Dissertation Title

"To determine whether use of Information technology by physicians in OPD can increase quality and utilization of healthcare insurance"

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

Post-Graduate Diploma in Health and Hospital Management

By

Shruti Goel

Roll No. PG/10/045

International Institute of Health Management Research

New Delhi -110075

May, 2012

Dissertation Title

"To determine whether use of Information technology by physicians in OPD can increase quality and utilization of healthcare insurance"

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

Post-Graduate Diploma in Health and Hospital Management

By

Shruti Goel

Roll No. PG/10/045

Under the guidance of

Mr. Ashok Tandon
Vice President (Networking and Claims)
HCX India

Prof. Indrajit Bhattacharya
Assistant Professor
IIHMR, New Delhi

International Institute of Health Management Research

New Delhi -110075

May, 2012

HCX
Healthcare Simplified
(Venture Of Bajaj Capital, India & IGI, USA)

T: +91 11 4010 0200 to 99
www.hcxindia.com

HealthCare InfoXchange India Pvt. Ltd.
#1002-1003, 10th Floor, Indra Prakash Building,
21 Barakhamba Road, Connaught Place,
New Delhi - 110 001

Certificate of Internship Completion

Date: 8/5/2012

TO WHOM IT MAY CONCERN

This is to certify that Ms. Shruti Goel has successfully completed his 3 months internship in our organization from February 1, 2012 to April 30, 2012. During this intern she has worked on ….. ……. (Task performed) under the guidance of me and my team at HCX India Pvt. Ltd.

……. (Any positive/negative comment)

New Concept Well done.

We wish him/her good luck for his/her future assignments

(Signature)

Ashok Tandon (Name)

VP Designation

Certificate of Approval

The following dissertation titled **"To determine whether use of IT can improve quality and utilization of health insurance for OPD services"** 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

Name	Signature
Prof. Dr. S.V. MANI	
Dr. Indrajit Bhattacharya	
Prof. (Dr.) T. MUTHUKUMAR	
Dr. Anandhi Ramachandran	

HCX
Healthcare Simplified
(Venture Of Bajaj Capital, India & IGI, USA)

T: +91 11 4010 0200 to 99
www.hcxindia.com

HealthCare InfoXchange India Pvt. Ltd.
#1002-1003, 10th Floor, Indra Prakash Building,
21 Barakhamba Road, Connaught Place,
New Delhi - 110 001

Certificate from Dissertation Advisory Committee

This is to certify that **Ms. Shruti Goel,** a participant of the **Post- Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision. He/She is submitting this dissertation titled " **To determine whether use of Information technology by physicians in OPD can increase quality and utilization of healthcare insurance** " 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.

Prof. Indrajit Bhattacharya
Assistant Professor
IIHMR
New Delhi
Date

Mr. Ashok Tandon
Vice President
HCX India Pvt. Ltd.
New Delhi
Date

Acknowledgement

I hereby take this opportunity to thank, Mr. Ashok Tandon, Vice President (Networking and Claims), HCX India and Mr. Sameer Bahadur, CEO, for his valuable guidance and advice. He inspired me greatly to work in this project. Their willingness to motivate me contributed tremendously to my project.

My special thanks to Mr. Junaid Ahmed, Deputy Manager, Networking and Claims, for his guidance, support, interest, involvement and encouragement. He has left no stone unturned in updating me regarding the subject.

I wish to express my deep sense of gratitude to Mr. Col. Kumar Kant, HR Manager, for giving me the opportunity to do my Internship and Dissertation at HCX India. He was very kind enough to spare his valuable time and provided several important suggestions at every stage of my study.

Besides, I would also like to thank the entire Healthcare IT team for their encouragement and cooperation in carrying out the project work.

My sincere acknowledgement goes to Professor Indrajit Bhattacharya and Professor Anandhi Ramachandran for their kind assistance and support throughout my dissertation.

Finally, an honorable mention goes to my family and friends for their understanding and support on me in completing this project.

Thank You

Shruti Goel

PGDHHM,

IIHMR, New Delhi

A. Abstract

"To determine whether use of Information technology by physicians in OPD can increase quality and utilization of healthcare insurance"

By

Shruti Goel

Health insurance is the fastest growing segment in general or non life insurance after casualty and property insurance. Rising healthcare costs, increasing number of chronic diseases due to sedentary lifestyle, out of pocket expenses and increasing awareness for health insurance are the main factors driving growth of health insurance industry in India. The Indian health insurance industry and its regulators are currently taking a number of actions to further goals for developing a strong health insurance market in India by launching new products for health insurance. Some of the major issues faced by two important stakeholders i.e. consumers and regulators for health insurance are: first; consumers don't have wide range of health insurance plans to choose from according to their needs. Secondly, the insurance companies are unable to perform claims processing timely and accurately. The payment errors made by the health insurance companies and long time taken in pre authorization approval /denials because of some missing information or incomplete documents of the patients while processing claims are the main barriers in the growth of health insurance. These errors often result in increased workload and costs for both payers and providers. Also, it leads to constrict the interest of consumers to buy health insurance as their claims are not processed in a timely manner and they have to face lots of problems because of the delay. The study envisages the solution to the high costs and delay in processing claims by using IT systems for processing claims in OPD as it will reduce the time taken in processing claims and errors will be reduced for payment of claims. A unique ID will be issued for each claim so that it can be seen and tracked during the whole processing cycle. Also, there will be a proper and standardized format for providing patient details so that no information or documents are left out and processing is done at once without delay due to missing information.

The special focus during the study was on the barriers and opportunities to implement IT systems in OPD for processing claims and how to improve quality and utilization of health insurance products for OPD by removing these barriers and latch on to the opportunities. The study was conducted by gathering the primary data through market research and in depth interview of doctors in healthcare facilities of Delhi and NCR region. Framework of the project, formulation of the problem, research plan, experimental results and findings are described in the study. It has been found that by using IT system for OPD services data storage and exchange of information for claims processing can be done in a better and precise way. Health insurance verification becomes much more reliable as no human intervention is required and double data entry can be prevented. Also, less time wll be required for claims processing.

B. Table of Contents

C. List of Figures

D. Abbreviations/ Acronyms/ Keywords

- AHIMA American Health Informatics Management System
- AMA American Medical Association
- IAMI Indian Association For Medical Informatics
- EOB Explanation Of Benefits
- EMR Electronic Medical Records
- His Hospital Information System
- OPD Outpatient Department
- PHR Personal Health Record
- RA Remittance Advice
- TPA Third Party Administrator

Part I

Internship Report

1.1 . HCX INDIA PROFILE

Healthcare info exchange India Pvt. Ltd. (HCX) is a healthcare company that aims at simplifying processes related to healthcare in India. It is a leading provider of healthcare technologies and is spearheading the advancement and automation of processes related to healthcare in India at provider as well as payer side. HCX is a joint venture of Bajaj Capital, India and IGI USA. Bajaj capital is one of India's premier investments advisory and financial planning companies while IGI, USA is a pioneer in IT since 1992 when it was known as Med- link Technologies. Med link was a leading company in creating web enabled platform for healthcare transaction processing. The head office of the company is situated at Central Delhi and has branch offices PAN India. Mr. Sandeep Bahadur is serving as the Chief executive officer of the company. He is a senior professional in General Insurance sector Mr. Ashok Tandon is the vice president; Networking and Claims. He is also a very renowned person in health insurance sector. The company has empanelment with more than 2500 healthcare facilities across India including some of the top hospitals in Delhi like Max healthcare, B.L. Kapoor memorial hospital etc. HCX started its unparallel journey on 3rd October, 2009 with strength of 10 employees. Growing since, around 76 employees are working across whole India currently. It has been able to come up with a series of four healthcare products mainly aimed at redefining the current healthcare structure. The four main products offered by the company are:

1. **Personal Health Record**

Personal Health Record is a vast repository of information comprising of patient's personal details and their medical history which includes information regarding previous surgeries or medical condition and medication history, the treatment, emergency contact details, hospitalization history, allergies, blood group and so on. It also facilitates by sending alerts for

appointments to doctors, lab tests that are due, booster doses for vaccination through e-mail, SMS and phone calls. HCX Personal Health Record provides an easy way to maintain all the details related to medical history of an individual or whole family by creating a web based health record which is simple to maintain and easily accessible. With PHR, patient gets a health card which contains information regarding the blood group, allergies, medications, age, disease and emergency and physician contact details. It also provide various other benefits like discount on different diagnostic and lab tests, pharmacy, OPD and IPD services and a personal accidental insurance with sum assured of INR 2 lac.

2. Online Claims Data Exchange

HCX provides online health insurance exchange helping uninterrupted flow for claims management system. With HCX web based portal, healthcare entities like hospitals, can check a cashless patient's insurance eligibility and benefits such as estimation of liability/ co-payment and policy exclusion. It also reduces the burden on insurance companies/TPA regarding the enquiry calls from the hospitals. By using HCX web based platform, there will be electronic submission of pre authorizations leading to faster processing of pre authorization for approval/denials at the insurance company/TPA end as there is a proper and standardized format would be available and rework because of some missing data is reduced. The seamless solution will also help checking the status of each claim. A unique ID is allocated for each pre authorization which enables the processing units to refer each claim case through a single recognition ID. Each claim can be tracked and seen through the entire processing cycle. With a complete online solution for managing Health Insurance Claims, HCX provides business intelligence for claims management which will indeed help enhancement of the business solutions for the Insurance Company.

3. My Smart Health

HCX's My Smart Health provides a web based platform for maintaining repository information comprising personal details and medical history of the individual. It provides OPD services to the patients that would help in availing free OPD consultation and health check up. With My Smart Health, a person will get a Personal Health Record, health card, two free health check up and five general physician visits and two specialists visit. There is a pre defined list of tests and

services that can be availed with My Smart Health product. It contains different type of tests for males and females. All the free services can be availed at HCX's empanelled hospitals, OPD clinics and diagnostic centres. The services can be availed for any of the family members. With My Smart Health, discounts can be availed on OPD, IPD and pharmacy and diagnostic services.

4. My Health Plan

With HCX My Health Plan, an individual can avail a free preventive health check up to be sure about his/her health. A complete body health check up along with a Personal Health Record, Health Card and various diagnostic and lab tests can be availed with My Health Plan product. Different tests included in my health plan are head and neck examination, chest examination, abdominal examination, skin examination, ENT examination, Eye examination, body weight, height and BMI. There are several other tests included in the My Health Plan Scheme which are different for males and females.

HCX also provides healthcare services using a range of IT solutions that enables to improve workflows, data analytics and integration of data to streamline processes in healthcare. They provide healthcare consulting, BPO services, Business intelligence solutions for organizations. They also provide web portal to exchange information and make it available to customers, partners and employees about various doctors, hospitals, diagnostic centres etc.

1.2. Area of Engagement

The area of engagement during the course of internship was in the market research of the OPD claims data exchange product. As it is a startup company so most of the projects are in planning stage. They already have products for OPD services but these products are currently maintained manually. Two main OPD products are My Smart Health and My Health Plan. There is no IT system for their management and patient data storage in these products. So, an upcoming product is in its planning stage. A feasibility study for the product is carried out to check the opportunities and barriers for the product and to make reasonable decision for the development of the product.

With the management skills and healthcare IT knowledge I have gained during my PGDHHM course, I was involved in conducting the market research of the product. The work involves the

problem identification and preparing a research plan, carrying out the data collection through surveys with meeting physicians in hospitals of Delhi and NCR, doing data analysis and presenting final report to the company. The healthcare facilities visited for carrying out surveys was selected by the list of empanelled hospitals with the company. Around eighty hospitals were visited from a list of more than one hundred and fifty hospitals. These hospitals are situated across all the zones of Delhi and NCR including Faridabad, Ghaziabad, Gurgaon and Noida. There were mainly six type of healthcare facilities visited. These are:

1. Multi specialty hospitals
2. Super specialty hospitals
3. Nursing home
4. Dental clinics
5. Diagnostic centers
6. Day care centers

1.3. Tasks Performed

Some of the major tasks performed during the course of internship are stated as follows:

- Finding out the problem in the existing system used for OPD services in health insurance.
- Suggesting a solution to the problem defined.
- Preparing a research plan (through questionnaire) to carry out the market research for defining a reasonable management decision for the project.
- Gathering the primary data by in interviewing doctors at healthcare facilities of Delhi and NCR.
- Analysis of the primary data collected by using analysis tool. (SPSS)
- Defining inference through results and findings from primary data.
- Preparation of final report.

1.4. Reflective Learning

During the course of internship, there has been a lot of learning from all the quarters, that is from the company and the healthcare facilities visited for conducting the research. Apart from that, the experience of the mentor has been very useful for knowledge transfer.

Some of the learning during the entire course of internship is as under:

- Practical issues involved in information exchange during the claims data exchange process in healthcare insurance.
- Finding out the gaps in the current processes for health information storage and transfer in OPD services.
- The various opportunities for developing an IT system for claims data exchange in OPD to increase quality and utilization for OPD services in health insurance.
- Basic workflow for claims data exchange used by the payers and the providers for approving the claims, the shine points of the workflows as well as limitations of the existing system.
- Various barriers observed during the market research which can be faced while implementing IT systems for claims data exchange in OPD.
- The various perceived risks and benefits among the payers, providers and consumers' regarding the IT systems for OPD claims exchange.
- Doctors perception regarding the use of IT systems for OPD.
- The different techniques employed by the service provider for project planning and carrying out feasibility study.
- The interpersonal skills required to carry out market research and conducting an in depth interview with doctors.

Part II

"Dissertation on determining the use of Information technology by physicians in OPD can increase quality and utilization of healthcare insurance"

Part A – Dissertation Overview

1. INTRODUCTION

I. Background

Health insurance in a narrow sense would be 'an individual or group purchasing health care coverage in advance by paying a fee called *premium*. In its broader sense, it would be any arrangement that helps to defer, delay, reduce or altogether avoid payment for health care incurred by individuals and households. Health insurance is the second largest segment of non life insurance in India after property and casualty insurance. It has been the fastest growing segment of non life insurance over the past few fiscal years and is all set to reach new heights in coming years as public and private insurers are coming up with various new schemes to reach the untamed insurance market in India. Increasing awareness of health insurance, rising healthcare costs, supporting demographic profiles, rationalization of premium costs and de-terrifying of health insurance industry are the key drivers for growth of health insurance in India. The insurance industry in India and its regulators are currently undertaking a number of actions to further India's goal of developing a strong health insurance market, which would improve the general health status of Indians, ease the government burden of public care, help families avoid catastrophic financial losses, and improve the overall quality of healthcare in India. Some of the key issues which various public and private health insurance companies are facing nowadays are limited healthcare delivery network with top few cities only, unavailability of sufficient data on trends in disease patterns and consumers, absence of standardization of processes in healthcare and high levels of frauds which results in high claims ratio and ultimately loss to health insurance companies. Time for processing claims and availing pre- authorizations is also a major issue in health insurance industry as it leads to make a negative perception about health insurance in consumer's mind and affects the growth of the industry.

II. Problem Formulation

The problems of rework and delay in settlement of claims due to manual process in claims settlement is the classification problem and low quality of service and rising costs of OPD consultation are the main barriers that are hindering growth of health insurance sector in the country. The details of the problem formulation are further discussed in other sections.

III. Objectives of the Study

The study ideates the solution to the problem of unnecessary and counterproductive gaps in health insurance which leads to an unstable health insurance market. It includes the attitude of physicians for using IT systems in OPD and the extent of awareness regarding use of electronic systems for storing and exchanging patient information in them. The main objective of conducting this project is to find out that how the use of IT systems for claims exchange in OPD can improve the quality of health insurance.

IV. Scope of the Study

The project gives the brief description about the overview of health insurance, current market size of health insurance, current scenario of health insurance in India, emerging growth trends in health insurance in India, factors driving growth of using online claims exchange for OPD, challenges for implementation of IT in health insurance.

V. Need for the Study

Rising costs of healthcare, out of pocket expenses and increasing number of cases of non communicable and lifestyle diseases due to sedentary lifestyle of people leads to a need of creating some health plans for OPD consultation and diagnostic tests. Some of the products for OPD services are now available in the market but processing of that plans and maintaining a track of patient record and his financials between payers and providers is a major concern as there are found so many gaps in processing of such claims manually. It takes lots of extra work and rework and still the patient information is not fully available and accessible as and when required. For maintaining record of a patient on paper or files, it takes almost an average of $20.00 per document.

VI. Assumptions

- It is assumed that at the physician level, doctors are aware of OPD products for free OPD consultation and diagnostic tests.
- It is assumed that doctors are aware of concept of Personal Health Record and electronic storage of patient data.
- It is assumed that the patients are willing to maintain their personal health record and have capacity to access it on their own for better decision making.

VII. Data Sources

- Primary data through survey
- HCX networking and claims team
- Secondary data through internet

VIII. Work Plan

ID	Task Name	Start	Finish	Duration
1	Defining the Problem	25-01-2012	31-01-2012	6 days
2	Literature survey	01-02-2012	10-02-2012	10 days
3	Methodology adopted	11-02-2012	18-02-2012	8 days
4	Data collection	18-02-2012	25-03-2012	37 days
5	Compilation analysis	26-03-2012	10-04-2012	16 days
6	Documentation	11-04-2012	24-04-2012	13 days

TABLE 1: PROJECT WORK PLAN

The study conducted was primarily is a feasibility study on use of IT system for OPD claims processes in different types of health facilities that is small, medium and large hospitals, day care centers, dental clinics, nursing homes and some big diagnostic centers. It includes all the steps of market research involved in feasibility study for a new product development. In the first step, the problem was defined by carrying out analysis on current market trends and finding out gaps between them that are responsible for hindering growth and lessening quality of health insurance. According to them, the objectives and a solution for that problem are defined.

In the second step, a research plan was developed to sort out details of which information is required to make a reasonable marketing decision. A questionnaire was prepared to gather information needed to make right marketing decision. In third step, primary data was collected by in depth interview of doctors in various health facilities of Delhi and NCR region. In the last step, the primary data was analyzed and a final report is prepared on the basis of results and findings from analyzed data.

IX. Limitations

- As it is a feasibility study so there is no such readymade software available for the OPD claims processing during the course of the study.
- Study is based on the assumption that such software will reduce the time and rework for claim processing and thus enhance quality of healthcare. But, there is no practical evidence found for the same.
- Due to the lack of time and resources, sample size taken for the study was not very large.

Part B – Project Overview

1) Introduction

Health insurance is the second largest segment of non life insurance in India after property and casualty insurance. It has been the fastest growing segment of non life insurance over the past few fiscal years and is all set to reach new heights in coming years as public and private insurers are coming up with various new schemes to reach the untamed insurance market in India. Increasing awareness of health insurance, rising healthcare costs, supporting demographic profiles, rationalization of premium costs and de-terrifying of health insurance industry are the key drivers for growth of health insurance in India. The insurance industry in India and its regulators are currently undertaking a number of actions to further India's goal of developing a strong health insurance market, which would improve the general health status of Indians, ease the government burden of public care, help families avoid catastrophic financial losses, and improve the overall quality of healthcare in India. Some of the key issues which various public and private health insurance companies are facing nowadays are limited healthcare delivery network with top few cities only, unavailability of sufficient data on trends in disease patterns and consumers, absence of standardization of processes in healthcare and high levels of frauds which results in high claims ratio and ultimately loss to health insurance companies. Time for processing claims and availing pre- authorizations is also a major issue in health insurance industry as it leads to make a negative perception about health insurance in consumer's mind and affects the growth of the industry.

2) Literature Survey

Mohit Kumar, Rayid Ghani and Zhu-Song Mei (July 25-28, 2010), KDD'10 stated in their study on "Data mining to Predict and prevent errors in healthcare claims processing" that most common errors in claims processing made by insurance companies are the payment errors and these results in the reprocessing of claims. It increases the level of administrative work which ultimately gives rise to the higher costs of manpower for rework and loss of revenue due to overpayments.

According to the American Medical Association findings, it has been found that in every five medical claims that are processed by insurers in errors, one of them is processed with error emphasizing the huge potential for reducing administrative costs for physicians and insurers and it has been suggested that by creating a single transparent set of processing and payment rules for the health insurance industry would create system wide savings and allow physicians to direct time and resources to patient care and save from excessive paperwork.

Linda L. Kloss of American Health Informatics Management System(AHIMA) stated in her study (Healthcare Imperative, 2009) PubMed, that real improvements and cost reductions for administrative work requires an end to end view of business processes, and a commitment to uniform and standardized processes with continuous improvements. Use of information technology is one of the potential strategies that can be used to simplify the processes in healthcare and reduce the workload on administration and physicians so that their efficiency is increased and they can devote more time for clinical services and care delivery. Transparency of costs, prices, clinical quality and effectiveness of medical services and products has been identified as a key tool for lowering costs, and improving outcomes. There is no sufficient data for disease management to the payers or providers which shields them from creating health policies which are most required for the consumers. A number of challenges faced by insurance companies in using IT systems for claims exchange are: first, consideration of security and privacy issues, including protection of information and need to build trust on patients; and second the degree of internet penetration and access of information by affected final users. Other common barriers for use of IT for claims exchange process in OPD are lack of skilled physicians who are fully aware about handling computers and resistance to change among doctors and other administrative staff. Heavy patient load in OPD's and lack of awareness and understanding about

the benefits for using such system are the barriers which hinders the growth of electronic claims exchange process in OPD's.

2.1. Study Of Existing System

Currently, manual process is used for claims processing for pre authorization approval and denials. It is a lengthy process and takes almost 4-6 hours and sometimes even more than that for processing claims if all the information and documents required are not available. Typical payer administrative system workflow for claims process includes five main steps which are described as follows.

Step 1: Receiving the claim

The payer may receive the claim directly from the physician or through an intermediary such as TPA. The claim is then evaluated for any missing information. This claim request is sent either through fax or e-mail but there is no proper and standardized format for claim request.

Step 2: Patient's eligibility and benefit level determination

A patient's benefit level, medical necessity, and covered and non covered services and procedures are determined based on the patient's health benefit plan. Whether a patient is eligible for a specific service with a specific physician at a specific facility is important information. Receiving an explicit answer will help in quick scheduling for patients, billing the appropriate payer with financial responsibility for the service and reducing the number of denied claims and payment errors which the physician's practice manually handles.

Step 3: Contractual Discount Applied

After finding out the eligibility and benefits of patient's health plan, the contractual discount is applied on the physician's billed charges on submitted claims by the payer to their individually contracted discounted fee schedule rate or "maximum allowed payment". The physicians are not able to clearly define the accuracy of contractual discounted amount as there is no proper remittance advice is provided by the payers. There is confusion between both the parties about the agreement of discounted fee amount schedule to be applied to the claim. In addition, there is

communication gap between the payers and providers regarding the sufficient notice of changes and updates to the contracted fee schedule before they take effect from payers.

Step 4: Payer Payment Rules and Claim Edits Applied

The payer further adjusts the payment by applying "payment rules" such as adjustments for modifiers, taxonomy, multiple procedures or global payment rules that either increase or decrease the payment amount. Simultaneously, the payer makes adjustment to the claim using payer claims edit that includes customized payer specific edits. These claim edits determine which of the specific codes are eligible for payment and which will be denied.

Step 5: Auto Adjudication

In this step, the final payment to be made on the claim is determined after considering all the factors from the above mentioned steps.

Step 6: EOB and RA is Sent to Provider

In the last step, Explanation of Benefits and Remittance Advice is sent to the provider, detailing the paid amount for medical services provided. This is also done manually and takes around four to six hours usually and sometimes even more if some information is missing.

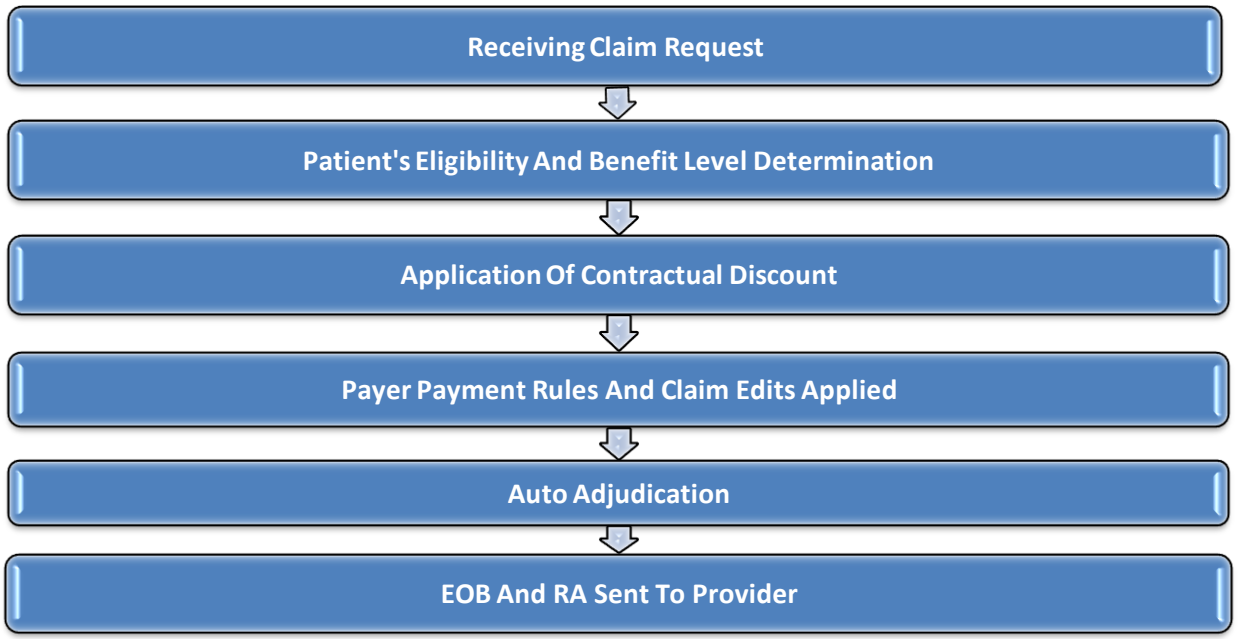

Figure 2: Existing Payer Administrative System Workflow For Claim Processing

3. Research Design

The study would primarily be covering different stages of quantitative market research being used in product development and its feasibility study of online claims data exchange for OPD services. The main goals for conducting product development market research are to uncover the issues in the existing system of manual processing of claims and storage and exchange of patient details, concept idea generation and testing, finding out the opportunities and barriers for the solution prescribed and mapping a reasonable decision. Quantitative marketing research is a kind of social research that typically involves the generation of questionnaires and scales. These questionnaires are filled by the respondents (doctors) and on the basis of information obtained, strategies and product development plans are created. Quantitative market research studies are designed to assess, predict and estimate buyers and users attitude and behaviour towards the product and the drivers for the growth of product in the market. There are different techniques used for conducting quantitative market research including telephonic surveys, online surveys, personal interviews and hybrid surveys. Primary data is used in the study by conducting in depth interviews of the physicians through questionnaire and drawing the inference by comparing the views and interests of doctors depending on the age, location and type of healthcare facilities. The questionnaire was developed after defining the solution to develop an IT system for claims exchange process and patient information for the identified problem in the current system of manual process and doing literature review. The tool used for analysis of primary data gathered through the questionnaire is SPSS. Various frequencies, descriptive tests such as chi square test and t test are used for finding out the results and comparing them based on certain criteria.

In this study, personal interview of doctors is carried out for conducting the research and gathering the primary data. The study is done in healthcare facilities of Delhi and NCR which are empanelled with HCX India. The steps followed to carry out the research study are as follows:

1. Defining the problem
2. Literature survey
3. Methodology adopted
4. Data collection
5. Compilation analysis
6. Final report preparation.

1. **Defining the problem**

This step is crucial for conducting quantitative market research study as it will lead to a better understanding of the current system and finding out gaps in them and understanding the nature of the problem. So, existing system of claims exchange process is reviewed and gaps in the system are searched out. It was found, that in the existing system, there is no standardization for exchange of patient data due to which several problems arises. One of the major problems is that most of the times one or other patient information is left out due to lack of proper format for claim request submission which results in delay of the claims approval/denials or pre authorizations. Also, payment errors are seen because of manual process and the process for claim approval cannot be tracked at any level. Patient details are not recorded in any proper format and most of the times, patients either forgets to bring their previous prescriptions or they are lost. All these problems leads to decrease the quality of healthcare insurance and its utilization as consumers will gets dissatisfied with the services if they face any of them. So, a solution to this problem is suggested and that is to use IT system or online claims exchange process. The study was mainly focused on OPD services as it is a potential area where improvement is highly required as most of the insurance companies are mainly focused for inpatient services and OPD services are not that popular among the insurers.

2. **Literature survey**

To understand the current challenges faced by the system in the payments, billing and claim reconciliation process and how use of IT systems will make the process more simplified, transparent and standardized in nature. After the claim is received, the payer will determine the eligibility of patient to receive benefits. Sometimes, the physicians and payers are not able communicate with each other due to several reasons. In that case, payer decides the total amount to be discounted on the services according to the patient health plan. Once the covered benefit value is determined and assuming that physician has contracted with the payer to accept the discount for the services in exchange for higher patient volume or prompt payment, the claim is reprised or the physician retail charges for the rendered services are reduced to reflect the agreed upon discount.

3. Methodology Adopted

Quantitative research is used to identify the opportunities and barriers in the use of online claims exchange process for OPD. The essence of quantitative research is development of a well designed questionnaire and identifies how relevant it is to a representative sample. A questionnaire carrying twenty questions is designed out of which two are open ended and eighteen are close ended questions. The role of the questionnaire is to provide a standardized interview so that respondents are asked questions that are appropriate to them and in the same way. The questionnaire is a medium of communication between the firm and its client. It is a conversation between two people, albeit they are remote from each other and never communicate directly. Sample size of the physicians interviewed for the study is eighty from different health facilities of Delhi and NCR which are empanelled with the company.

4. Data Collection

The research data was collected by in depth interview of the physicians through the questionnaire in the different types of healthcare facilities including multispecialty, super specialty, day care, nursing home, dental and ophthalmology centers and diagnostic labs situated in different areas of Delhi and NCR including Noida, Gurgaon, Ghaziabad and Faridabad. Eighty hospitals have been visited for meeting the doctors and conducting the survey. Physicians who were interviewed were general physicians, dentists, radiologists, gynecologists and ophthalmologists mainly.

5. Compilation Analysis

The data collected through questionnaire and interview of doctors is then analyzed by using analysis tool that is SPSS 17.0 for finding out the results. Various frequencies including mean, bar charts, tables etc are extracted by analyzing the questionnaires. Through this type of research, the findings consist of particular statistics which are very accurate and reliable. Bar charts and frequency tables are presented for easy and clear understanding of results. It has been shown through the analysis that quality of health insurance will be improved with the advent of online claims exchange process for OPDs and it will lead to better disease management and reduction of time and costs and simplifying processes.

6. Preparation Of Final Report

After analyzing the research data, a final report is documented to be presented in front of the company for better and reasonable market decision for the product. It is a very important step as most of the evaluations are based on studying the final report only and not appreciating the other steps of the study. But those are also important if a person really wants to know the market trends and deep understanding of market. While we may be very familiar with the problem, sometimes defining it in a way that leads to a resolution through research can be complicated. Uncovering and solving the true business need can be difficult, especially without the resources to execute the study and the expertise to design and analyze it. For this reason, most businesses invite a third party market research company to step in and complete the five steps of market research.

4. Compilation analysis

There are various important components in the questionnaire which are analyzed by using SPSS 17.0 based on which inference is drawn by carrying out the frequency tests and non parametric chi square test about the enhancement of quality in health insurance by use of IT systems. These components are discussed below. Various opportunities, barriers and scope of IT systems in health insurance are also discussed.

A. Opportunities for implementing IT systems for online claims exchange process in OPD

- **Extent Of Computerization**

In the eighty healthcare facilities visited during research and interview of doctors it has been found that more than 50% of the facilities are partially computerized. They were mainly using the modules for billing and inventory. Some hospitals were using HIS as well but only one hospital was using software for online claims exchange and that was not also fully functional. Only around 16 % of the hospitals were fully computerized but they were not using online claims exchange process. Around 23% of the hospitals were not at all computerized.

Fig 3 : EXTENT OF COMPUTERIZATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	fully computerized	13	16.3	16.3	16.3
	partially computerized	43	53.8	53.8	70.0
	not computerized	24	30.0	30.0	100.0
	Total	80	100.0	100.0	

Opportunity- It has been estimated that most of the healthcare facilities are not yet computerized and there is a need of computerization in them to reduce administrative problems and better management.

Barrier- Some of the facilities which are currently using IT systems are not satisfied with it and around 18 % of all the hospitals visited don't have any plans for computerization.

- **Improvement In Information Exchange By Use Of IT**

  From the eighty respondents interviewed, 45 of them believe that IT system will be useful for exchange of patient information. Around nine physicians do not agree with the fact that IT systems will be helpful in patient information exchange as they think it will lead to privacy and security issues with patient. Remaining 26 were not aware about the benefits of using IT system for patient information exchange.

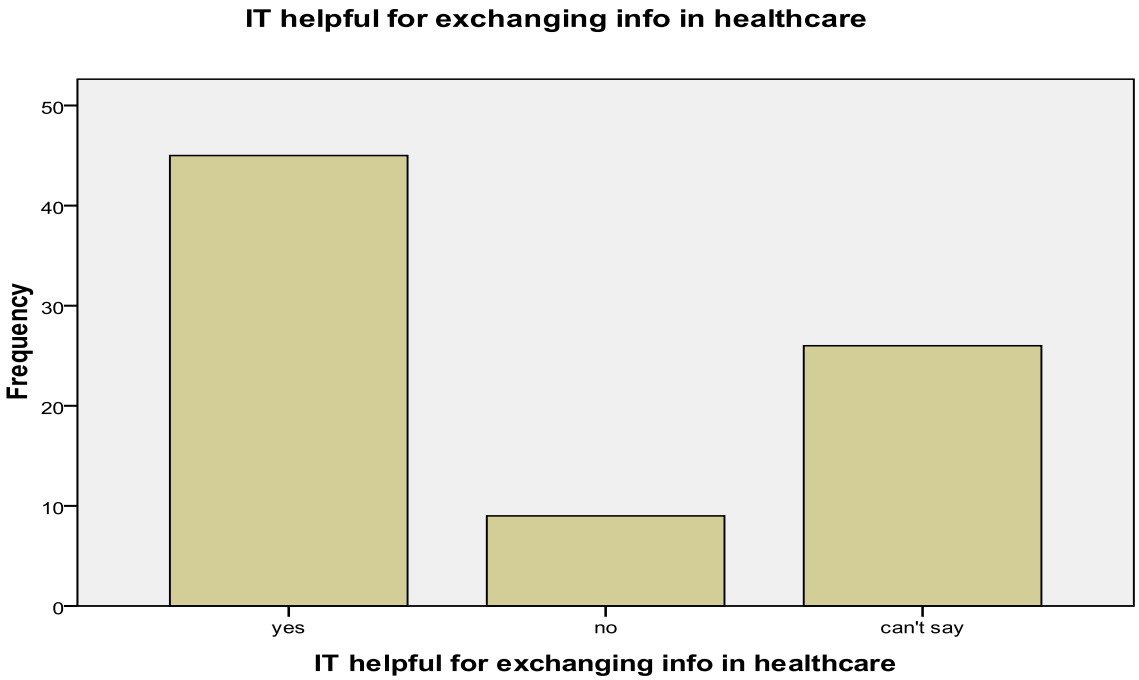

Figure 4

Opportunity- It has been found that more than 55% of doctors believe that IT systems will be helpful for patient information exchange so there is a very good scope of using such a system for OPD to make the patient details exchange more simple and consistent.

Barrier- Security and privacy of data is the main concern in sharing patient information and exchanging it through IT systems.

- **Need Of Health Insurance For OPD Services**

  Need of health insurance for OPD is supported by around 40% of the respondents interviewed. Rest 35% believe that health insurance is not required for OPD as it will lead to unnecessary crowding of OPDs as more patients will come even when it is not required. 25% of the respondents were not aware about OPD health insurance coverage and believe that it has both negative and positive effects.

Fig 5 : Health Insurance Need For OPD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	32	40.0	40.0	40.0
	no	28	35.0	35.0	75.0
	can't say	20	25.0	25.0	100.0
	Total	80	100.0	100.0	

Opportunity- Health insurance for OPD services will lead to early detection of diseases and would be helpful in reducing out of pocket expenses for OPD consultation and diagnostic tests as most of the healthcare expenditure of an individual is on OPD services rather than IPD.

Barrier- It is estimated that most of the physicians are not in favour of the coverage of OPD for health insurance.

- **PHR Attraction**

  More than 50% of the doctors likes the concept of PHR and believe that it will lead to better management of patient data and their medical history. Most of the doctors said that PHR is required for the easy availability and accessibility of patient information at any time.

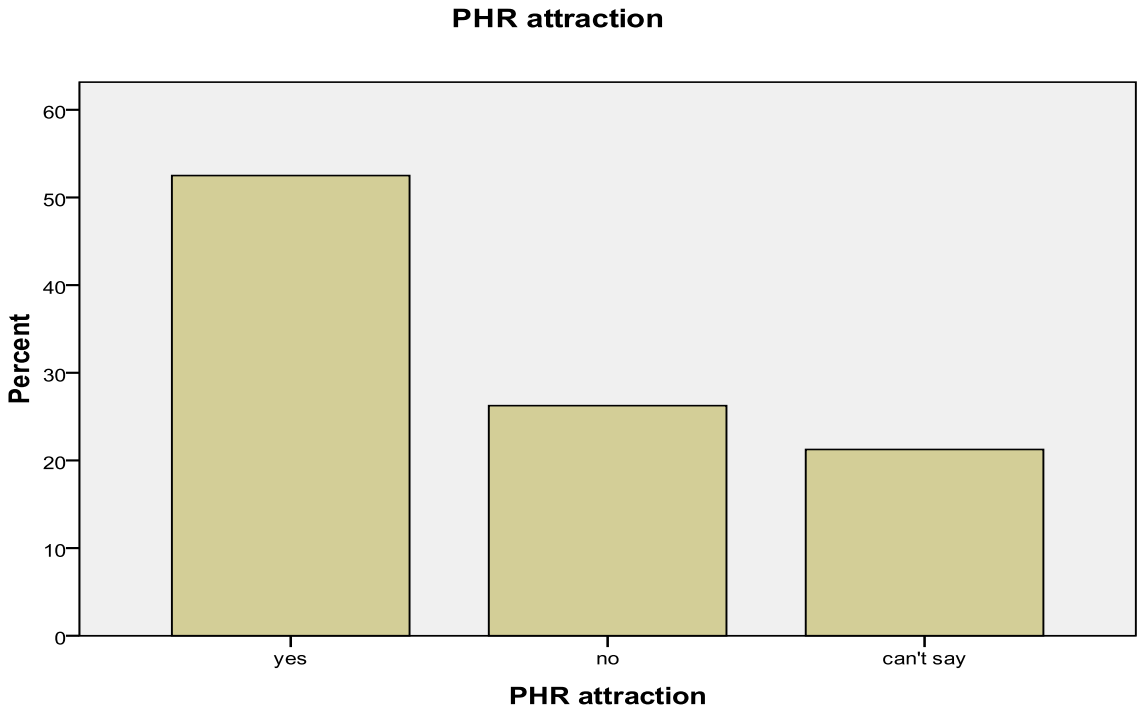

Figure 6

Opportunity- It is estimated that more 50% of doctors are attracted with the concept of PHR and excited to adopt it. If there is a good marketing strategy is followed and a good product is available in the market, then the concept of PHR will become more popular.

Barrier- Lack of resources, less computer knowledge and unawareness of the benefits of PHR are the main barriers in PHR usage.

- **Time Saving By Using Online Exchange Process**

Using online claims exchange is a time saving process. It can reduce the time taken by payers to process claims and pre authorizations due to some missing information of patient. Around 45% of doctors believe that online processing of claims will reduce time taken in processing claims manually. Around 30% of the respondents were not agreed with the fact as they believe it doesn't make any difference.

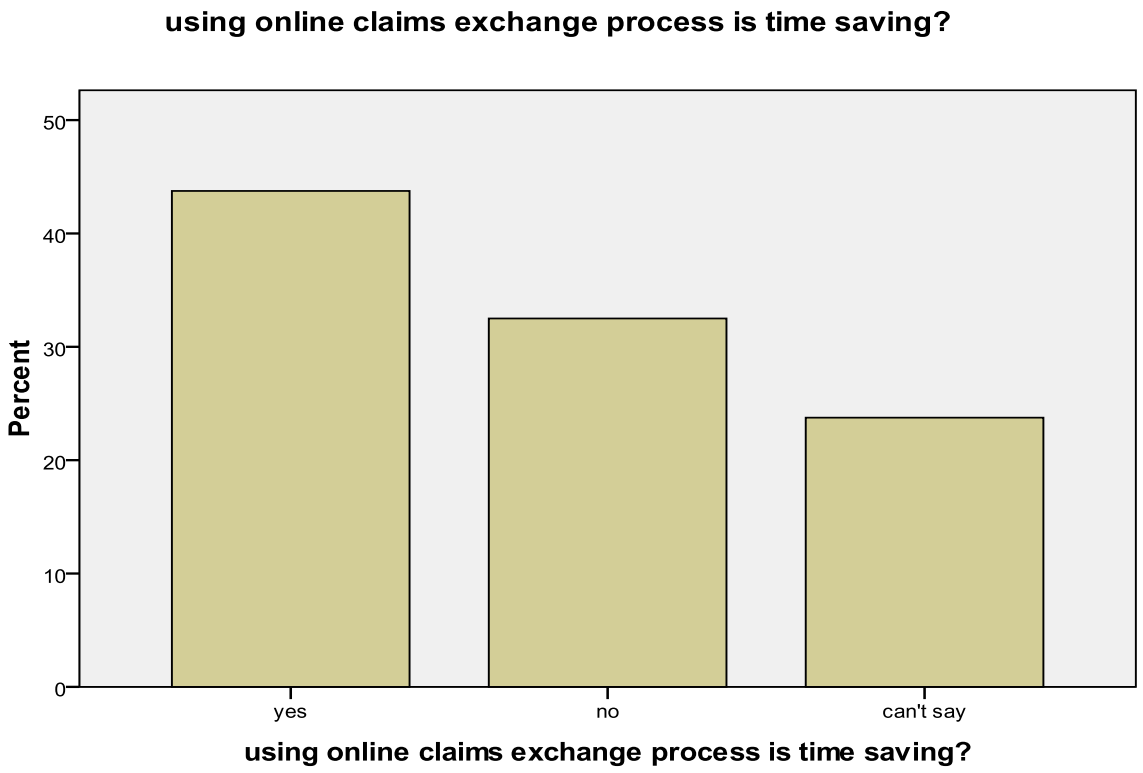

Figure 7

Opportunity- Online claims exchange process is time saving and consistent as it consists of a standardized format and there are lesser chances for missed out information which will prevent the rework and also payment errors will be minimized.

Barrier- There is security and privacy issues in online claims exchange process which can compensate with the time taken in processing claims but physicians are not ready to compromise with security of patient details.

- **Main Barrier For Using IT System In OPD**

The main barriers in using IT system in OPD are heavy patient load, cost of maintaining systems, difficulty in using computer system and complicated software. Around 50 % of the respondents believe that heavy patient load is main barrier out of all the four. Around 22- 23% believe that cost for purchasing system and difficulty in using systems are the main barriers. Less than 5% believe that complicated software is the main barrier.

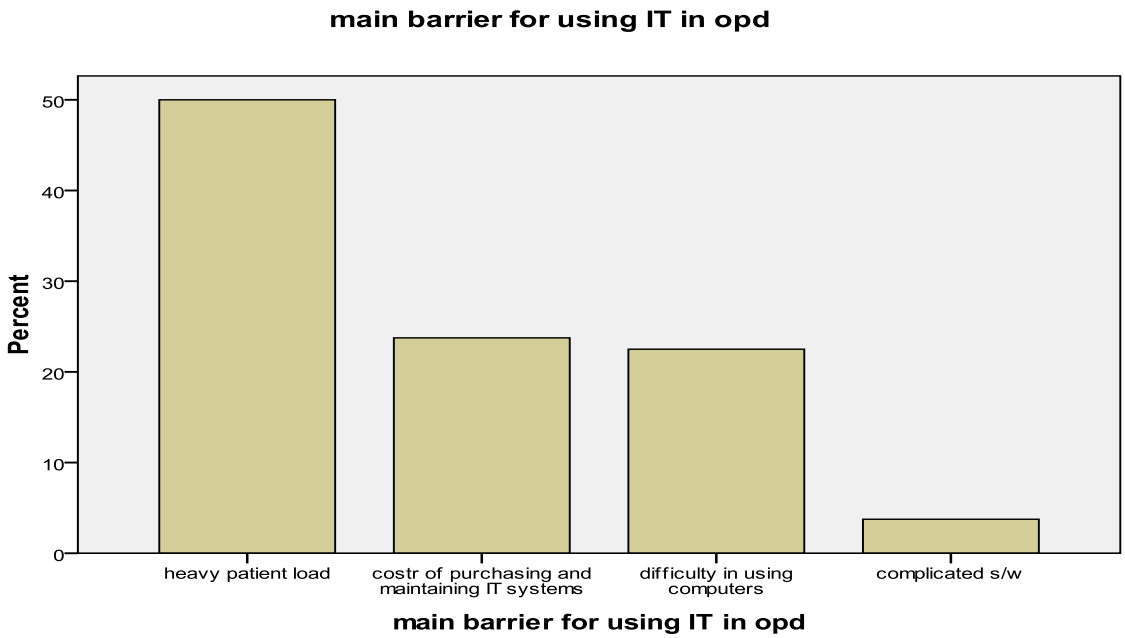

Figure 8

- **Importance Of IT For Patient Care**

  IT systems are important for patient care as with the use of IT systems medical errors can be prevented. Around 25 respondents out of 80 who were interviewed confirmed the fact. Also, 13% of the respondents said that IT systems can increase the patient safety. 41% of respondents said that IT systems are important for easy accessibility and availability of patient data irrespective of time and place.

Fig 9 : Importance Of IT For Pt. Care					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	reducing medical errors	25	31.3	31.3	31.3
	increasing patient safety	11	13.8	13.8	45.0
	incresing revenue	3	3.8	3.8	48.8
	patient data accesibility and availability	41	51.3	51.3	100.0
	Total	80	100.0	100.0	

***Opportunity*-** It is estimated that easy accessibility and availability of patient data is highly needed for patient care and also, better management with reducing errors can be done through IT systems.

***Barrier*-** Some of the doctors are not aware of importance of IT systems for patient care and feel that this concept is not worth for Indian healthcare and hospitals.

- **Use of IT for better disease management**

Better management of disease can be done through IT systems as with the concept of PHR and free OPD services coverage in health insurance most of the diseases will be detected in early stage only. More than 50% of respondents agrees that IT systems can be helpful in better disease management. 35 % of the doctors are not agreed with the fact and said that it is a useless and complicated process not meant for ordinary patients. Around 15% said that they are not aware of use of IT and its benefits so they can't say anything about it.

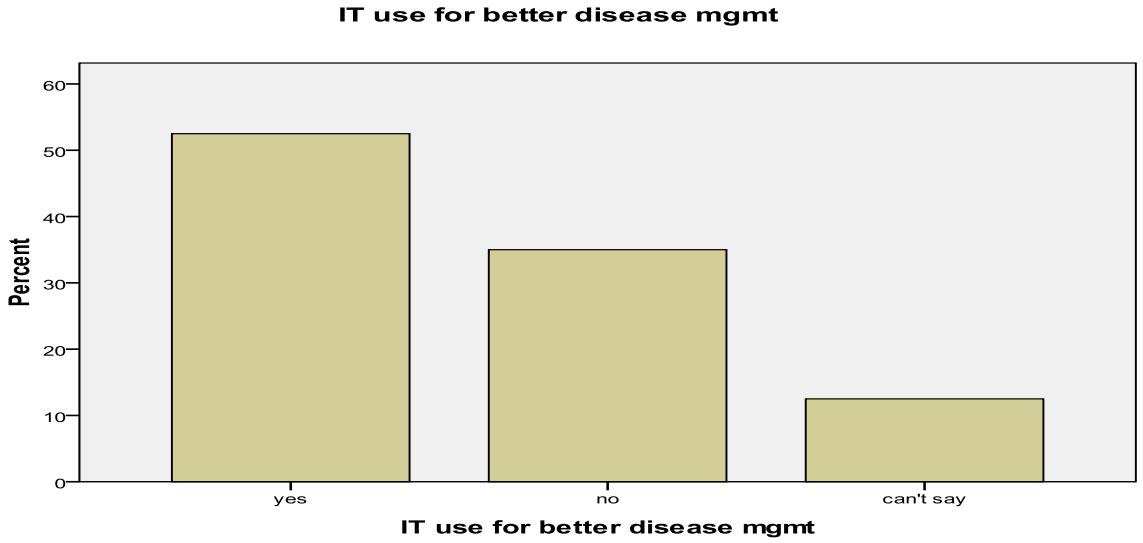

Figure 10

***Opportunity*-** IT systems can be used for better disease management as with help of them, whole of the patient history can be retrieved at any time which otherwise would not be available all the time.

***Barrier*-** Unawareness about benefits of using IT system in OPD to the physicians is the main barrier and also patients are not that IT friendly to maintain their health related data.

5. Discussion

After the analysis of the questionnaires, it was found that quality and utilization of healthcare insurance will be enhanced with the use of IT systems by reducing the time and costs of administrative process included in claims approval/denials. Also, the gaps in the current system will be filled with more standardized processes for patient data exchange for claims and better disease management with the use of Personal Health Record. There are some barriers with the implementation of IT systems in OPD's such as heavy patient load, difficulty in using computer systems by doctors, costs of purchasing IT system, no support from patients to store their data due to security and privacy reasons. Also, the culture of organization is highly responsible for IT usage in OPD as in rural areas there is very high number of attrition of staff and patients are not aware of the benefits of using IT systems so lack of support is observed from their side. In some facilities it was found that some of the doctors and management do not want to use IT systems because of transparency issue. It has also been found that the main problem in healthcare is misuse and underuse of services leading to non transparent system. Key expectations of physicians from IT system for OPD services claims exchange process is that the system should be user friendly and secure for storing and exchanging patient information. It should also be cost effective and easy to maintain. The system should have features to detect fraud and abuse and provide accurate and reliable patient information. The system should also be able to reduce time for claims processing so that patient and physicians time is saved.

6. Conclusion

It has been found that higher administrative costs and complex process for exchange of claims with less reliability are the main barriers in growth of health insurance sector in India. With the help of Online claims exchange process, these barriers can be minimized or even removed. Payment error, rework due to incomplete patient information and non transparent claims can be tracked out with IT system. Each of the claims will be given a unique ID by which claims can be tracked throughout the claims processing cycle. But for using IT systems, there exists some barriers which are heavy patient load in OPDs, untrained staff for using computer systems, cost of purchasing IT systems and complicated software. These can be sorted out by developing user friendly and not too complicated software which will be available at a more reasonable cost. Concept of PHR also attracts physicians and most of them believe that by using PHR, patient data can be easily accessible from any place at any time which is very difficult otherwise to carry all the reports all the time. Most of the physicians are also agreed that by using online claims exchange for health insurance for OPD services would help in reducing time for processing claims for approval/denials and increase the revenue. Physicians also believe using IT systems will be helpful in better disease management as all the medical history related to allergies, drugs, surgeries, diagnostic reports etc would be maintained all the time.

7. Recommendations

- As patient security and privacy is a major concern for many of the doctors, standardized process should be used by using some standard like HIPAA.
- Physicians should submit clean claims with full transparency and adopt online claims exchange process as soon as possible to reduce costs and simplify processes.
- All the stakeholders for health insurance that is payers, providers, consumers, employers etc should play a role in implementing the online claims exchange process for better health data management and increasing quality of healthcare insurance.
- Standardized process for payments and billing should be made to prevent payment errors.
- Dashboard should be maintained for keeping a track of performance of the people and software and to prevent rework and payment errors.
- Proper marketing strategies should be made for creating awareness of such a product in the market as most of the physicians are not aware about it.
- Training sessions should be made for the physicians for making them aware about health insurance for OPD services.

8. **References**

- *facweb.cs.depaul.edu/research/vc/.../active_learning_KDD2010.pdf*
- http://www.ama-assn.org/resources/doc/psa/admin-simp-wp.pdf
- *www.ahima.org/downloads/pdfs/.../HASCReport20090717.pdf*
- www.hcxindia.net
- *www.healthsprint.com*
- *www.ncbi.nlm.nih.gov › NCBI › Literature*
- www.buzzle.com/.../basic-**steps**-of-**marketing**-**research**-process.html

9. Annexure

***RESEARCH STUDY*: - To determine whether use of Information technology by physicians in OPD can increase quality and utilization of healthcare insurance.**

I trainee at HCX and student of PGDHHM at IIHMR, Delhi is doing a study on above topic in the healthcare facilities of Delhi and NCR.

QUESTIONNAIRE FOR PHYSICIANS

1. **General information**

NAME OF THE HOSPITAL : ……

NAME OF THE RESPONDANT: ……

CONTACT NUMBER : ……

EMAIL ADDRESS : ……

2. Age of respondent
   - 25-34
   - 35-44
   - 45-54
   - 55 and above

3. Specialty of hospital
   - Single specialty
   - Multispecialty
   - Nursing home
   - Others (please specify)

4. Focus specialization area
   - Medicine
   - Dental
   - Ophthalmology
   - Others (please specify)

5. Specialization of doctor
    - General physician
    - Opthalmologist
    - Dentist
    - Others (please specify)

6. Computer literacy status of doctors
    - MS Office
    - Internet
    - MS office + internet
    - None

B. Main Information

Q1. Are you aware of computerization of your healthcare organization/hospital?

I. Yes
II. No
III. Can't say

Q2. Can you please let us know the extent of computerization in your organization/hospital?

I. Fully computerized
II. Partially computerized
III. Not computerized

Q3. Do you have any future plans to computerize all the functions in your organization/hospital?

I. Yes
II. No
III. Not applicable

Q4. Do you think implementation of IT will be helpful for improving the exchange of information in healthcare?

I. Yes
II. No
III. Can't say

Q5. Do you think healthcare insurance is needed for OPD consultation?

I. Yes
II. No
III. Can't say

Q6. Does the concept of PHR attract you?

I. Yes
II. No
III. Can't say

If yes, why? ……..

……

Q7. According to you, using the online process for insurance claims and cashless facilities is time saving?

I. Yes
II. No
III. Can't say

Q8. According to you, what is the main barrier for using IT system in OPD?

I. Heavy patient load
II. Cost for purchasing and maintaining IT systems
III. Difficulty in using computer systems
IV. Complicated software

Q9. Why do you think using IT is important for patient care?

I. Reducing medical errors
II. Increasing patient safety
III. Increasing revenue
IV. Patient health record accessibility and availability

Q10. Would you say that the culture of the unit/organization(s)/ region affects the implementation of IT in a healthcare facility?

I. Yes
II. No
III. Can't say

Q11. If yes, in what ways?

I. Computer literacy of the end users
II. Awareness about the benefits of using IT systems
III. Patient support
IV. Availability of doctors and nurses

Q12. Would you say that by using IT systems in OPD for free consultation will lead to better disease management (at unit/organizational/regional level) and early detection of diseases?

I. Yes
II. No
III. Can't say

Q13. What do you think is the main quality problem in healthcare?

I. Variation in services
II. Underuse of services
III. Overuse of services
IV. Misuse of services

Q14. What are your key expectations from IT system in OPD for free consultation and claims exchange?

I.
II.
III.

Q15. Are you satisfied with the performance of current IT system in your organization?

I. Yes
II. No
III. Not applicable

Q16. Do you have any suggestions in relation to computerize OPD services for free consultation and claims exchange process?