"Gap Analysis of operational HIS System In XYZ Multispecialty Study of Pharmacy Module and HR Module"

A dissertation submitted in partial fulfilment of the requirements

For the award of

Post-Graduate Diploma in Health and Hospital Management

By

Anuj Gaur

International Institute of Health Management Research

New Delhi -110075

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Invest2Care Technologies Private Limited

Certificate of Internship Completion

Date: 25th April 2013

TO WHOM IT MAY CONCERN

This is to certify that **Anuj Gaur** has successfully completed his 3 months internship in our organization from January 21, 2013 to April 20, 2013. During this intern he has worked on **System Analysis** under the guidance of me and my team at **Invest2Care Technologies Pvt Ltd**

We wish him good luck for his future assignments.

(Signature)
NIRANJAN Kumar (Name)
CEO, Invest2Care Designation
Technologies Pvt Ltd.

36, 1st Floor, Balfour Road, Kilpauk, Chennai – 10, India | Phone: +91 44 26450460 | E-mail : info@invest2care.com

Certificate from Dissertation Advisory Committee

This is to certify that **Anuj Gaur**, a graduate student of the **Post- Graduate Diploma i Health and Hospital Management**, has worked under our guidance and supervision. H is submitting this dissertation titled **" Gap Analysis of Existing HIS System inMultispecialt Hospital - Study of HR & Pharmacy "** in partial fulfilment of the requirements for th 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 i has been reproduced from any other dissertation, monograph, report or book.

6 May 2013

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Date 7 May 2013

Invest2Care Technologies Private Limited

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FEEDBACK FORM

Name of the Student:	**Anuj Gaur**
Dissertation Organization:	Invest2Care Technologies Private Limited, Chennai
Area of Dissertation:	Issue Analysis of Operational Hospital Information System, Back Office Support System & Data Mining and Reporting Application in a Multi Specialty Hospital
Attendance:	**Regular**
Objectives achieved:	**Satisfactory**
Deliverables:	Report on analyzing the existing IT System and Infrastructure . Propose options to move ahead to resolve the issues.
Strengths:	Good Problem Solving Skills, Willingness to explore new areas
Suggestions for Improvement:	Self initiation

Attalakshmi

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

Date: 25th April 2013
Place: Chennai

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ABSTRACT

Invest2Care is a fast growing organization committed to see what they implemented really solves the key CHALLENGES of their clients.

The organization follows up and stays with the customer till they see THE MEANINGFUL USE of the implemented solution. Invest2care has been in the forefront of DESIGNING PRODUCTS for the Indian as well as global market. Invest2care is able to introduce sufficient flexibility in its product design to take care of all possible eventualities. Invest2care has positioned itself to provide a broad range of IT project services - systems development, legacy migration and consulting services.

The Company ensures innovative solutions and a delivery aimed at generating client delight. The organization takes away his CLIENT'S OPERATIONAL headache that comes across during the delivery, implementation and post training too. The Organization helps his clients in handling the CHANGE MANAGEMENT issues

XYZ Multispecialty Hospital, Which is located in New Delhi with 675 beds, is a multispecialty hospital & known for one of the best e-enabled institution. The IT infrastructure is strongly supported by mainly 3 applications such as -1 (product of Comp-A), SYS-2 & SYS-3 (Product of Comp-B). SYS-1 is being used for Front Office and Patient Management. SYS-2 is being used for Back Office Management. SYS-3 is being used for Data Mining and Reporting.

The Senior management of the hospital had technical and functional issues related with all the above mentioned applications, so management given the responsibility of constructing a proper road map for reformation of IT infrastructure to our organization i.e. Invest2Care Technologies Pvt Ltd..

The goal of this project is to improve the Patient Satisfaction, ensure smooth functioning of various departments, thorough visibility and utmost transparency of the technical, commercial implications of information infrastructure systems.

Activities related with the project are:

- To initiate a detailed system study in all identified departments especially Pharmacy, Patient administration, Front office, Billing, Centralized investigation reporting, Admission, Receiving and purchase etc.
- Categorize & prioritize the issues as show stoppers, major bugs, minor bugs, suggestions to improve, enhancements, wish list etc.
- Issues list per user / department.
- Assess the latest product to analyse in detail.
- Prioritize the issues based on the business, functional and technical requirements

The major findings are:

- Various gap in inter-departmental communication which hampers the exchange of information among departments
- Various customizations done in all the three applications in past 6-7 years which were not properly documented at that time.
- Different lack of pro-activeness from the department with respect to issues and requirements
- Compulsory the up-gradation of existing applications
- Issues in License management system.
- Issue log or issue ticketing system to record each and every issue happened in organization.

Review of Literature

Hospital Information Systems in Nigeria:

This literature review was developed to examine empirically the factors hindering adoption of hospital information systems in Nigeria. The study was focused on the perceived paucity of health information technology policy in Nigeria and the causes of poor implementation of hospital information systems in the country. The findings of the literature review highlighted hindrances to the adoption of hospital information systems to include; the high cost of full implementation of a hospital information system, inadequate human capital, corruption, and problems associated with poor infrastructure in Nigeria. The recommendations were that, the Nigerian government needs to provide stable electricity, basic communication infrastructures, and Internet access to boost private initiatives in the adoption of health information technology across the country.

Hospital Information System Evaluation:

Information technology has rapidly penetrated into the healthcare sector and it has been proved that it can lead to better decision support, organizational support and even influence the quality of the services offered to patients. The evaluation of any HIS is, therefore, a very critical issue. After an extended and systematic review of the existing literature, user satisfaction was chosen as the measurement of IS success. The proposed research model of IS success is based on widely validated user satisfaction models. System quality, information quality, service quality and user background were selected to measure user satisfaction. A structured questionnaire has been used to collect data from four Greek state hospitals, in order to empirically test the validity of the proposed model. Structural Equation Modeling is the main statistical technique used to test the fit of the structural model.

The main conclusion is that user background, information quality and service quality directly and positively affect user satisfaction confirming three out of four initial hypotheses (H1, H3, and H4). System quality has been found to influence user satisfaction only indirectly, through information quality, but not directly, as it was initially stated.

"Dissertation Report"

1.1 Introduction of Organization:

Name of the Internship Organization: **Invest2Care Technologies Private Limited, Chennai**.

Invest2Care is a fast growing organization committed to see what they implemented really solves the key CHALLENGES of their clients.

The organization follows up and stays with the customer till they see THE MEANINGFUL USE of the implemented solution. Invest2care has been in the forefront of DESIGNING PRODUCTS for the Indian as well as global market. Invest2care is able to introduce sufficient flexibility in its product design to take care of all possible eventualities. Invest2care has positioned itself to provide a broad range of IT project services - systems development, legacy migration and consulting services.

The Company ensures innovative solutions and a delivery aimed at generating client delight. The organization takes away his CLIENT'S OPERATIONAL headache that comes across during the delivery, implementation and post training too. The Organization helps his clients in handling the CHANGE MANAGEMENT issues.

The organization was founded by Mr. Niranjan Kumar Ramakrishnan (Founder & CEO) in the year 2009.

Organization's Corporate Office:

36/2, 1st floor, Balfour Road, Kilpauk Garden, Chennai, 600010

Branch Office:

II floor, Rasi Scans Building, A.R IT Park, Ramanathapuram, 623501

Competences:

- Management Consulting Services
- Hospital Management
- Patient Management
- Event Management
- Data Management
- Cloud computing Training
- Healthcare IT Training
- Return on Investment.
- Operational Transformation.
- Document Management.
- Communication & Training Business Planning.
- Business Strategy Development.
- Community Management Systems.
- New Business Development.
- Market Research & Analysis.
- Branding and business development.
- Partnership Collaborations.
- Performance Reporting & Improvement.
- Sales Support & Account Management.

1. **Hospital Management**:

Life2Care is Hospital Information System (HIS) is designed to meet all the information needs within a hospital. 'LIFE2CARE' is a Hospital Management Solution for Multi-Specialty Hospital to cover a wide range of hospital administration and management processes. This is an integrated end-to-end Hospital Management System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration and critical financial accounting in a seamless flow.

This includes diverse data types such as patient information, billing, finance and accounting, staffing and scheduling, pharmacy ordering, prescription handling, supplies, inventory, maintenance and orders management, diagnostic reports related to laboratory, radiology and patient monitoring as well as providing decision support. The ultimate objective is to build a network of interdependent centres such as the clinical laboratory, radiology department, pharmacy, and so on in order to effectively meet the needs arising within the hospital. Despite the fact that these individual centres are autonomous, they are interdependent in terms of delivering services and to ensure effectiveness of providing care. All this can be achieved through Life2Care that have formed the cornerstone of today's modern hospital.

Life2Care Highlights: User Friendly, Template Designer, Seamless Workflow, Intuitive Work, Token Generator, Erx, SMS, Digital Signature, Palm Vein Biometric, Tally Based Accounting Integration, Touch Screen Integrated.

1. **Life2Care Packages:**

Life2Care Enterprise
Patient Registration
Appointment Desk
Doctor's Workbench
Patient Billing

Laboratory Management
Radiology Management
Admission Management
Ward task Management
Discharge Management
Electronic Medical Record
Customizable Reports
Template Management

2.Life2Care OPD

Patient Registration

Appointment Desk

Doctor's Workbench

Patient Billing

Laboratory Management

Electronic Medical Record

Customizable Reports

3. Life2Care Lab

Patient Registration

Appointment Desk

Patient Billing

Laboratory desk

Scan desk

Lab Inventory Management

Customizable Reports

4. Optional Modules

Pharmacy Management

Inventory Management

Biometric Identification Solution

Biometric Attendance Management

Tally Integration

Patient Kiosk

KIOSK Operator

Records Scanning

ICD Coding

Insurance Integration

ID card Printing

Resource Management

- **Patient Management:**

Patient2Care enables patient management process automated using Next Generation technology solutions for AFFORDABLE & User friendly integrated patient management solutions is the role of Patient2Care. Demonstrable ROI is the key in the success of HIT solutions globally especially in India. We at Invest2Care truly understand this. Patient is the Centre of Gravity of Health Ecology. Whether it is Cloud, Touch Screen Kiosk, Palm Vein based biometric sensor we adopt any proven technology - technique to bring in meaningful automation in healthcare industry. Any innovation should be focusing on the patient as the primary stakeholder.

- **Data Management:**

Data2Care is the state of art technology comes with business process management and forms processing software enabling enterprises to digitize documents and automate manual processes,

thus adding agility and flexibility for quick decision making on ever-changing market dynamics. Data2Care is a robust, yet easy to use web-based Enterprise Document Management Software built on the scalable and secure Microsoft .Net platform. The state of art technology comes with business process management and forms processing software enabling enterprises to digitize documents and automate manual processes, thus adding agility and flexibility for quick decision making on ever-changing market dynamics.

Data2Care Features

Store and Manage documents
Manage Batch Directory
Scan and Import
Assign indexes
QC Indexing
Enable Export
Generate Report
Key Benefits:
Integrated workflow
Multi-level Search and retrieval
Authorized role based access control
Reduce paper handling and storage cost
Workflow Management
Audit log Management.

- **Cloud Computing Training:**

Learn2Care Division of Invest2Care in collaboration with Leading and recognized organization, set up Centre of Excellence for Cloud Computing with the intention of developing Cloud Computing skills to meet the Globe demand for Cloud computing skills. Despite the growing

adoption of information technology (IT) there are still barriers to its optimal use, one of them being shortage of trained resources who understand the business as well as IT. To bridge this gap between supply & demand of trained resources Learn2Care has launched short term courses in the field of IT for Cloud Essential Professionals.

Cloud Computing is the next step in the evolution of the Internet as a source of services. Cloud computing is a general term for anything that involves delivering hosted services over the Internet. The service is fully managed by the provider (the consumer needs nothing but a personal computer and Internet access).

Significant innovations in virtualization and distributed computing, as well as improved access to high-speed Internet and a weak economy, have accelerated interest in cloud computing.

- **Health IT Training:**

Health IT Technician training and certification course delivers regulatory requirements, healthcare terminology/acronyms, and an understanding of practice workflow while adhering to code of conduct policies and security best practices. It is designed specifically to prepare students for successful completion of the Healthcare IT Technician exam. With the aid of authorized courseware and certified experienced instructors, this course imparts the knowledge and skills required to confidently implement, deploy, and support healthcare IT systems in various clinical settings.

HIT Technician training is a vendor- and technology-neutral credential that validates the operational, regulatory and security knowledge necessary to provide hardware and software support in medical environments where electronic health record (EHR) systems are used.

1.2 Project Engagement Area:

Invest2care Technologies appointed as Healthcare IT consultant in Multispecialty Hospital, New Delhi,

1.2.1 Project Summary –

Gap Analysis of operational HIS (A), Back office support application (B) & reporting application (C) with respect to HR and Pharmacy Module in XYZ Multispecialty Hospital, New Delhi.

1.2.2 Chief Accomplishments/Determination involved during execution of Project Consignment:

- In the beginning of the project, consulting team needs to find all the departments who uses any of the three applications.
- Successively completion of identification of all the relevant departments, team needs to Identify all the key/power users of that particular department.
- Secondary, team requires doing detailed interview of identified users, and collecting all Issues related with the three applications whether functional or technical.
- In the meantime the team requires getting the training of all the three applications from IT department users to understand the issues of applications faced by users in daily process work.
- Formerly the team needs to categorize the issues as Hardware issues, Network issues Bugs & Fault, Recommendations to recover, wish list, etc.
- Categorize & prioritize the issues based on the business, functional and technical requirements.
- At that time the team requires getting the opinion of IT department on all the issues faced by the users.
- Further the team will try to get the access of trial version of Latest Track Care i.e. Pro-A Version 2012 to review that product completely.

1.3 Tasks with respect to various Departments:

Task given was mainly the department wise study; Recording of all identified issues / requirements; Understanding of the existing system, usage and work flow in detail; To get IT team's inputs / feedback for all the issues; and reporting & documentation of all the existing issues and requirements.

The various departments are as follows:

a. Admissions
b. Front Office and Billing
c. OPD
d. Investigations
e. Discharge Department
f. Dialysis Centre
g. Nursing Station
h. Finance
i. Pharmacy
j. Purchase
k. Receiving
l. Heart Centre
m. CIC
n. OT Store

1.4 Contemplative Learning during Internship Period:

However at work on this project I learnt various things in techniques & documentation which are enrich my skills and competence.

During my whole internship I got opportunities to interact with users of different departments and to record their problems and issues.

- Reviews, analysis and detailed documentation, including workflow, program function Issues in HIS, Inventory tool and reporting tools.
- Interaction with all users throughout hospital to understand their needs and to co-Ordinate their feedback in relation to the current deployed HIS.
- Prioritizing and escalating issues requiring urgent attention.
- Publishing dashboard of issues through the department wise
- Identifying the root cause of the issues and presentation of the report to the senior Management folks of Hospital

Dissertation on Gap Analysis of operational HIS System in Multispecialty - Study of HR & Pharmacy Module

1.1 Introduction

XYZ Multispecialty Hospital, located in New Delhi with 675 beds, is a multispecialty hospital & known for one of the best e-enabled institution. The IT infrastructure is strongly supported by mainly 3 applications such as PRO-A, PRO- B, PRO- C. PRO-A is being used for Front Office and Patient Management. PRO- B is being used for Back Office Management. PRO- C is being used for Data Mining and Reporting.

The Senior management of the hospital came across many technical and functional issues related with all the above mentioned applications, so management gave the responsibility of constructing a proper road map for reformation of IT infrastructure to our organization i.e. Invest2Care Technologies Pvt Ltd.

This project is to improve the Patient Satisfaction, ensure smooth functioning of various departments, thorough visibility and utmost transparency of the technical, commercial implications of information infrastructure systems.

The project report document is to highlight the Hospital's detailed system analysis and technical status. Then we are supposed to extend our consulting service, to clearly articulate the functional needs of the hospital to be computerized for an efficient patient care as functional design document. Once the system study is complete consulting team would recommend the most economical solution by retaining the modules, which are functioning well and to list the new functions to computerize.

1.2 Scope of the Project:

- To initiate a detailed system study in all identified departments especially Pharmacy, Patient administration, Front office, Billing, Centralized investigation reporting, Admission and Receiving (purchase) etc.
- To come up with issues list per department / user.
- To categorize the issues as show stoppers, major bugs, minor bugs, suggestions to improve, enhancements, wish list etc.
- To prioritize the issues based on the business, functional and technical requirements.
- To get trial version of Latest application installed and review the product fully.
- To evaluate the latest product to analyse in detail.
- The complete study would be Qualitative.

1.3 Problem Statement:

Currently the hospital users are using mainly three applications, Pro-A, Pro-B & Pro-C.

Pro-A, B used in following areas:

1. Admissions
2. OPD
3. Central Investigation Center
4. Casualty
5. Radiology
6. Discharge Department
7. PRO-B used in following areas:
8. Store
9. Purchase
10. Receiving
11. Finance
12. Nursing
13. Billing

14. Ordering
15. OT
16. Laboratory
17. Over the Counter sale

PRO-C Used by IT department users to fulfil the requirements of various kinds of reports which are raised by the different departments.

METHODOLOGY

A qualitative research with a descriptive study has been conducted for the evaluation of the hospital information system at Sir Ganga Ram Hospital. The methods used in the study were:

i. Survey process
ii. Observational process

Descriptive research is also called Statistical Research. The main goal of this type of research is to describe the data and characteristics about what is being studied. The idea behind this type of research is to study frequencies, averages, and other statistical calculations. Although this research is highly accurate, it does not gather the causes behind a situation. Descriptive research is mainly done when a researcher wants to gain a better understanding of a topic. A descriptive study is one in which information is collected without changing the environment (i.e., nothing is manipulated). Sometimes these are referred to as "co relational" or "observational" studies.

Descriptive studies can involve a one-time interaction with groups of people) or a study might follow individuals over time. Descriptive studies, in which the researcher interacts with the participant, may involve surveys or interviews to collect the necessary information. Descriptive studies in which the researcher does not interact with the participant include observational studies of people in an environment and studies involving data collection using existing records (e.g., medical record review). Descriptive research is the exploration of the existing certain phenomena. persons.

1. Survey Process:

Survey research can be specific and limited, or it can have more global, widespread goals. The Survey method is the technique of gathering data by asking questions to people who are thought to have desired information.

It is relatively simple to analyze, quote and interrelate the data obtained by survey method. But, Symantec difficulties are there - it is difficult. Careful control of data gathering by employing specially trained investigators who will observe carefully report on subtle reactions of persons interviewed.

Personal interviews are conducted by an associate of the researcher. These interviews have more flexibility than a paper survey, because, for instance, the interviewer can skip irrelevant questions, and both the interviewer and respondent can ask for clarification. The interviewer can also control the order of the questions if that is important.

2. Observational Process :

Social research technique that involves the direct observation of phenomena in their natural setting. Observational research involves observing something without changing it or any variables involved. You will just record what you 'observe' without interfering with it in such a way that the outcome may change. If one or more variables are changed, this is 'causal' research or experimental research.

It can provide quantitative or qualitative data. Observation can be a tricky method as it involves interpretation based on your recorded observations. Generally, there are three types of observational research.

Gap Analysis of HIS

In

PHARMACY DEPARTMENT

An Overview

To enable operational efficiency across the hospital need to deploy proper and adequate due to diligence and right implementation approach, these system can help

Addressing the shortage of pharmacists by streamlining and automating the workflow process step. The system should aim for efficient filling of perceptions while freeing up pharmacist for customer consultation and allowing technician time for value-added activities.

Streamlining operation through data sharing across store location allowing patient to order/refill their Rx from any store. Significant important is possible in this area with workload balancing and remote/ distributed operations

Segmentation of work process for efficient division of labour.

Systemic data check to scan impact of drug combination of drug allergies to ensure patient wellness and provide counselling to improve relationship with the patient.

Enhancing customer satisfaction level and repeat business through timely and consistent customer service.

Clinical Features:

1. **Smooth workflow process:** enabling external services such as third party payment, DUR (Drug Utilization Review), consultation wait time calculation.
2. **Integration capabilities:** For robotics/central fill, refill alert, grouping of Rxs, point of sale, reporting order, order/inventory management, labour scheduling etc.
3. **Centralized view of data:** Including patient history inventory and ability to fill prescription anywhere I, vicinity store inventory view, RX transfer.
4. **Workload balancing:** Ability to improve store productivity by off- loading activities to alternate locations using remote processing and workload balancing.
5. **Record of across counselling activities:** Maintain schedule and record of counselling activities particularly requirement as well as allow for electronic signature capture.
6. **Integrate across channels:** Viz, e-commerce, e-prescription, kiosks, concierge etc.

Technology features essential in Pharmacy system includes:

- Scalability to add stores on the network on the same foundation / Platform
- No performance variation due to additional stores or increased transaction volumes. Ability to manage peak load considering a mix of 24 hour extended hour and normal hour operations
- Quick response to user query/ user inputs
- Restricted access based on functionality and role
- Real-time synchronization between corporate and stores for fast convenient data transfer
- Robust down-time architecture – Ability to continue prescription processing with minimal impact on productivity in connectivity breakdown scenarios.
- Flexibility to address specific requirement by setting rules and test/modify specific code areas.

- Reliable disaster recovery and back-ups with data storage at stores as well as corporate
- Ease of maintenance
- Ease of integration and data transfer with over systems such as IVR, Robotics, PoS, Website, etc.
- Ability to ensure quick roll-outs of enhancement / upgrades

Options for Retails Pharmacies:

Pharmacy process an choose between ready to-to-deploy product, custom built product or buying our source code and customization it for their requirements.

The right choice will depend on factors like size, geographical spread and complexities of each organization. Their current state with respect to system sophistication and process standardization are also important considerations.

Some critical factors that must be considered from the economic and implementation perspectives' include:

- Effort and cost involved in developing / purchasing the base version
- Effort required deploying the base version across a number of stores
- Development of user training modules and ease transition
- Estimated long term maintenance effort and costs
- Effort and documentation for support team to stay abreast of developments
- Flexibility and ease of enhancements for future business needs
- Ability to run different version in product in test and development for different environment and different application.

The Product route:

Although most existing product cover the base requirement the overall picture of ready-built pharmacy system in not encouraging. This is party due the lack of product choices in the field. Product vendor are yet to gain credibility with retail pharmacy process due to :

- Unfulfilled promises in term of product lunches
- Rigid enhancement regimes
- Generic products that have failed to address specific pharmacy needs.

Custom- built system:

Often for want of better options, pharmacies have the custom build route. However, this options has had its own share of failures. The exception to this is a custom built system one of the largest pharmacy process that has become the gold standards in pharmacy system. This system has helped provide the pharmacy a competitive advantage by offering significantly advanced capabilities over all other systems

Buying the source code:

Another option for retail pharmacies is to buy out the source code from product vendor and customize it for their specific requirement. With this option, retail pharmacies benefit from stating with an existing working base version that can be beta-deployed to quickly ascertain changes or enhancement to be mode.

The source code version is often generic. If the beta deployment is not carefully planned and executed, it could trigger a strong negative sentiment and scuttle any further deployments.

The pharmacy would own the source code; it needs to figure out the mechanism and of changes. Frequently, the product vendor's commitment plummets after the sale is completed. Although some vendor may continue to provide support, it could come at a step price which could alter the economics and make the option unviable.

There is a strong need for organizational and governance process to manage the product without which success can prove elusive.

Needs to make arrangements to "Manage the product" in the future.

Key Factors:

Pharmacy needs to consider the economics and their commitment to any option prior to understanding a pharmacy process initiative. Equally important is conducting a through due diligence exercise to identify challenges and strategies for their mitigation.

1. **Economics:** A pharmacy application for a hospital can start with an up- front cost upwards of approx. – 40$ million, while the cost would rule out this option for smaller and regional organization.
2. **Long term commitment:** Any pharmacy module embarking on this journey must think like a software product vendor. Unless it can commit to nurturing its product for a span of 5-10 years, this option could quickly succumb to the same issues surrounding other product and head for failure.
3. **Due Diligence:** **F**oundational problems are bad news, but otherwise there is typically enough good to move forward although success may not be guaranteed.

   The big problems usually pertain to:

   A. Scalability / Architecture / Performance – While this could mean a problem is "Functional" in nature, it can also be traced to "Big Bang" implementation. In such cases, taking step back and evaluating a phased approach can help.
   B. Functionality and change management – Although this problem is not foundational from a system perspective, business can find that rolling out a system that is "radically different" from the existing one to be an insurmountable hurdle.

Factors to consider in this case:

- If the technician could master an old character-based system to record productivity levels, what could be the worst case intermittent productivity drop with an intuitive GUI-based system which is better navigable, and possibly smoother? Instead of gut feel an actual usability test and hard number would provide reliable pointers.
- If the pain involved in transition is too high creating a façade (a layer of screens) mirroring the existing UIs (but with a better and more robust platform) could be an interim option.

- Futuristic functionality can be a key dissent factor and some of this feature could be pulled out to be plugged in at a later date when they are truly required.

Conclusion:

Choosing the right pharmacy system has been one of the tougher question faced by user. However successful in this area show that it is a critical decision that need to be evaluated and planned for carefully with a 5- 10 year roadmap in view.

FACTORS INFLUENCING THE SELECTION PF PHARMACY SYSTEM	
Functional	**DESCRIPTION**
Base Functional Features Sets	Typical Workflow
	Consultation Tracking Capability
	Wait Time calculation
	Inventory Check Prior to Fill
	Grouping of Rxs
Out-of-the-Box Integration Capabilities	IVR
	Robotics
	PoS
	Website
	E- Prescribing
Additional Desired functionality	Signature Capture
	Refill Alerts
	Workload Balancing Capability
	Vicinity Store Inventory View
	Single Click Rx Transfer within the Chain
	Central Fill Facility Integration Capability

TECHNICAL	DESCRIPTION
Architecture- Distributed, Centralized, Stand Alone	Rx Workflow system can be central (completely Host driven with a dumb terminal at the store), Central + Stores or Standalone
Scalability	Claims processed, 24 hour operational capability , workload balancing
Performance	Avg Application response time to user query / user input
Communication Procedure	Real Time synchronization capabilities between Corp (Host) and Store Application
Data Security & Access Authentication	Restricted Access to functionality based on role
Disaster Recovery	Data Backup and recovery
Data Storage and Transfer	Data Storage at store as well as host. Frequency of data transfer between store and host.
Downtime Operation	Ability for store application to operate f connectivity to host is lost
Application Configurability	Ability to handle for plan/state specific requirement by setting rules
Modularity – For ease of maintenance / Enhancements	Ability to modify and test specific code areas
Reliability	Frequency and Duration of Downtime
Ease of Interfaces / Integration	Easy Integration and Data transfer with other system

PROCESS	DESCRIPTION
Development Effort	Effort to develop base version
Development Effort	Effort to deploy base version across a significant of stores
End user training (Availability of CBT and Training Efforts)	User Training Modules Development and Ease of Transition
Production Support / Maintenance Effort	Estimated on-going Maintenance Effort
Maintenance Tem Training	Efforts & Documentation to bring Support team up to speed on an on-going basis
Enhancements Plan and Effort	On-going effort to enhance application for business needs
Version Control and Change Management Effort	Planning for multiple environment and multiple application version existing concurrently

Methodology for XYZ Hospital:

Issues Finding in Operational Pharmacy Module of XYZ Multispecialty Hospital

The pharmacy module is vast area of operational hospital where the various transitions has to be done which is most important for the daily work process.

STUDY OF AREA:

- Pharmacy main store
- Pharmacy OTC (Over the counter)
- Purchase department

SAMPLE SIZE:

- Number of Users : 25
- Key (Power) Users : 7-8
- Number of concurrent Users _7-8
- Product usage (Name) – A,B,C,
- Product usage (Hours)- varies

DATA COLLECTION TECHNICQUES:

The study was based on direct observation techniques . Data were collected using the techniques of work flow analysis and time in observing the pharmacy departments

TYPES OF DATA:

1. Primary : By on field- observation technique
2. Secondary: Previous data from the pharmacy prescription record.

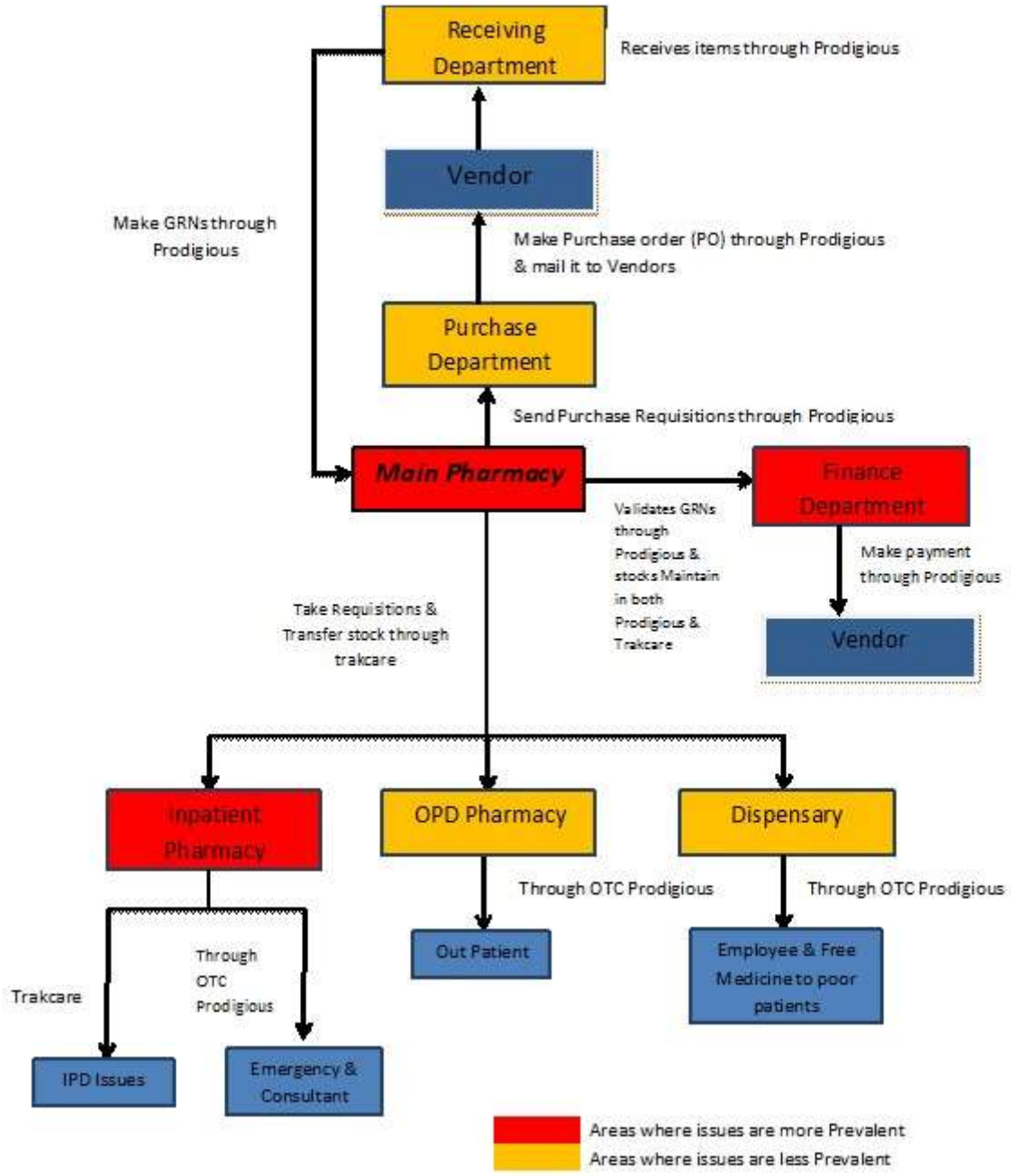
The list various issues found in XYZ Multispecialty hospital:

- License Issue
- Speed Issue
- Mismatching of Product
- Stock requisitions Issues
- Printing Issues
- Validation issues
- Stock level Issues
- Run-time error Issues
- Server down Issues

OBSERVATIONS:

The work flow analysis revealed considerable issues in daily process of prescription result to delay processes.

- The main deficiency in the system the slow wrok flow process of the work .
- License process also complicated for the user, if the user by mistakenly logged out then he was unable to re-login
- Less upgraded of HIS software
- Training issues
- Run time error most faced.



Work Flow of Pharmacy In Hospital

General observation:

In various department of pharmacy the user were using both of the product on their daily process

These are follows for the number of user on their key role and concurrent role and power role in various departments

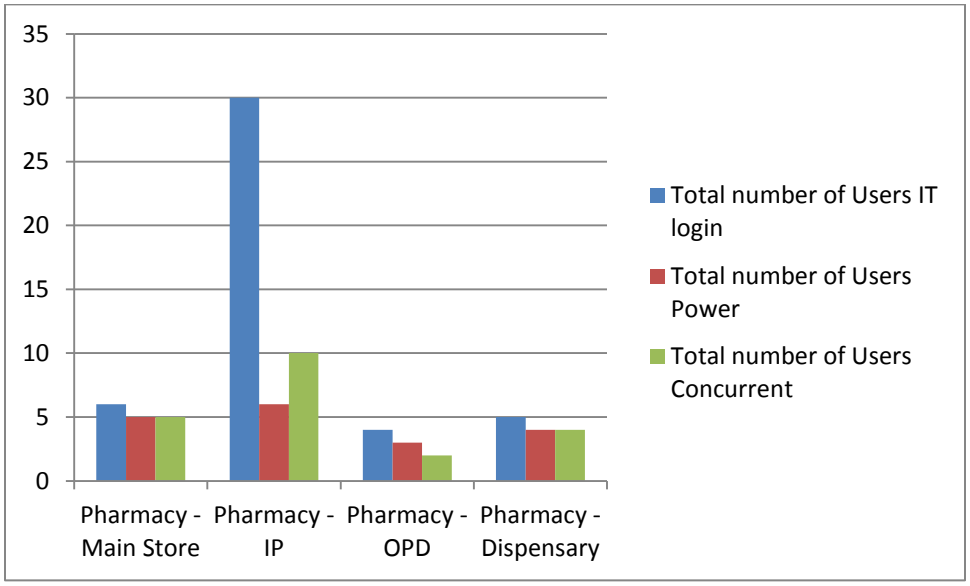


Fig. 1 Department wise total number of user

These are the timely bases product uses by the user which is effect the work load of the hospital:

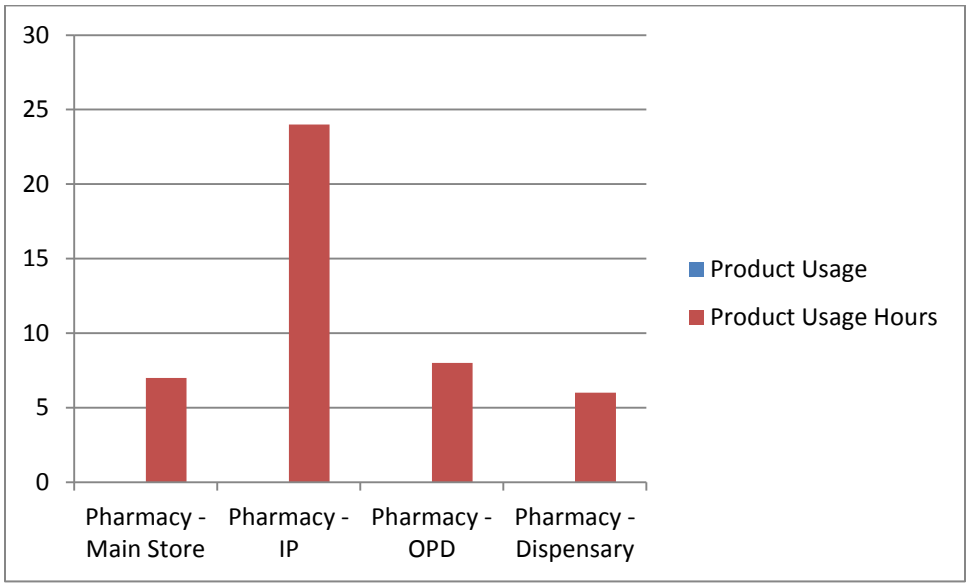
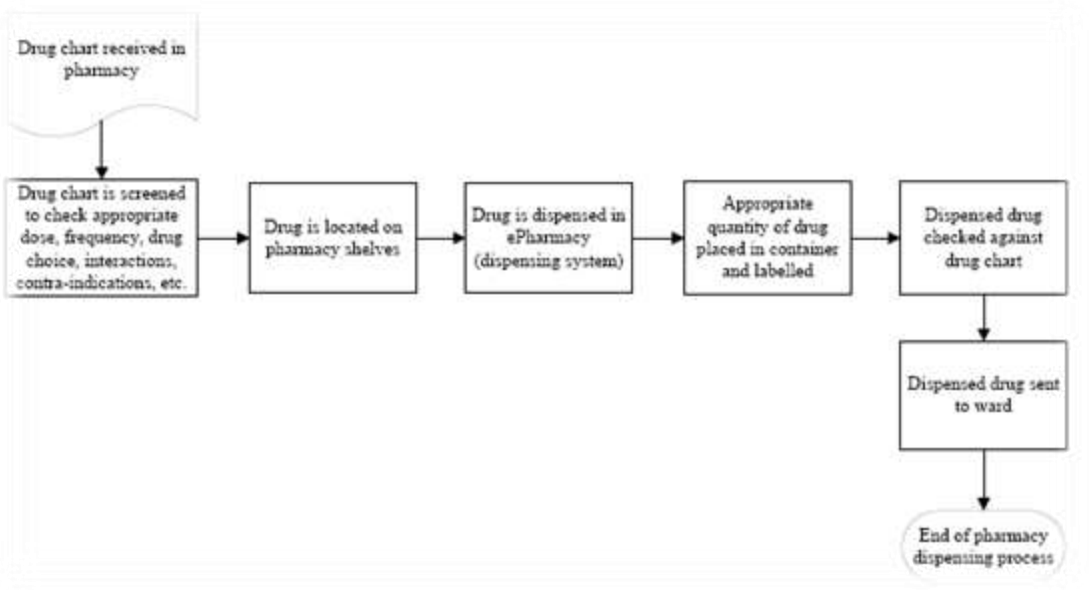


Fig. 2 Product uses by user per Hour Bases

General Work flow of operational Hospital Pharmacy

Fig.3 Work flow of Pharmacy in hospital



Recommendations:

Up-gradation of the current product

Change the new system

Rectify the current issues

Effective communication between respective users and Hospital IT support team

Conclusion:

Pharmacy department ensure the key user of the product which is daily based prescription for all the department are less skills of IT .This is possible by coordination with pharmacy department through constant follow and department of IT support of hospital. The hospital needs to their current version to new version of the product.

Gap Analysis of HIS

In

HUMAN RESOURCE DEPARTMENT

Gap analysis of Human Resources department of Hospital

Human Resources Information Systems (HRIS) is an integration of HRM and Information Systems (IS). HRIS or Human resource Information system helps HR managers perform HR functions in a more effective and systematic way using technology. It is the system used to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information regarding an organization's human resources. A human resource information system (HRIS) is a system used to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information about an organization's human resources. The HRIS system is usually a part of the organization's larger management information system (MIS) which would include accounting, production, and marketing functions, to name just a few. Human resource and line managers require good human resource information to facilitate decision-making.

Critical Analysis

- The general perception about HRIS is that the organization can do without its implantation. Hence only large companies have started using HRIS to complement its HR activities.
- HRIS would be very critical for organizations in the near future. This is because of a number of reasons.
- Large amount of data and information to be processed.
- Project based work environment.
- Employee empowerment.
- Increase of knowledge workers & associated information.
- Learning organization

But trends are changing for the better as more and more organizations realize the importance of IT and technology. Major HRIS providers are concentrating on the small and middle range organizations as well as large organizations for their products. They are also coming up with very specific software modules, which would cater to any of their HR needs.

Objective of study

The objectives of this project report have been manifolds. In general the purpose of the project is to have in-depth analysis and knowledge (personal details) about all the employees of all the departments. In a larger perspective the project aimed at finding out the complete details of the employees, so that the HR department can contact them in the case of emergency or official purpose. This study is the starting point for further analysis.

- It is hoped that a more detailed study can use a survey instrument developed from the results found here.
- HRIS is more important, as organizations require their employee’s details for different purposes.

- If a given HRIS is to have any value at all to HR then information should be based on two factors
    - How many decisions will be improved by the HRIS and
    - How much values will each improved decision produce.

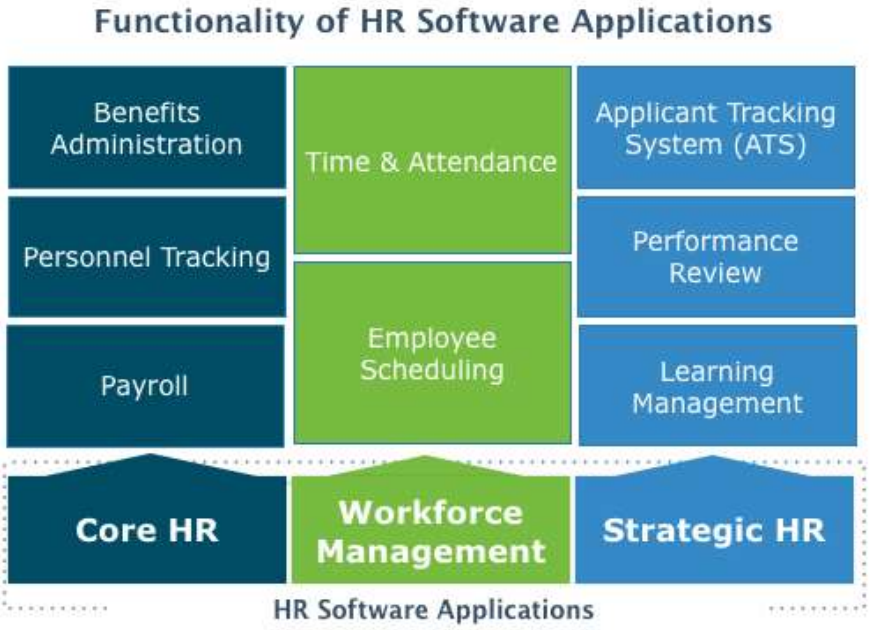


Fig.4 Functionality of HRMS Application

SCOPE OF STUDY

Human Resource Information system is an integrated system designed to provide information used in HR decision making it is a tool through which an HR department can take the information of the employees when company requires any personal or any official informations.

- Personnel Management and administration
- Industrial management
- Manpower management
- Organizational management
- Cordial employee relations.

HRIS is a new technique which is used in these different fields where HR can make there work more easy with the help of Human Resource information system they can collect the information by providing them a form of the same format which includes there company details and personal details also.

The HR management module is a component covering many other HR aspects from application to retirement. The system records basic demographic and address data, selection, training and development, capabilities and skills management, compensation planning records and other related activities. Leading edge systems provide the ability to "read" applications and enter relevant data to applicable database fields, notify employers and provide position management

and position control. Human resource management function involves the recruitment, placement, evaluation, compensation and development of the employees of an organization. Initially, businesses used computer based information systems to:

The significant cost incurred in maintaining an organized recruitment effort, cross-posting within and across general or industry-specific job boards and maintaining a competitive exposure of availabilities has given rise to the development of a dedicated applicant tracking system, or 'ATS', module.

The training module provides a system for organizations to administer and track employee training and development efforts. The system, normally called a "learning management system" (LMS) if a standalone product, allows HR to track education, qualifications and skills of the employees, as well as outlining what training courses, books, CDs, web based learning or materials are available to develop which skills. Courses can then be offered in date specific sessions, with delegates and training resources being mapped and managed within the same system. Sophisticated LMS allow managers to approve training, budgets and calendars alongside performance management and appraisal metrics.

The employee self-service module allows employees to query HR related data and perform some HR transactions over the system. Employees may query their attendance record from the system without asking the information from HR personnel. The module also lets supervisors approve O.T. requests from their subordinates through the system without overloading the task on HR department.

Benefit of HRMS

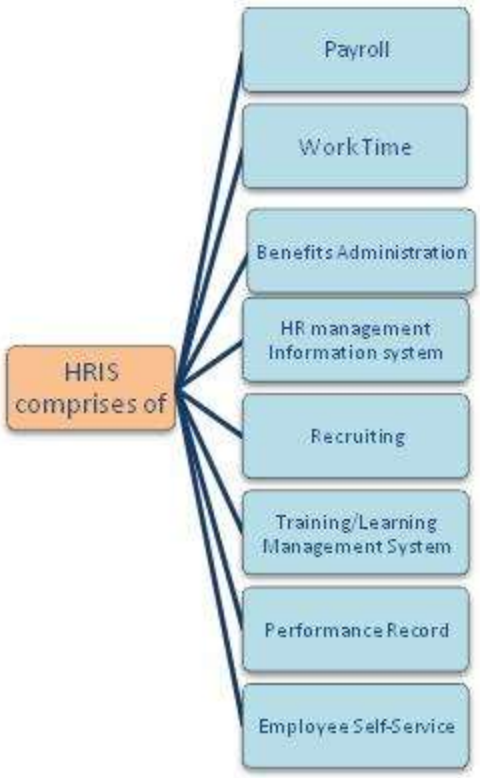


Fig- 5 HRMS Benefits

WORK FLOW HRMS

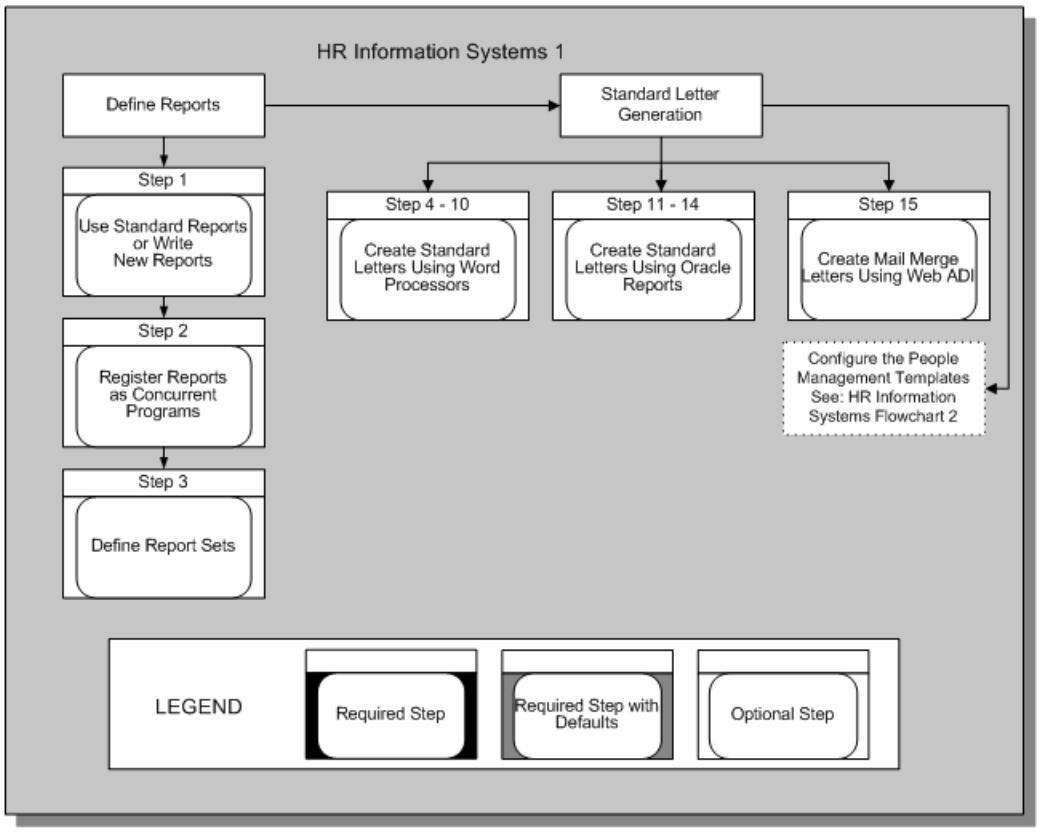


Fig – 6 HRMS work flow

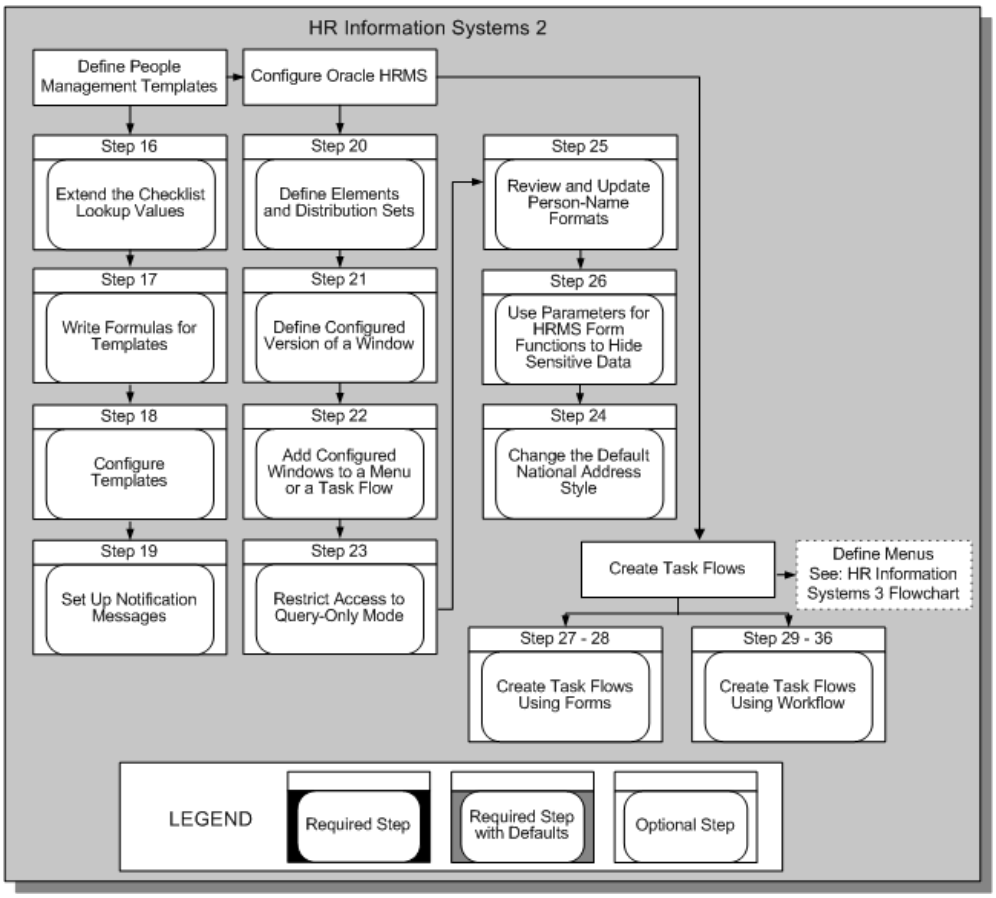


Fig-7 HRMS Work Flow

Methodology for HR Module in XYZ Hospital:

Issues Finding in Operational HR Module of XYZ Multispecialty Hospital

The HR module is very important area of hospital not even hospital but also for other organizations where the various record of personnel can be maintained which is helpful for the increasing of revenue of organizations

STUDY OF AREA:

- HR department

SAMPLE SIZE:

- 5- 10 HR Management personnel

DATA COLLECTION TECHNICQUES:

The study was based on direct observation techniques . Data were collected using the techniques of work flow analysis and time in observing the HR departments

TYPES OF DATA:

3. Primary : By on field- observation technique
4. Secondary: Previous data from the pharmacy prescription record.

OBSERVATIONS:

The work flow analysis revealed considerable issues in daily process because they are using own database system for maintaining the records and personal information system for employees of the hospital records

The main deficiency in the system the process of the work is slow.

- Data recording schema
- Data maintaining system
- Data retrieving issues
- Data are not connected with HIS

General observation:

In various department of Human Resources the user were using their own data system for maintain the record of hospital employees. They also using some part of personal information system which is developed by It team of the hospital.

Recommendation:

Up-gradation of the current product

Change the new system which has well-functioning HRMS

Effective communication between respective users and Hospital IT support team for implementation and connectivity of HRMS and HIS.

References

http://infoman.teikav.edu.gr/~fragidis/papers/2012_Hospital_Information_System_Evaluation.pdf

http://dl.acm.org/citation.cfm?id=1285995

http://www.mrc.ac.za/bod/nothern.pdf

https://www.google.co.in/

http://www.cancure.org/medical_errors.htm

http://en.wikipedia.org/wiki/Health_Information_Technology_for_Economic_and_Clinical_Health_Act

http://www.expresshealthcare.in/201204/itathealthcare03.shtml

http://en.wikipedia.org/wiki/Human_resource_management_system

rfp.technologyevaluation.co