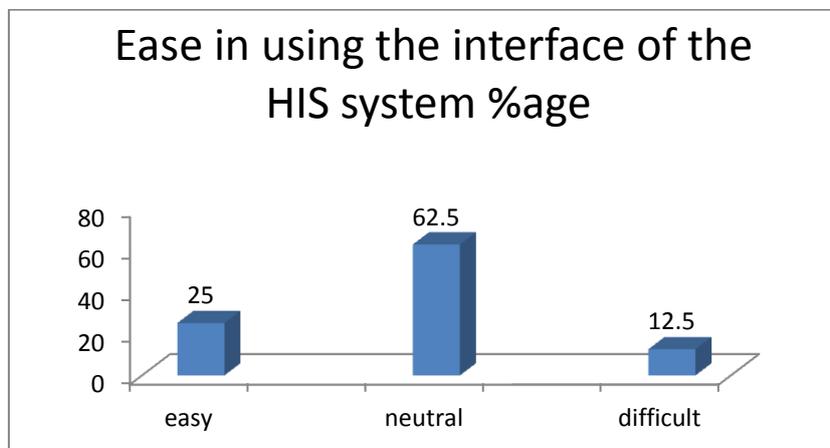
1. There is only 5 IT staff in all center.
2. Many procedures are not IT based.
3. Complete vendor dependency of existing HIS.
4. No authorization process in making GRN and other contents.
5. No spellings check facility into HIS.
6. Manual steps are more.
7. Patient records are not available at other centers and vice versa.
8. Work Duplication is very much.
9. Lack of confidentiality.
10. No alert system.
11. It is a client server based system anyone can change the data.

### **Opportunities that exist in the hospital are:**

1. There are a lot of patients who visit hospital from various places.
2. Organization is fast growing organization.
3. Standardization of operation and functioning.
4. Determine process gap i.e., manual/electronic, support/Infrastructure, requirement/  
Manpower

**Threats that exist in the hospital:**

1. Level of acceptance of HIS is very low.
2. Difficulty in integration of old records.
3. Privacy of records.
4. Hardware Limitations.

**7.3 Findings****For Commercial**

It has been analyzed in research that commercial executive, pharmacist and optician have found the ease of using the lekhi as like.

25% said that lekhi is very easy to use and there is no difficulty in using HIS. 62% of commercials said that lekhi is neutral to use there is no much difficult thing in it to use.

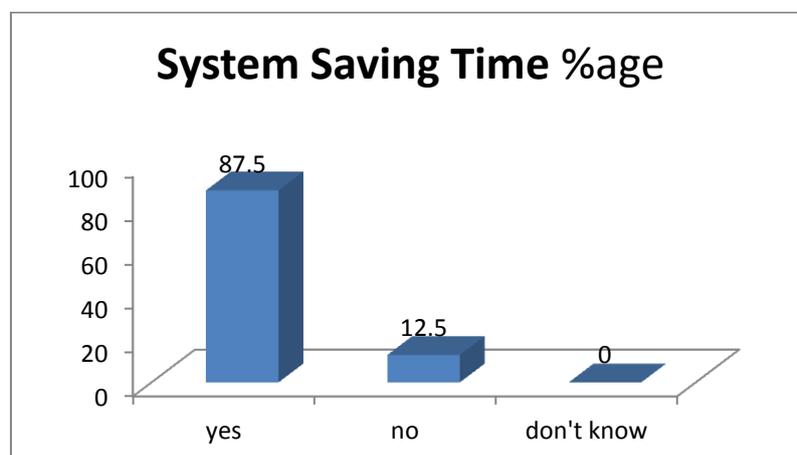
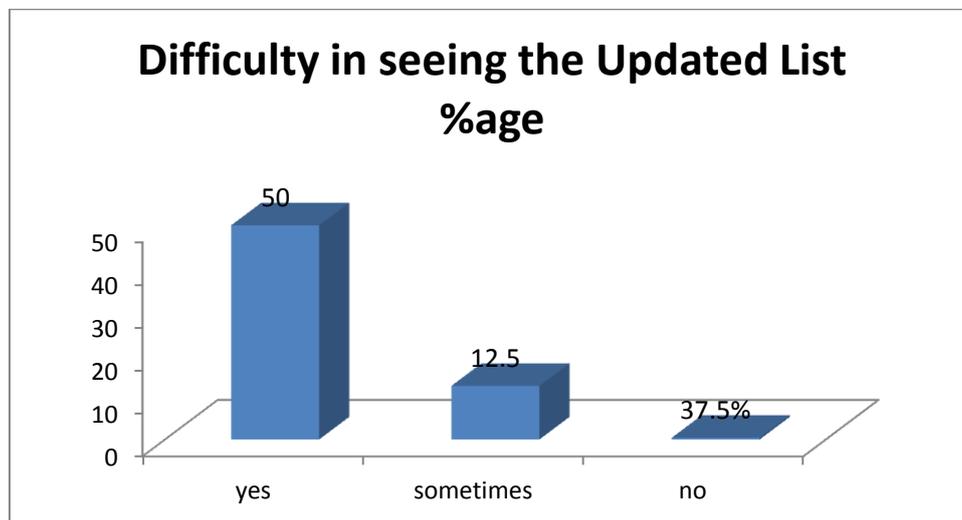
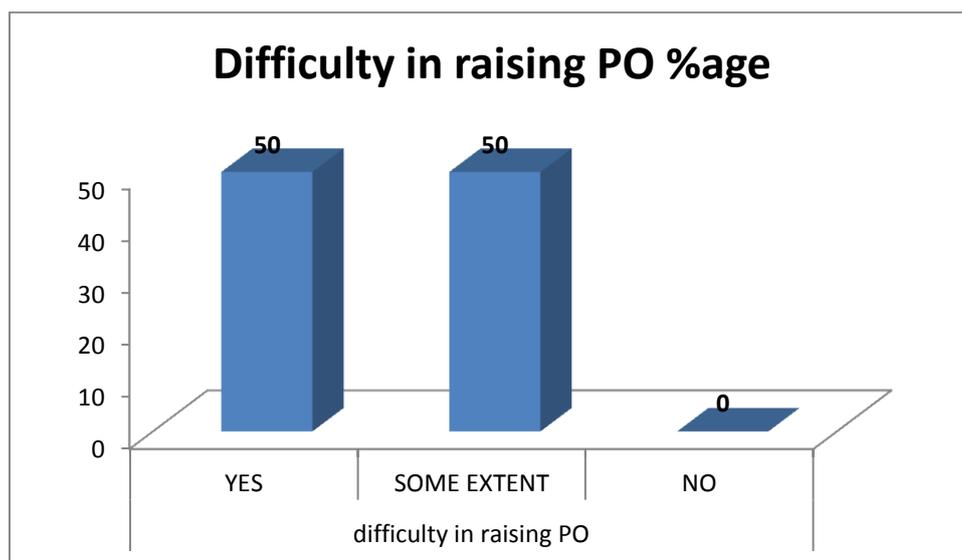


Figure show that 87.5% commercials / pharmacy and opticians has given their viewed that the existing system that is running currently is saving their time and 12.5% staff of commercial , pharmacy and said that system is not saving their time.

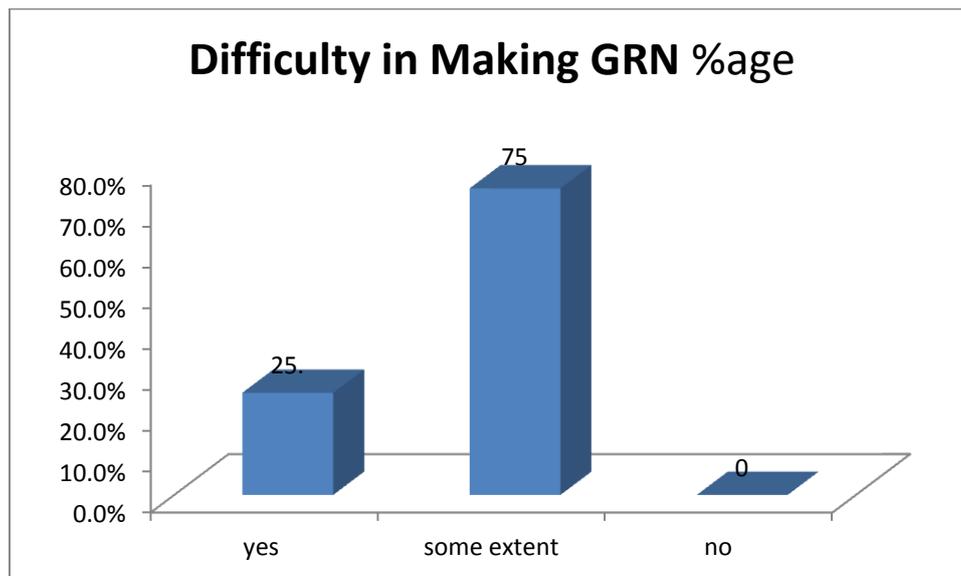


It has been analyzed from the research that 50% of commercial, pharmacy and opticians are agreed that they are facing difficulties in seeing the updated list of product , investigation and procedures list.



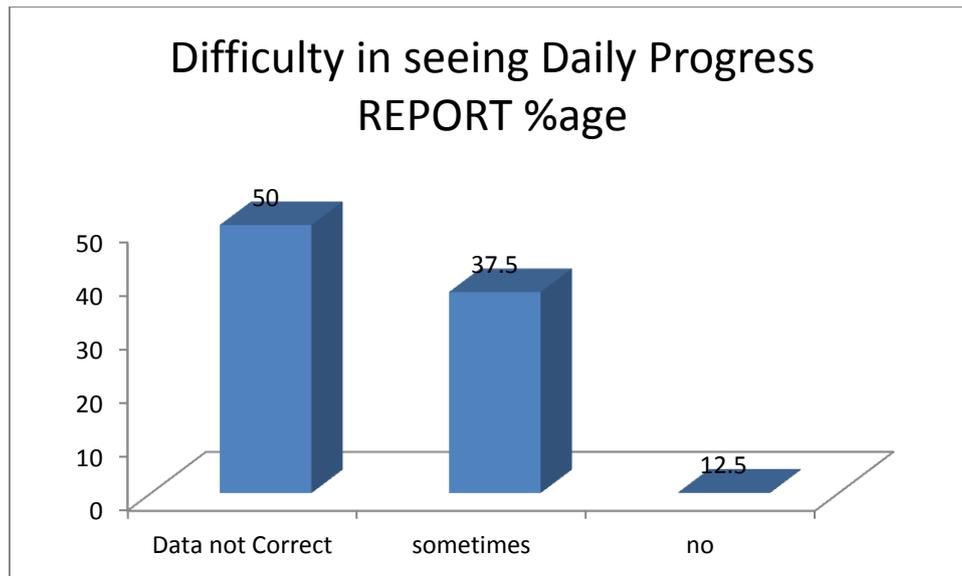
This figure shows that 50% of commercial staff are facing many difficulties in raising PO(purchase Order) and the 50% has given their views that they are facing difficulties up to some extent .

The reason that they are facing difficulties in raising PO is that the prices that they had entered were not been editable and sometimes it sometime it goes blank.



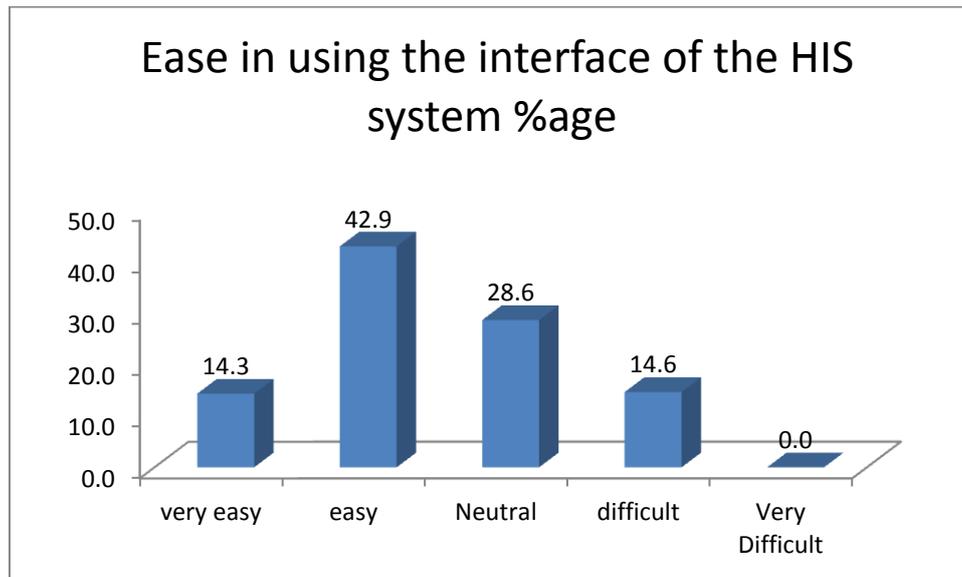
It has been analyzed by research that 25% commercial, Pharmacy and opticians said that they are facing many difficulties in making Goods Receipt Note. And 75% commercial, and pharmacy staff said that they are facing the difficulty up to some extent in making GRN.

The major difficulties that they are facing GRN because the person that is entering the data is not able to edit the bill no manually.

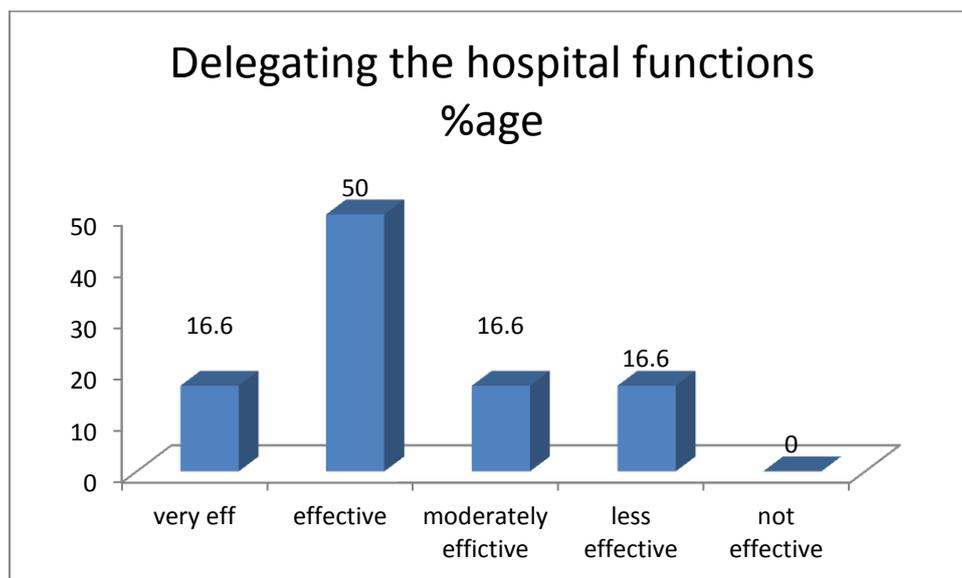


It has been analyzed in research that 50% commercial staff has given their views that Data from daily progress report is not correct and 37.5% commercial staff sometime facing difficulties in seeing the correct data from daily progress report and 12.5% commercial staff doesn't have any problem with seeing the daily progress report.

## For Clinicians

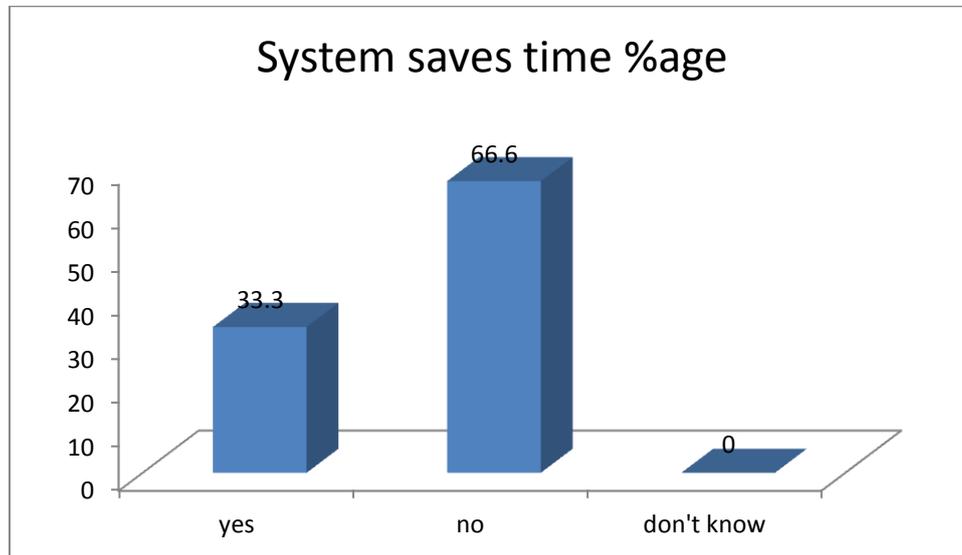


It has been analyzed in research that 14% clinicians said that the existing HIS is very easy to use and they don't have any difficulty to use this. 42.9 % clinicians have said that HIS is easy to use. 28.6 % clinical persons have neutral use with it and 14.6% clinicians have difficulty the use with it and none of the clinician has been said that existing HIS is very difficult to use.



It has been analyzed in research that 16.6% have agreed that the existing Hospital information System that is running is very effective and it is delegated to run the hospital function smoothly.

50% people of clinicians have agreed that the existing Hospital Information System is effective and delegated the Hospital functions. 16.66% clinical staff said that existing HIS is moderately effective and 16.67% clinicians have said that it is not effective.



It has been analyzed by research that 33.3 clinical persons agreed upon that current HIS system saves their time and 66.67 clinical staff given their opinion that Current HIS System doesn't save their time.

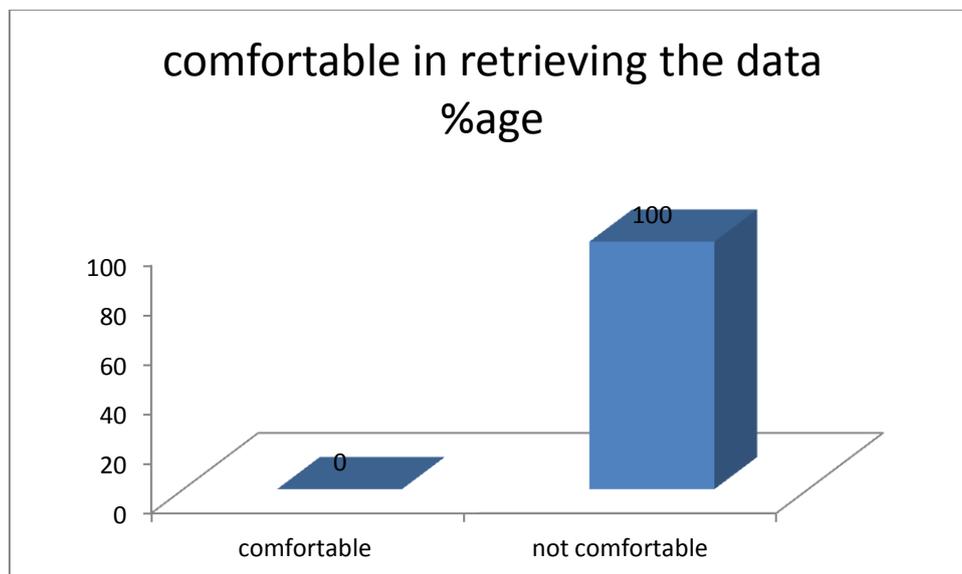
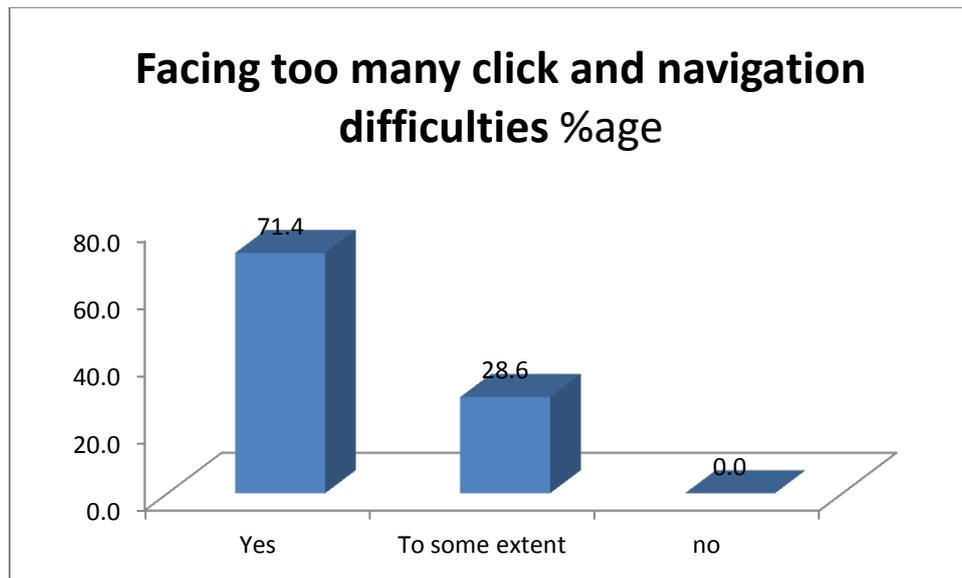
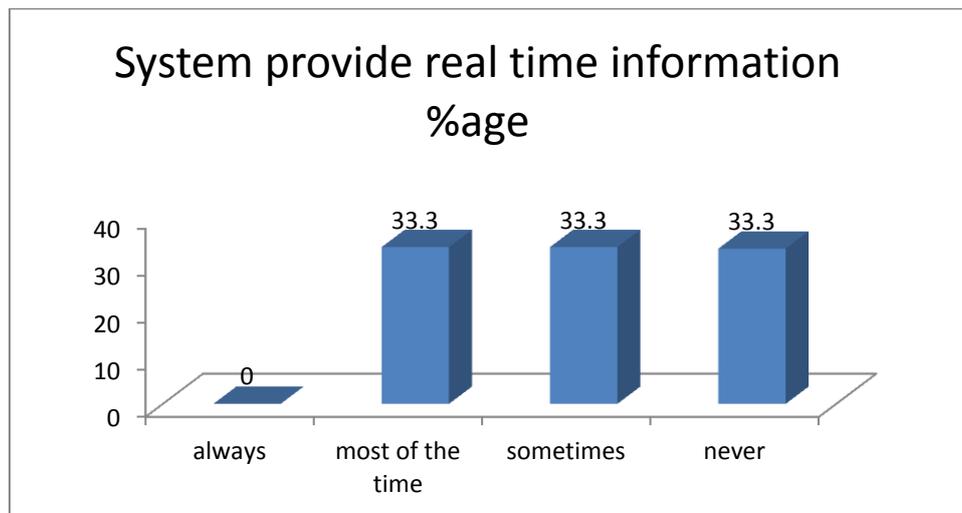


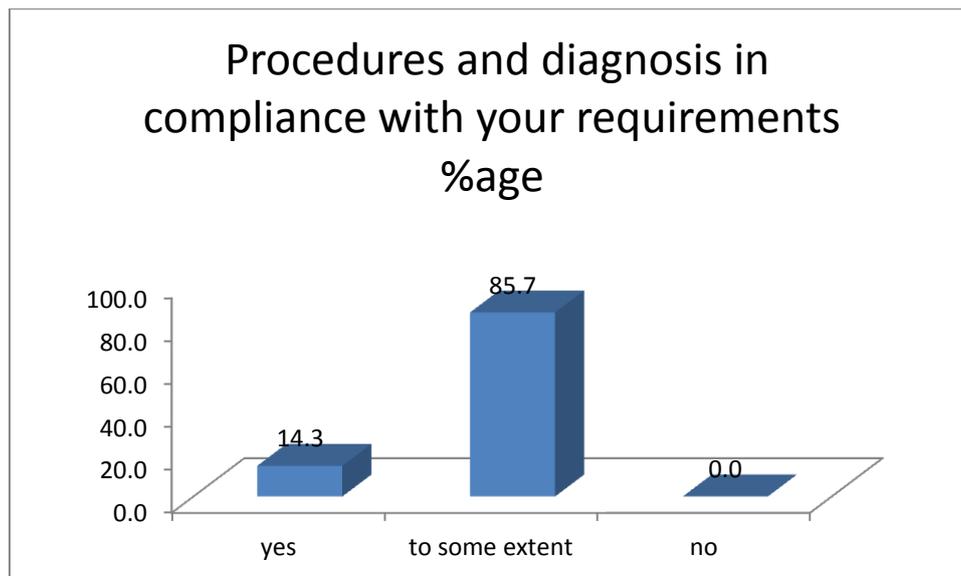
Figure shows that none of the clinicians had agreed upon that they are comfortable in retrieving their old patient data.



It has been shown in research that 71.4% clinical staff facing too many click and navigation difficulties and that shows that they are facing too much time consuming deficiencies.

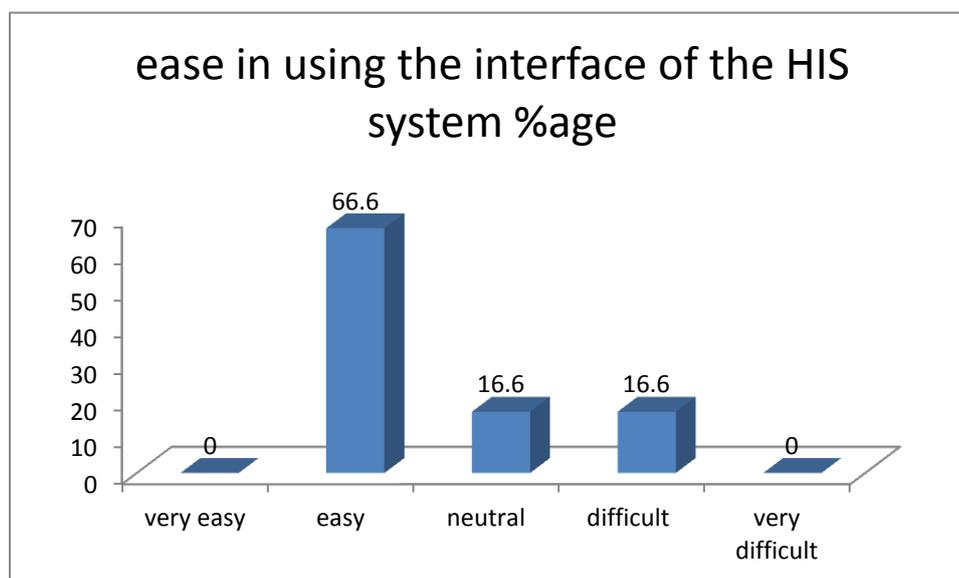


It has been analyzed in research that in total no of clinicians 33.3% agreed upon that current HIS is providing real time information most of the time. 33.3% clinical staff agreed upon that System provide real time information sometime and 33.3% clinicians said that Current HIS System doesn't provide real time information.

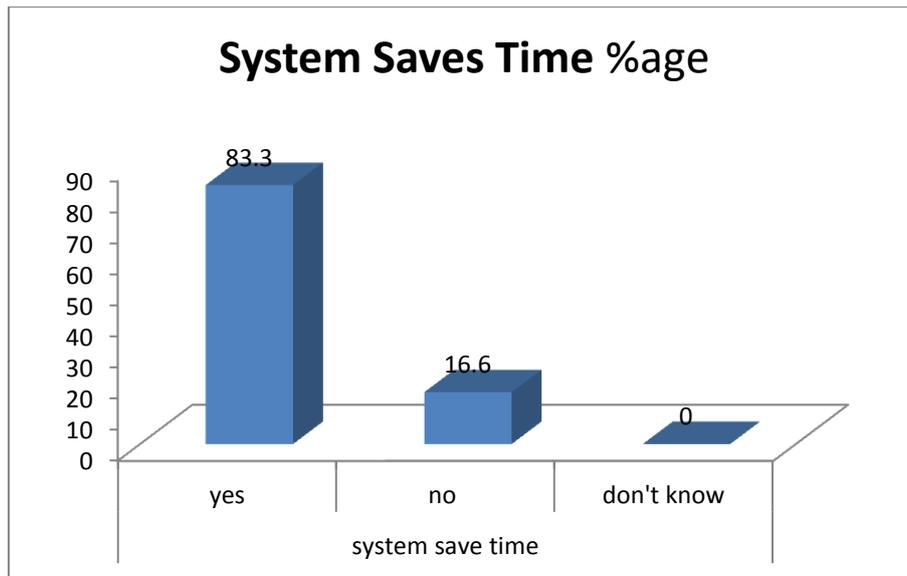


It has been analyzed in research that 14.3% clinical staff said that the procedures and diagnosis that is there in HIS is comply with their requirement. And 85.7% clinical staff has said that up to some extent procedures and diagnosis is comply with their requirement.

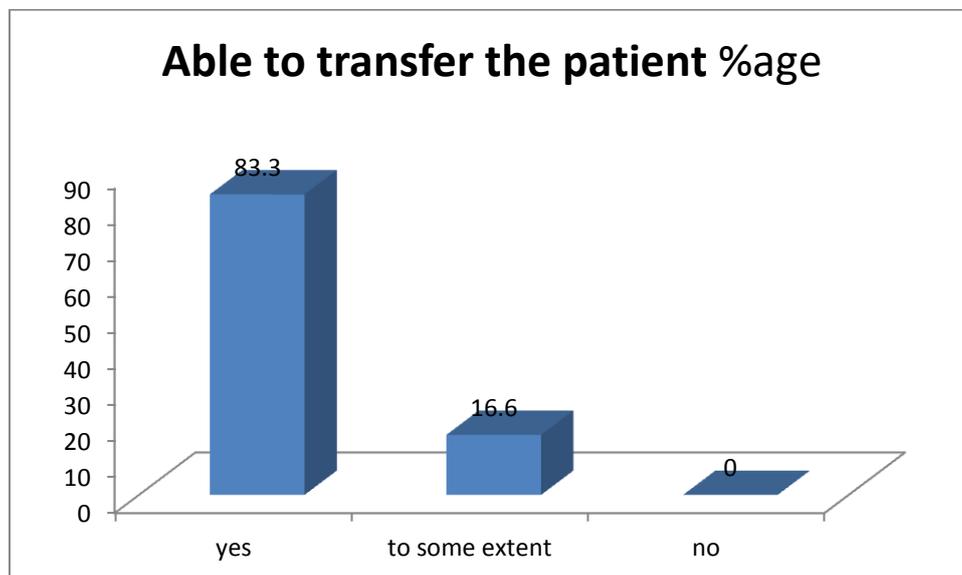
#### **For PRE's**



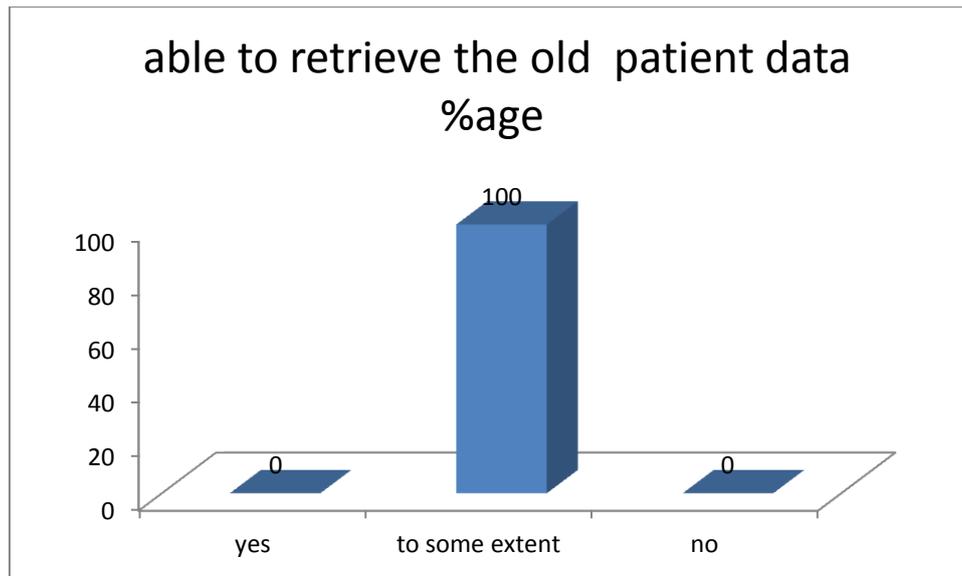
It has been found in research that with interface usability of current HIS the 66.6 % PRE staff said that it is easy to use. And for 16.6% PRE's it is neutral to use. And for 16.6% PRE's staff it is difficult to use with it and none of the PRE's staff said that it is very easy and very difficult to use.



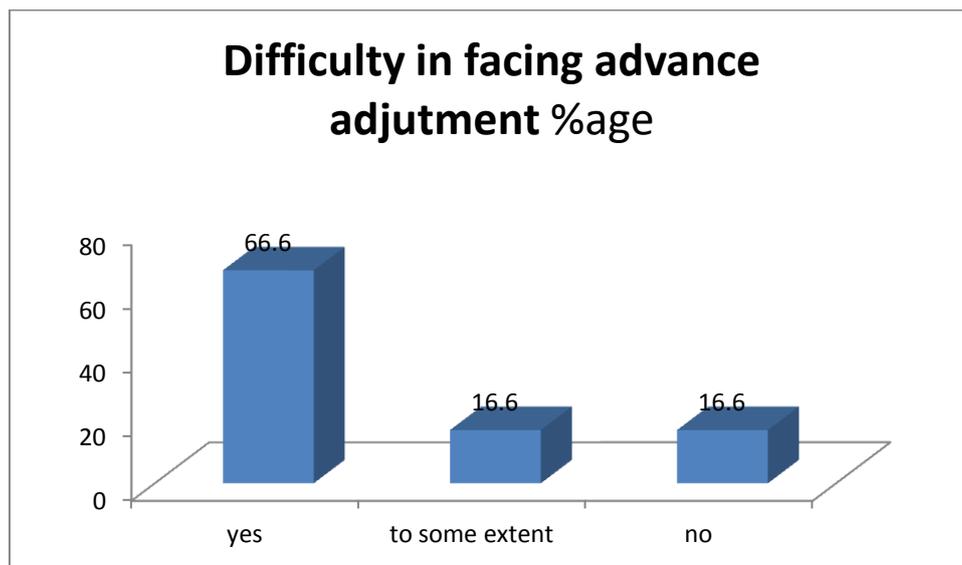
It has been analyzed in research that 84% PRE’s thinks that the HIS saves there time in daily hospital functions and 16.6% PRE staff has said that the current information system is delaying their work because of some reasons.



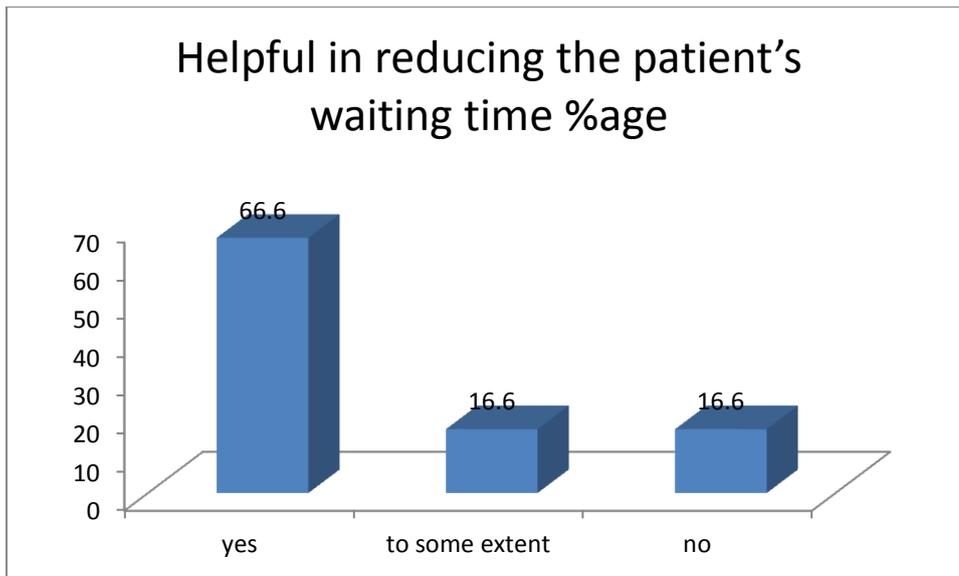
It has been analyzed by the research that 83.3% PRE staff able to transfer the patient easily through HIS and they don’t have any difficulty to transfer their patient. From the PRE ‘s staff it has been find that 16.7% staff is able to send the patient data with some extent of difficulty.



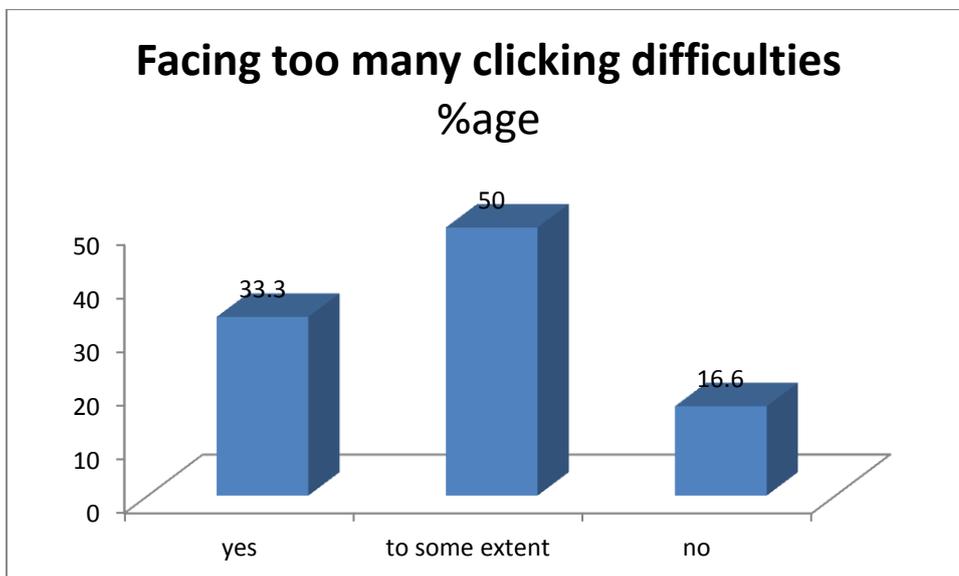
It has been find in research that all the PRE staff was able to retrieve the patient data smoothly and they don't find any difficulty to use with this feature.



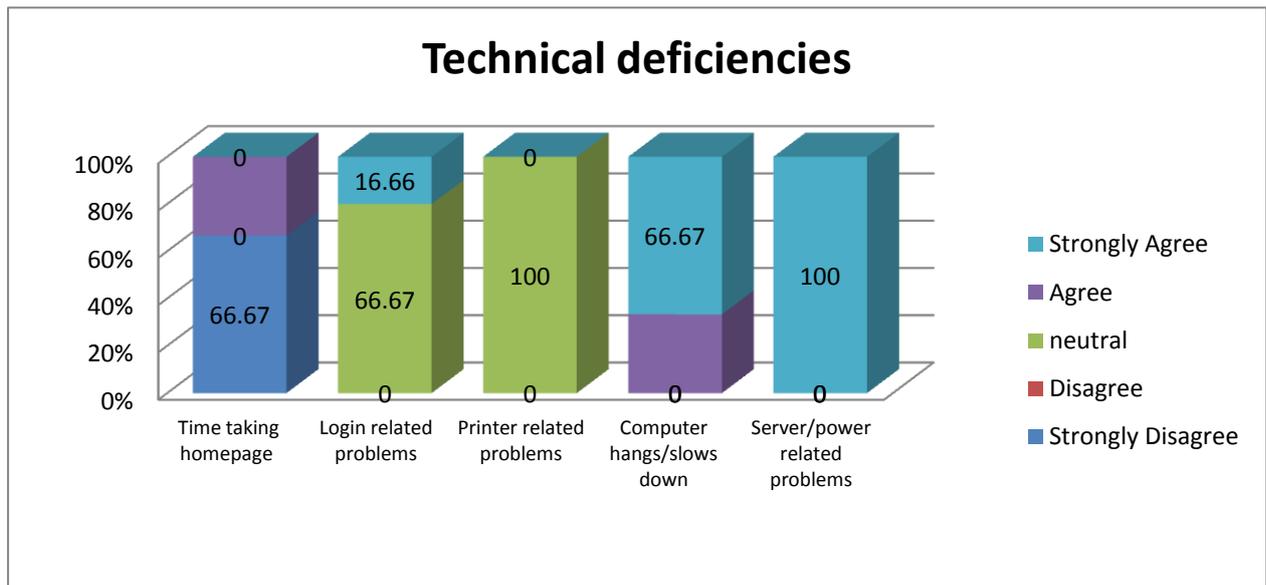
In reference of the taking advance it has been analyzed in research that 66.6 % PRE staff had facing the difficulties with taking advance from the patient. Other half of the staff 16.6%PRE's find some difficulty and other 16.6% wasn't found any difficulty making advance adjustment for the patient and for their point of view the current HIS is good for the taking advancement process.



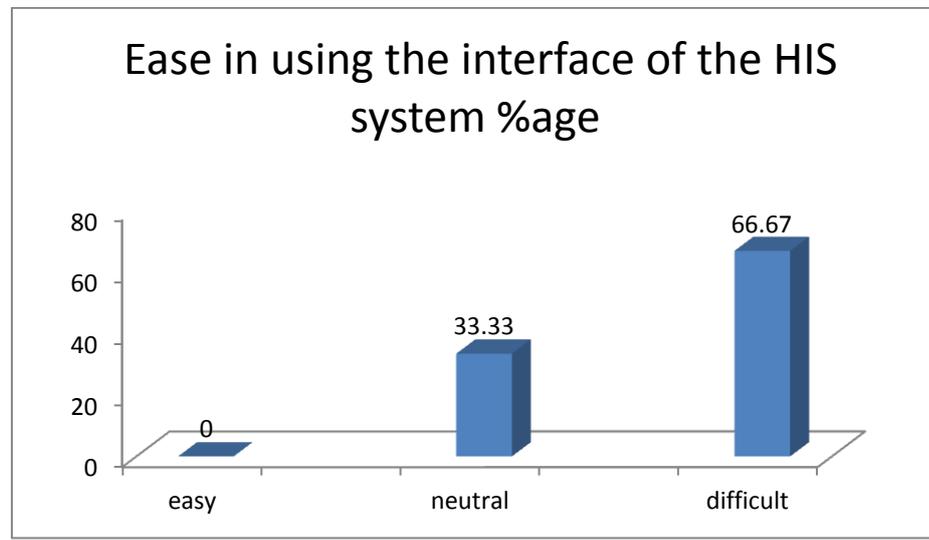
With reference to reducing the patient waiting time it has been analyzed that 66.6% PRE's said that Current HIS is helping their time to reduce the patient waiting time effectively. And from other remaining staff the 16.6% staff have given their views that current HIS is reducing patient waiting time up to some extent. And for other 16.6% PRE staff said that existing HIS doesn't helps to reducing patient waiting time.



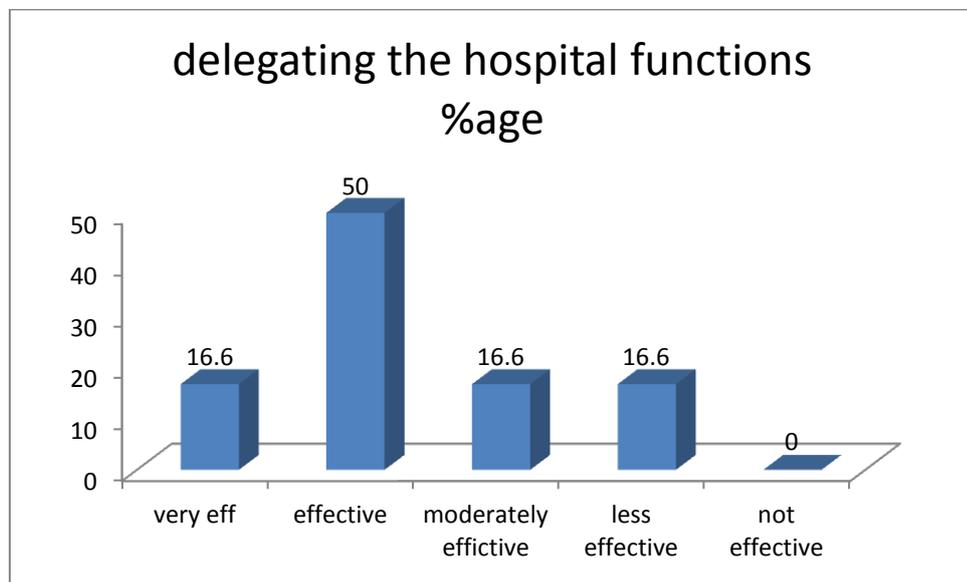
In context of clicking difficulties the PRE's staff has given their views that the current HIS has too many clicking . from the PRE's staff the 33.3% said that they are facing clicking and navigation difficulties. And for 50% PRE's staff have given their views that they are facing difficulties in clicking and navigation in HIS up to some extent .and 16.6% PRE staff said that they don't have any difficulty in click and navigation into HIS.



It has been analyzed in research there are some basic technical deficiencies in Lekhi. Like time taking of homepage 66.6 strongly agreed that they are it taking too much time in opening the home page. And 33.3% were agree that sometime it is taking time in opening the homepage. For Login related problems 66.6 person are neutral thought and 16.6 PRE's staff are strongly agree. For Printer related Problems all the PRE's Staff have neutral thoughts. For computer hanging problems 66.6% are strongly agree that are facing problem in computer slows down and computer hangs down. And 33.3% were agreed that they are facing computer hang down problem. For server related problem all the PRE staff have strongly agreed that they are facing too much difficulties in connecting the server.

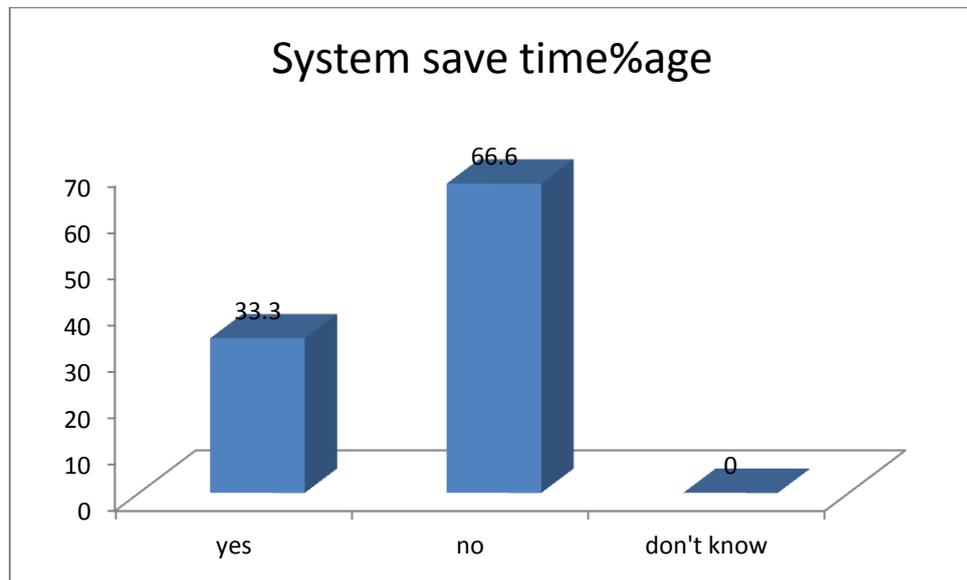
**For Administrators:**

It has been find in research that with interface usability of current HIS the 66.67 % admin staff said that it difficult to use. And for 33.33% PRE's it is neutral to use. None of the Admin staff of hospital said that it is very easy and very difficult to use.

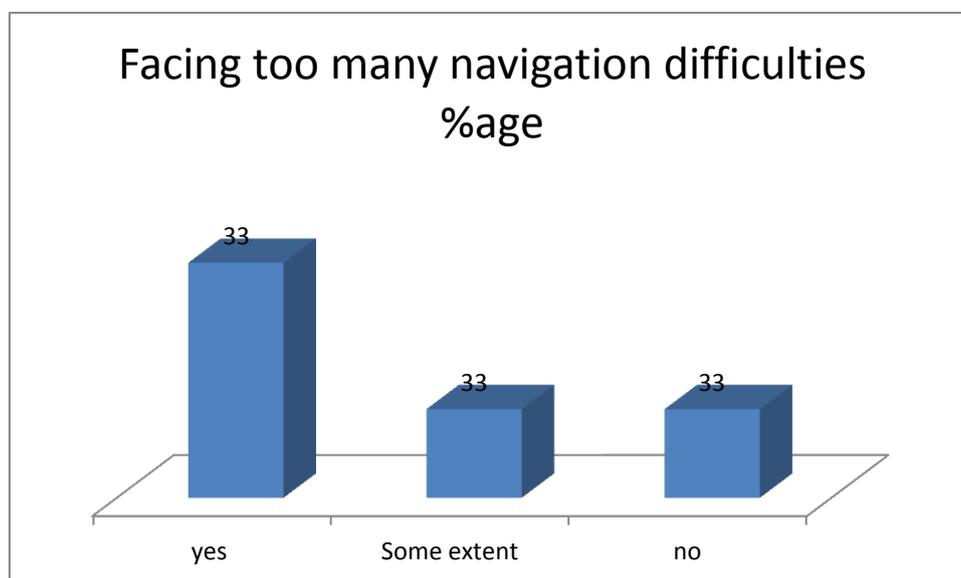


It has analyzed in researched that 16.67% have agreed that the existing Hospital information System that is running is very effective and it is delegated to run the hospital function smoothly.

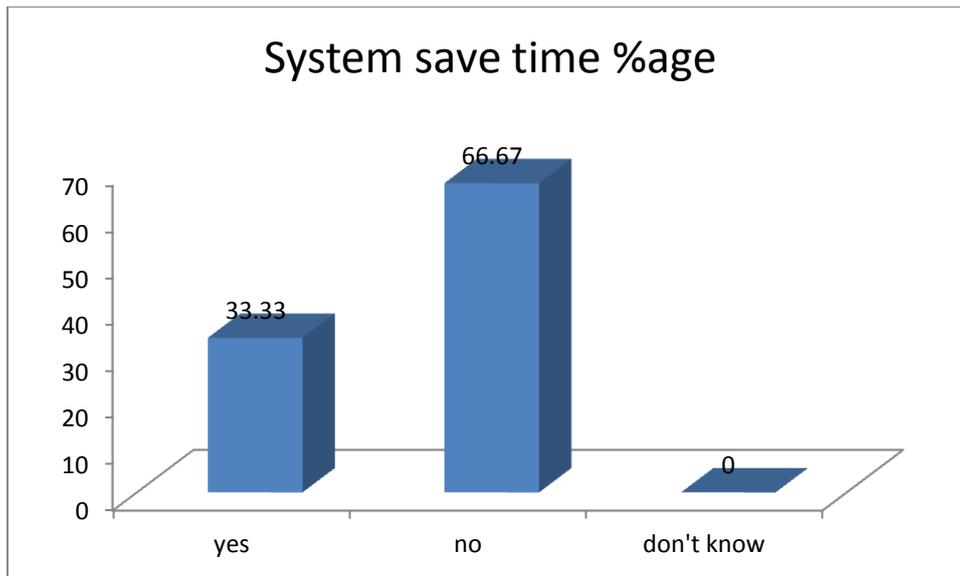
50% people of admin staff have agreed that the existing Hospital Information System is effective and delegated the Hospital functions. 16.6% admin staff said that existing HIS is moderately effective and 16.6% admin staff have said that it is not effective.



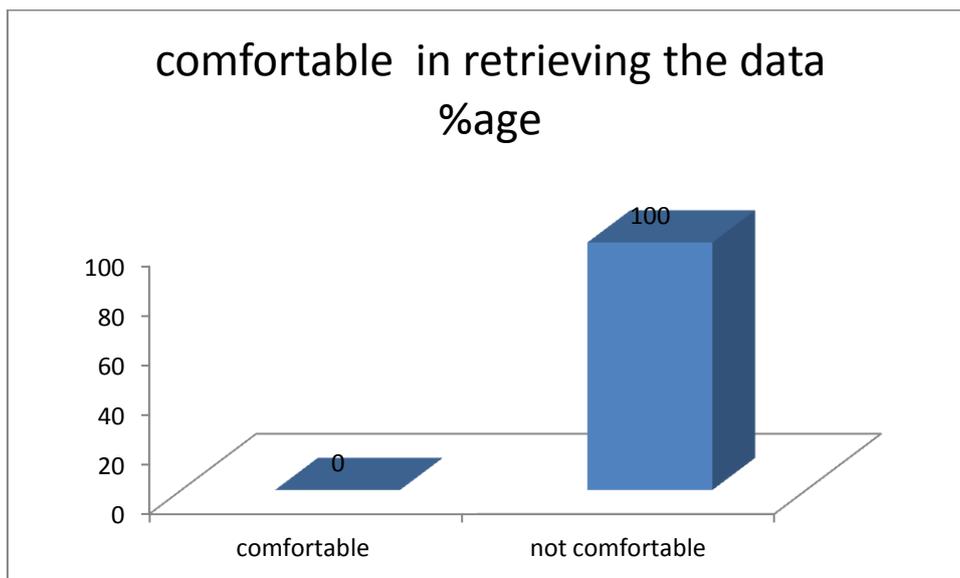
It has been analyzed in research that 33.3% admin staff thinks that the HIS saves their time in daily hospital functions and 66.6% Admin staff has said that the current information system is delaying their work because of some reasons.



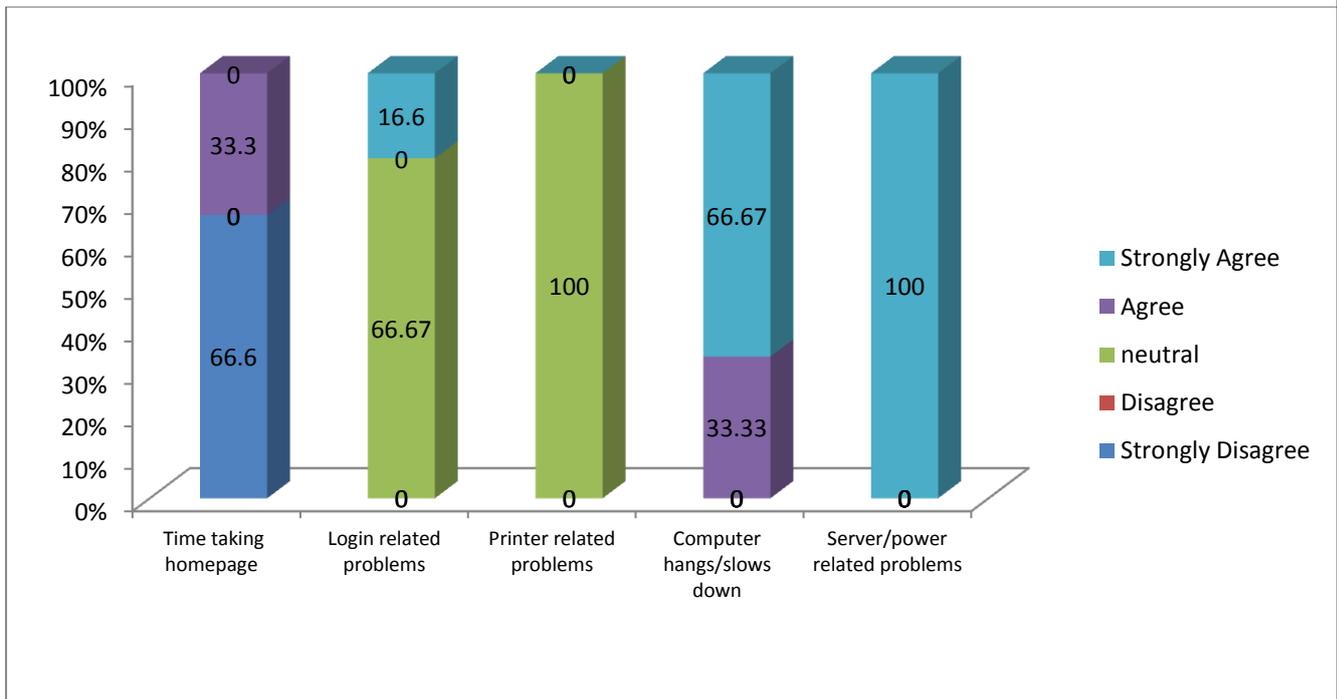
It has been analyzed in research that in facing of navigation difficulties the percentage is same for all 3 aspects that yes, no, to some extent.



It has been analyzed in research within admin staff 33.33% staff are agreed that current HIS saves their time and 67.67% Staff has given their views that system doesn't saves their time.



It has been analyzed in research that none of the administration staff are agreed that current HIS system saves their time.



## **8. Discussions:**

### **A. The Current IS/IT Condition at Eye-Q Vision.**

The Hospital Information System has been implemented before 4 years ago in one of the Eye-Q Center. It is developed by using SQL and LAN Network Novel. Database that is used to record the transaction and patient data, uses internal database structure of SQL(.mdf and .ldf files) . The database size is 1-2 Gb. Patient data are recorded in the database by using an unique patient registration number, e.g. 01896209, which the last 2 digits indicate the year. Registration number can be used to access different databases.

The HIS (Hospital Information System) runs in client-server system. The Lekhi (HIS) consist of several sub system developed for each division in Eye-Q Hospital. However, the database of each sub system is integrated to central database server. Lekhi consists of the following sub systems:

1. Registration Sub System
2. Appointment Sub System
3. Outpatient Sub System
4. Pharmacy Sub System
5. Medical Billing Sub System
6. Administration Sub System
7. Reports Sub System
8. Inventory Sub System

### **B. Advantages and Disadvantages of Current Information System**

In order to find the need the change of existing Hospital Information System, there is a need to find the Strength and weakness of current Hospital Information System.

#### **Advantages of Lekhi are:**

1. Lekhi connects clients via a local network cable to almost all parts of the hospital.
2. Lekhi is user access based.

#### **Weaknesses of the Current System:**

1. HIS in Eye-Q Hospital is client server based system. Hence, sometimes data of other patients was not available at the required moment.
2. Lekhi's menus are very complex, in order to go to the initial menu; the users have to go through several menus. This process is very much time consuming compared to the drop-down menu model which usually exists at current desktop applications.

3. No authorization process in making GRN and other contents.
4. No spellings check facility in HIS.
5. Manual steps are more.
6. Patient's records are not available at different centers.
7. Work Duplication is very much.
8. Lack of confidentiality.
9. No alert system.
10. It is a client server based system anyone can change the data.

**The usability of Lekhi:**

There are respondent's answer to question about usability of lekhi about its interface. For PRE staff and clinical staff its entire interface is easy to use and they are not facing many difficulties with the interface. For commercial staff the interface of HIS is neutral to use but for admin staff the interface of lekhi is difficult to use.

**For retrieving the Data:**

In terms of retrieving the data the result has been shown for most PRE's were satisfied and they said that from lekhi we are able to retrieve the data up to some extent.

From report retrieving point of view none of the administration staff has agreed that system is generating the correct report.

**For Commercial purpose:**

In commercial part the commercial executives are facing continues difficulties in making Purchase orders and Goods receipts note. In purchase order the last purchase price is not picked up by lekhi. The optical and pharmacy persons are facing continues difficulties in seeing price list. The commercial staff is continuously facing the difficulties getting the daily progress report. In reports it is not retrieving the correct data. In daily progress reports, the amount that is showing is not correct.

**Cash Flow Reports**

The cash flow that is managed by existing HIS is not correct. The staff is continuously facing the difficulties in mapping the cash flow. In taking advance for the other center, the PRE's are facing much difficulties because of decentralized system the PRE need's to enter the data into HIS for other category. This results into redundancy of the data.

**Patient transfer**

In flow of the patient transfer the PRE's staff is not facing much difficulty to transfer the patient. The optometrist and doctor and easily find to transfer the patient.

**Technical Deficiencies**

In technical part the hospital staff is facing some difficulties like login, printer and time taking home page, computer hangs and server connectivity related problem. In existing HIS, PRE's and clinicians are facing too much technical difficulties and this will results in time consuming.

**System Saving Time**

In reference to system saving time the hospital staff has given their views that system doesn't save their time. With reporting point of view the reports are not correct the commercial staff are preparing their reports manually for decision making.

**Clinical Analysis**

The clinical staff is facing too many difficulties in doing their work for ex. The procedure and diagnosis that they have to enter in HIS needs modification from their point of view the clinical staff are satisfied up to some extent.

The clinical staff are not much satisfied in retrivewing the old patient data. They have given their views about old data that the patient data is not correct and there is no standard in current HIS.

**9. Conclusion:**

This research study is aimed to formulate suitable change management need for change existing of Hospital Information System to new Hospital Information Systems. Based on this research, we can conclude the followings:

1. There is individual resistance that is relatively in small amount for change of current Hospital Information System.
2. For commercial purpose the commercial executives and opticians are facing difficulties in cash receipt and report generation.
3. In advantage points the PRE's are comfortable with existing HIS (Hospital Information System) .
4. In system saving time the administration, PRE staff are agreed upon the system doesn't saves their much time.

5. Administrator staffs are not much satisfied with the current Hospital Information System because reports are accurate from Lekhi this happens of lack of decision support System.
6. In most of the PRE Staff the marking that they have given to lekhi was sufficient to run the Current Information System and with this information system they are satisfied in working with Current Information System.
7. In advance taking point of view for commercial it is very difficult to manage the cash flow , the continues cash flow deficiencies has been seen in the hospitals this results the improper results.
8. In conclusion the ease of using the interface of existing information system the staff are not much easy the results were neutral and difficult.
9. The patient flow between department to departments are easy to transfer and from their point of view there is no need to change the current system.
10. There are Lack of confidentiality is there in every center in Eye Q Hospital. The server is installed and anybody can access the backend data , this causes the organization .
11. The change of Hospital Information System in Eye-Q vision would result the following:
  - a. Reduced paper Cost
  - b. Improve Quality
  - c. Better Management Control

## **12. Recommendations**

Generally we find there are a few things that predict the degree of success that each Organization will have. These are the things we need to “get right” in approaching need of change the HIS:

1. There should be centralized store authorization needs be there in commercial process.
2. There is need for proper networking should be there because the Information System is running on Client –Server System Based.
3. There is need for training the staff at monthly basis.
4. IT meeting should be conduct at monthly basis this leads to remove the IT deficiencies in organization.
5. The existing Hospital Information System needs to be replaced with centralized web access system

### **13. Limitations of the study:**

1. Refusal by individual
2. Expertise in current software and resistance of changes.
3. Random sampling bias .
4. Time duration of the study wasn't sufficient
5. Some people involved with the project were not approachable. ( might be due to their busy schedule).
6. Doctors on large-scale couldn't be involved in the survey.

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## **Annexure:**

### **Questionnaire for the administrators**

1. Name.....(optional)

2. Working Unit/Department:.....

3. Work Profile:.....

4. Since how long have you been working at Eye-Q Hospital

(1)less than 7 months      (2)7-12 months

(3)1-3 years                      (4)More than 3 years

5.Have you ever received formal training to use LEKHI software?

(1)Yes    (2)No

6.How was the quality of training?

(1)Good    (2)Very Good      (3) average    (4)Poor

7.How many hours do you spend on the HIS application per day?

(1)Less than an Hour    (2)1-3 Hours    (3)More than 3 Hours

8.Please mention the ease in using the interface of the HIS system?

very easy      easy      Neutral      Difficult      very difficult

If difficult please elaborate.....

9.How effective has the HIS been in delegating the hospital functions?

very effective      effective      Moderately effective

less effective  Note effective

10.Does the system save time?

yes no  don't know

If No, Please specify.....

11.Has the HIS proved helpful in reducing the patient's waiting time?

yes no  don't know

If No, Please specify.....

12.Has the system improved the access to patient data across various department of the hospital?

improved Drastically slight improvement No improvements

13.How comfortable are you in retrieving the data by means of a report?

comfortable Not comfortable

14.Are you facing too many clicking difficulties in using HIS.

Yes To some extent No

15. How often does the system provide real time information?

almost always  Most of the time sometimes  Never

16. How accurate is the patient discharge information?

much accurate  accurate  not accurate  can't say

17. Does the HIS provides data security?

Yes To some extent No

If No. Please specify.....

18.Has the HIS helped in reduction of errors?

Yes No

Kindly elaborate.....

19 How has the data captured through HIS helped in decision making?

Yes No

20.Are you satisfied with documentation and troubleshooting support provided by the HIS team?

Yes To some extent No

If NO, Please specify.....

21. What are the technical inconsistencies that you have faced(if any) after the HIS ?

[1-strongly disagree2-Disagree3.Neutral4.Agree5. Strongly Agree]

- a) Time taken in opening the homepage(1) (2) (3) (4) (5)
- b) Login related problems (1) (2) (3) (4) (5)
- c) Printer related problems (1) (2) (3) (4) (5)
- d) Computer hangs/slows down (1) (2) (3) (4) (5)
- e) Server/power related problems (1) (2) (3) (4) (5)
- a) Other

What is your overall rating of the hospital information system in hospital on a scale of 1-10?

Rate out of 10: /10

22.Is there any need of replacement of current HIS with other new upgraded HIS in the hospital?

23. If there are / You have any kind of suggestion for the betterment of the working of HIS, kindly list there below

.....  
...

### **Questionnaire for the Doctors/Optomatrist**

1.Name.....(optional)

2.Working Unit/Department:.....

3.Work Profile:.....

4.Center.....

4.Since how long have you been working at Eye-Q Hospital

less than 7 months    7-12 months

1-3 years                More than 3 years

5.How many hours do you spend on the HIS application per day?

Less than an Hour    1-3 Hours

More than 3 Hours

6.Please mention the ease in using the interface of the HIS system?

very easy    easy    Neutral

Difficult    very difficult

If difficult please elaborate.....

7.Does the Current HIS provide data confidentiality?

yes    To some extent    no

If no , Please specify.....

8.Are procedures and diagnosis in compliance with your requirements?

yes    To some extent    no

9.Does the system comply with smooth workflow of OPD?

yes    To some extent    no

If no, Please specify.....

10. Are you easily able to search a patient in queue and system.

very easy  Easy  Moderate  difficult  very difficult

11. Are you able to search the records of an old patient along with previous investigation reports .

Always  Most of the time  sometimes  Never

12. Are you satisfied with the patient records being generated by the HIS system?

Yes  To some extent  No

If NO, Please specify.....

13. How often does the system provide real time information?

Almost always  Most of the time  Sometimes  Never

14. Has the system improved access to patient data across various departments of the hospital?

To an effective level  To satisfactory level  Not at all

15. Has the HIS helped in reduction of errors?

Yes  To some extent  No

16. Are you satisfied with the reports that are generated the HIS system?

Yes  To some extent  No

If NO, Please specify.....

17. What are the technical inconsistencies that you have faced (if any) after the HIS implementation?

[1-strongly disagree 2-Disagree 3.Neutral 4.Agree 5. Strongly Agree]

- a) Time taking in opening the homepage (1) (2) (3) (4) (5)
- b) Login related problems (1) (2) (3) (4) (5)
- c) Printer related problems (1) (2) (3) (4) (5)
- d) Computer hangs/slow down (1) (2) (3) (4) (5)
- e) Server/power related problems (1) (2) (3) (4) (5)
- f) Other

22. Is there any need of replacement of current HIS with other new upgraded HIS in the hospital?

.....

23. If there are / You have any kind of suggestion for the betterment of the working of HIS, kindly list there below

.....

...

### **Questionnaire for Commercial/Pharmacist/Optical**

1. Name.....(optional)

2. Working Unit/Department:.....

3. Work Profile:.....

4. Since how long have you been working at Eye-Q Hospital

less than 7 months    7-12 months

1-3 years                More than 3 years

5. How many hours do you spend on the HIS application per day?

Less than an Hour    1-3 Hours

More than 3 Hours

6. Please mention the ease in using the interface of the HIS system?

very easy    easy    Neutral

Difficult    very difficult

If difficult please elaborate.....

7.How effective has the HIS been in delegating the hospital functions?

- very effective effective Moderately effective  
less effective None effective

8.Does the system save time?

- yes no  don't know

9.Are you facing any difficulty in seeing the updated list.

- yes To some extent no

10.Is the HIS reflects the Last purchase list .

- yes sometimes no

11.Are you facing any difficulty in raising PO(purchase Order).

- yes To some extent no

12.Are you facing any difficulty in making GRN(Goods Receipts Note)

- yes To some extent no

If NO Please Specify.....

12.Are you facing any difficulty in seeing Daily Progress?

- Data not correct Sometimes No

13. Have you find any deficiencies in cash flow into HIS.

- yes no

If yes Please Specify.....

14.Have you find any deficiencies in cash flow into HIS.

15. What are the technical inconsistencies that you have faced(if any) after the HIS implementation?

[1-strongly disagree2-Disagree3.Neutral4.Agree5. Strongly Agree]

- a) Time taking in opening the homepage(1) (2) (3) (4) (5)

- b) Login related problems                      (1)            (2)            (3)            (4)            (5)
- c) Printer related problems                    (1)            (2)            (3)            (4)            (5)
- d) Computer hangs/slows down                (1)            (2)            (3)            (4)            (5)
- e) Server/power related problems            (1)            (2)            (3)            (4)            (5)
- f) Other

16. If there are / You have any kind of suggestion for the betterment of the working of HIS, kindly list there below

.....  
....

17. Is there any need of replacement of current HIS with other new upgraded HIS in the hospital?

.....

**Questionnaire for the PATIENT RELATIONSHIP EXECUTIVE'S**

1. Name.....(optional)

2. Working Unit/Department:.....

3. Work Profile:.....

4. Since how long have you been working at Eye-Q Hospital

less than 7 months      7-12 months

1-3 years                      More than 3 years

5. How many hours do you spend on the HIS application per day?

Less than an Hour      1-3 Hours

More than 3 Hours

6.Please mention the ease in using the interface of the HIS system?

very easy    easy    Neutral

Difficult    very difficult

If difficult please elaborate.....

7.How effective has the HIS been in delegating eh hospital functions?

very effective    effective    Moderately effective

less effective    None effective

8.Does the system save time?

yes    no     don't know

9.Does the system is able to transfer the patient smoothly from your dept. to other dept .

yes    To some extent    no

10.Does the system is able to retrieve the old patient data smoothly?

yes    To some extent    no

11.Are you facing difficulty in taking advance adjustment in HIS.

yes    To some extent    no

12.Has the HIS proved helpful in reducing the patient's waiting time?

yes    no     don't know

If No, Please specify.....

13.Are you facing too many clicking difficulties in using HIS.

Yes    To some extent    No

14. What are the technical inconsistencies that you have faced(if any) after the HIS ?

[1-strongly disagree2-Disagree3.Neutral4.Agree5. Strongly Agree]

- |                                       |     |     |     |     |     |
|---------------------------------------|-----|-----|-----|-----|-----|
| f) Time taken in opening the homepage | (1) | (2) | (3) | (4) | (5) |
| g) Login related problems             | (1) | (2) | (3) | (4) | (5) |
| h) Printer related problems           | (1) | (2) | (3) | (4) | (5) |
| i) Computer hangs/slows down          | (1) | (2) | (3) | (4) | (5) |
| j) Server/power related problems      | (1) | (2) | (3) | (4) | (5) |
| b) Other                              |     |     |     |     |     |

15.Is there any need of replacement of current HIS with other new upgraded HIS in the hospital?

16. If there are / You have any kind of suggestion for the betterment of the working of HIS, kindly list there below

.....  
...

17.What is your overall rating of the hospital information system in hospital on a scale of 1-10?

Rate out of 10: /10