

Analysing Managerial Accounting Information System of Islam Malang Hospital and Defining its Important Role to Serve the Indonesian community.

Puji Handayati^{a*}, Shadi Emad. A. Alhaleh^b, ^{a,b}State University of Malang,
Email: ^{a*}puji.handayati.fe@um.ac.id

This paper examines the accounting system at Unisma Islam Malang public hospital in order to determine its integrity and reliability to complete administrative and operational activities. A questionnaire was used to obtain details about the system and to understand its strengths and weaknesses. An analysis revealed that the system was inflexible and to upgrade it prohibitively high. Additionally, the adoption and implementation of a new system would take considerable time. While Unisma Islam Malang hospital administrative operations are going well, some transactions, patient records and papers take many days to be posted and journaled in the accounting system. This process, in fact, prevents a misunderstanding of the hospital's accounting and managerial processes.

Key words: *Hospital, Accounting, Accounting Information system, computerized Accounting.*



Introduction

Hospitals deal with the life and health of their patients. Good medical care relies on well-trained doctors and nurses and on high quality facilities and equipment. Good medical care relies on good record keeping. Without accurate, comprehensive and current and accessible patient notes, medical personnel may not offer the best treatment. They may, in fact, misdiagnose the condition, resulting in serious consequences. Associated records that hospitals handle daily, such as x- rays, antibiotics, medication and patient registration, must also be well organised if the patient is to be protected. Good record keeping ensures the hospital's administration runs smoothly: unneeded records are transferred or destroyed regularly, storage areas are clear and accessible and key records can be found quickly, saving time and resources. Records also hold the hospital accountable for its actions; they also provide data for medical research, statistical reports and health information systems.

Managing Hospital Records addresses the specific issues involved in managing clinical and non-clinical hospital records. Records of management should be comprehensive in order to know everything about the hospital and to create an easy access for understanding the hospital Information system and to know the right ways how to store these information into the system. So a comprehensive records management system in a hospital helps to ensure that staff have access both to clinical information and to administrative records on a wide range of issues, including policy, precedents, legal rights and obligations, personnel, finance, buildings, equipment and resources. Records Management refers to an on-going process of managing records in accordance with approved policies, procedures and schedules. Records Management as a discipline defines and applies business rules related to the creation, protection, retrieval and disposition of an organisation as records over time. Retention schedules are the cornerstone of a successful Records Management process. Records Management as a discipline involves record keeping. Record keeping is an important aspect of every organisations/ institution's day to day operations. There cannot be a records management system without records and neither can there be efficient record keeping without a good records management system. Therefore, record keeping is a systematic procedure by which the records of an organisation are created, captured, maintained, and disposed of. This system also ensures their preservation for evidential purposes, accurate and efficient updating, timely availability, and control of access to them only by authorized personnel.

The record in question refers to any item or collection of data. So, the system runs every single process and is considered the treasure as its expensive assets make the hospital's operations clear and comprehensible. (Paras Kumar Bishwakarma, Manish Upreti, Raju Kumar Yadav, Shreedhar Acharya, 17th June 2014, Locusproposal, Hospital Management System). In high demand, Hospital information systems handle increasing population needs and also aid practicing doctors and hospital support staff with timely and precise. Varied metrics are available to assess a Hospital's and the successful implementation and usage of an

information system forms a crucial role in this respect. Hospital information systems are available on the software market which, in most cases, needs to be customised and developed based on specific hospital user requirements. Hospital services are customer and society sensitive and the quality of HIS and hospital staff needs to be precise and of highest standards. (Premkumar Balaraman, Kalpana Kosalram, 2013, E –Hospital Management & Hospital Information Systems – Changing Trends. School of Management, SRM University, Vadapalani, Chennai 600026, INDIA)

Today's hi-tech hospital services are provided predominantly by private players in the market at increased costs despite low cost competition by public sector hospitals. An OECD report (2012) finds that attempts to control costs by regulatory means, such as reducing fees paid to healthcare providers and rationing user access, have typically only been temporarily successful. E-Hospital Management Systems provide the benefits of streamlined operations, enhanced administration and control, superior patient care, strict cost control and improved profitability. Due to business and legal demands - like the Healthcare Insurance Portability and Accountability Act (HIPAA) of the United States as a global norm - healthcare organisations are fully realising the urgency to integrate their businesses.

Research focus

Interviews focused on acquiring information and knowledge about how to analyse and evaluate the hospital system through asking questions in order to know how strong the system is. This allowed for identifying errors in the system in order to find suitable solutions to fix it. However, interviews did not provide all the answers sought by the researcher. High level hospital security prevented a complete acquisition of knowledge and information. Consequently, the focus was on the system and its ability to overcome unpredictable obstacles or attacks on the system.

Problem statement

In general, hospitals face many problems controlling a range of systems. The research problems are summarised below:

1. Lack of immediate retrievals: the information is difficult to retrieve and find particular information. For example, to find out about the patient's history, the user has to go through various registers. This results in inconvenience and an excess use of time.
2. Lack of immediate information storage: the information generated by various transactions takes time and effort to be stored in the right place.
3. Lack of prompt updating: various changes to information, like patients, are difficult to make as paperwork is involved.

4. Error manual calculation: manual calculations are error prone and take a great deal of time, resulting in incorrect information. For example, the calculation of a patient's bill based on various treatments.
5. Preparation of accurate and prompt reports: this becomes a difficult task as information is difficult to collect from various registers.

Research purposes

The main purposes of the research is to determine

1. How robust the hospital's system is and to recognise the instructions and procedures to be followed to analyse the system and its software.
2. The accuracy and reliability of the system and if transferred information is protected or not.

Literature review

A hospital: (wikipedia) is a health care institution with an organized medical and professional staff and with permanent facilities that include in-patient beds. They provide medical, nursing and other health services related to patients. Hospitals involve a method or system whereby medical staff, with the help of pharmacy and therapeutic committees, select and evaluate dosages which are considered to be most useful in the patient care.

Accounting: (investopedia) is a systematic and comprehensive recording of financial transactions pertaining to a business and refers to the process of summarising, analysing and reporting these transactions to oversight agencies and tax collection entities.

An accounting information system is a set of detailed methods, procedures and routines established or formulated to carry out specific activities, perform a duty or solve a problem. They are a system to capture and store data about a selected subset of institution events, namely activities that meet the definition of accounting transactions and events that change the composition of the institution's properties.

A computerised accounting system ensures that financial reports are automatically generated at the end of accounting year and is a system that eliminates paperwork, is time efficient and allows for a rapid collection and analysis of information.

System analysis concerns a problem that the organisation will try to solve with an information system, in addition to understanding and specifying in detail what an information system should do. Also, it focuses on what, why, who, when, where and for whom. Information system analysis emphasises institution issues not technical or implementation

issues; it is about how to know the problems and how to find the right solutions to be implemented.

System design is a complementary problem solving technique to system analysis that reassembles a system's component pieces back into a complete system. An improved system such as this involves adding, deleting and changing pieces relative to the original system (Adigwe, et.al 2018). System design specifies, in detail, how the parts of an information system should be implemented.

What is the hospital information system about?

According to Paul R. Vegoda (1987), Hospital Information System (HIS) is defined as an integrated information system which improves patient care by increasing the user's knowledge and reducing uncertainty allowing rational decisions to be made from the information provided. Haux, Schmücker and Winter (1996) view the hospital information system as the entire information processing and storage subsystem of a hospital. It is not just about computer systems, networks and computer-based application systems that are installed on them, but the information in a hospital as a whole. According to (Garrido, Raymond, Jamieson, Liang and Wiesenthal (2004:21-22), a Hospital Information System consists of different integrated software to:

1. Capture data in specific sections of the hospital.
2. Handle the workflow of daily medical services.
3. Assist in managing financial, administrative and clinical data. From the various definitions of HIS, it is understood that HIS is a very broad area as it encompasses services catering to varied departments and personnel of a hospital
4. Satisfy patient care in its true sense.

Hospital Information Systems are supposed to make the right information and knowledge available to the right people, in the right place, at the right time and in the right form.

What is the hospital's management and technology system about?

The developments in technology and internet speed made services like Telemedicine a dream come true for today's patient care needs. Telemedicine can be referred to as the provision of medical services from a distance [Wooton, Craig and Patterson, 2006:1]. This includes diagnosis, treatment and prevention of diseases. The types of telemedicine can be categorised as real-time or pre-recorded telemedicine. Additionally, the growing technology and varied solutions in hospital management necessitated the development of common protocols and standards at global level. Such standards and legal requirements are discussed in further sections. According to a Belgium Federal Public Service – FPS report (2002), high quality of data storage, speed, exchange and networking for Hospital information systems (HIS) is

mandatory for efficient performance of Hospital Information Systems (HIS). Data storage requirements, especially for Radiology departments, are challenging.

Explanation about hospital tasks and features

The most important tasks in hospital information systems can be summarised as follows (PayamHomayounfar (2012):

1. Storage and monitoring of a patient's condition: accurate and electronically stored medical records of patients (e.g. drug allergies) are provided, visual and auditory warning systems are generated in the event of abnormal test results or other important data, time intervals and/or testing periods for tests on patients to be specified and data processing and analysis for statistical purposes and research oriented purposes;
2. Management and Data Flow: supports automated patient data transfers between departments and institutions, enables graphic or digitised diagnostic images from the hospital database based on the integrated retrieval system, digital signatures, in order to create internal orders electronically, communication by Laboratory Information System and registration of human resources and their properties.
3. Financial Aspects: efficient administration of finances, use and monitoring and ordering of medicines, expected and actual treatment costs are listed and reported, automated representation of the needs of the nursing staff and status analysis of bed occupancy and overall performance in the hospital information system.

In the public sector domain, some of the successful e - hospital management solutions include that of the National Informatics Centre, India (NIC, 2013). It is a Hospital Management System that is an ICT workflow based solution for Hospitals in Government Sector. This is a generic software which covers major functional areas like patient care, laboratory services, work flow based document/information exchange, human resource and medical records management of a Hospital. It is a patient-centric system rather than a series of add-ons to a financial system.

In order to understand the concepts associated with records management and/or computer based records management systems, it is imperative to examine and analyse published material from experts in the field. The purpose of this review is to obtain experience as regards the creation and archival processing of electronic records. The review is based on an exhaustive assessment of literature on computerised electronic management and electronic records and contains an overview of the main concepts associated with the creation of an electronic records management system from the perspective of published experts. (Paras Kumar Bishwakarma, Manish Upreti, Raju Kumar Yadav, Shreedhar Acharya, 17th June 2014, Locusproposal, Hospital Management System).

Methodology

Research design

The research followed a descriptive, analytical approach to analyse and describe the hospital system through identifying strength and weakness points. In order to obtain a sufficient understanding, determining the main activities of hospital employees with the system are categorised as follows:

1. Administrative and financial systems which facilitate billing, accounting and other administrative tasks.
2. Clinical systems which facilitate or provide input the care process.
3. Infrastructure systems which support both administrative and clinical.

Data Collecting

Interviews collected information about the hospital accounting system to determine if it was capable of controlling unmanaged plans automatically and without any waste. With regards to employees' opinions from different departments, there is a systematic connection between divisions which established a good benchmark about the system is in some areas but not in all. (Interview with Unisma Islam Malang, Indonesia, September, 2017).

Observation

The researcher endeavoured to observe different hospital activities through interviews which consisted of ten questions. This allowed for an understanding of the accounting system to be determined so as to find or diagnose system errors and to establish solutions. The interview guidelines were useful for obtaining information. However, not all information was given because of privacy. Consequently, some questions were answered by some employees who were allowed to discuss it with the researcher. (Management Information system analysis, Unisma Islam Malang, 2017).

Previous studies

Where most of the hospital was not using a computerised management system, such a program would be ideal to overcome daily problems. This application contains important data such as login form, patient registration and doctor registration. A hospital management application allow patients to edit their information like patient name, contact number, address and disease from which they are suffering. It can be used in any hospital, clinic, dispensary or pathology lab for maintaining patient details and their test results. Data related to knowing hospital processes and how data should be collected and stored in the system. Previous research from 2017 was helpful and useful in collecting information in order to know if a change in the system or not was needed.

Proposed work of the Hospital's Accounting system

Login form

The login form is necessary to secure hospital or patient data .The login form contains a username and password. When entered, entire information related to the patient will be display. If the admin is a doctor, they will access data related to the doctor itself other data will be hidden from the doctor. Usernames have icons where we can see a list of different usernames when icons are clicked. Different passwords allocated to different users ensure the hospital database is secure .In this case, data will be retrieve from the database when users login and displayed to the relevant user. Users can change their password and, if forgotten, can reset that password after confirmation .User confirmation will be done when information of the user matches with the data present in the database. This manner of access is easier than previous forms as the entire record was maintained in a manual record.

Home Page

The home page form contains a list of entire data in different modules: staff, patient, report, billing and so on. When a user clicks on staff, they get the doctor, nurse, and other forms (workers, accountant, etc.). Patient contains the information related to the patient: when clicked, they get different forms: admit card, operation, discharge and room change. The next form is Report and data related to reports such as blood report and urine reports are provided.

Staff Detail

Staff detail concerns information of hospital staff. The staff module contains information about the doctor, nurse and other individuals who work in the hospital such as accountants, pions, waiters, sweepers etc. In the staff module we can add the list of doctors, nurses and other staff members. Here, we can modify the list if we want to update the current data of the hospital, we can delete the data if we want to delete the data. The total information about the staff resides in the staff segment. The staff module is the main key of the hospital management project; if we want to add information about a new doctor joining the hospital, then we simply add the new doctor's details in the first form.

Patient

Handwritten medical record is associated with poor legibility and contributes to medical error, the standardisation of abbreviation is encourage to improve reliability of paper medical records. Digitisation of forms facilitates the collection of data for hospital studies. Duplication of lab tests and other services can be prevented by good record-keeping of any type. However, because database records can be available at many locations at once, integration of services and awareness of duplication can be reduced. Database Management Systems enable health organisations to access old records instantly, thereby allowing the health work to be sent to other health organisations in an emergency. The current procedure

involves a patient visiting the hospital for medication and buys an admission card which contains an identification number and other information needed. The patient then waits for the card to be processed together with a file jacket that holds the card with a column for diagnosis made by physician, medicine prescribed and date at the waiting room for the arrival of the card. When the file arrives, the patient joins the queue to see a doctor. With regards to this current system, files are used for keeping individual patient cards enclosed in a file. This system traces record files and is slow in processing because of the ensuing administrative steps.

In the electronic data record we can access and retrieve data faster compared to earlier handwritten systems. In this module we can see the details of the patient record such as the admission card, discharge, room change and X-ray forms. In the patient module, the entire data is an electronic form where we can see and retrieve the entire data of the patient when he/she enters the relevant code.

Report

The Report Form saves registration number, name, test date, test name, age, gender and address of the patient. Additionally, the Report will show the kind of disease from which patient is suffering. The Report detail will print after the entire information is filled in and another button called Display will retrieve the entire data from the database after entering the patient registration number.

User

User Forms save the data of the employee. When we click on user type we get list of different users such as Doctor, Admin and so on. Entire data i.e. full name, address, user Id, password, mobile number and Email Id is displayed here.

Results

The interviews and subsequent analysis reveals that:

1. The capacity of the system (software) is fair only with a limited number of patients and to enhance it will take considerable time. Also noteworthy is that hospital administration is so complicated in giving permission to improve the system.
2. The accounting system software is not flexible or adaptable in making the necessary changes that will happen during some operations.
3. Good privacy and security for the hospital accounting system is not easy to have in terms of access.
4. During interviews, hospital employees refused to answer some questions because of the legal procedures of the hospital. This led us to believe that the accounting system at the hospital is controlled by the legal system.

5. The hospital has countless copies about its activities and keeps it secure in the case of fire or natural disasters. The hospital's management pays attention to protecting its documents and urgent records.
6. Some of the accounting transactions are done manually rather than electronically because of new updates of the system.

Conclusions

1. According to the researcher, it was difficult to access information and ideas about the Hospital's system because of a poor connection between management and staff, limited authorisation to the Hospital's staff by the top management, and employees carelessness about how to improve the system in the case there are new changes that should be adopted.
2. The software takes care of all requirements and is capable of providing easy and effective storage of information related to patients that come to the Hospital.
3. The system generates the reports, provides prescription details including various tests, check-up and medicine prescribed to patient and doctor; it also provides injection details and billing facilities.
4. The hospital's system provides backup facilities.
5. In the case of data loss or damage, management has copies to protect the Hospital's information in term of high privacy and security.
6. The system's capacity is good as it suits a limited number of patients but the Hospital can adapt with small changes in order to be stored in the system. Also the Hospital tries to make its system flexible with new improvements.
7. There is no update changes for the system and the person responsible to make a change is in the IT unit at Islam malang hospital.
8. The hospital's software doesn't deal with all activities because Unisma islam malang hospital is still dependent on manual systems to manage its activities and this is a dangerous indicator as it will harmfully affect the hospital's data and information.

REFERENCES

- Asabe.S.A., Oye, N. D., Monday Goji,” HOSPITAL PATIENT DATABASE MANAGEMENT SYSTEM”, COMPUSOFT An International journal of Advance Computer Technology.
- Adigwe, P., Okaro, C., Emejulu, I., & Ananwude, A. (2018). Banking Sector Operations and Foreign Direct Investment in Nigeria: A Causality Analysis.
- Aditya Bakshi, Department of Information Technology, review on hospital management system, international journal of research in science and engineering.(. www.ijrise.org
- Brown, P.J. (2000). “Evaluation of the quality of information retrieval of clinics finding from a COMPUSOFT”, An international journal of advanced computer technology, 2 (3), March -2013 (Volume-II, Issue-III) 70 computerized patient database using a semantic technological.
- Belgium Federal Public Service – FPS report (2002). Recommendations and quality criteria for hospital information systems. Accessed from: www.health.belgium.be/filestore/8054405/his_v1s_en_8054405_en.pdf, accessed 21 March 2013).
- Darshana shah, Department of Information Technology, review on hospital management system, international journal of research in science and engineering.(www.ijrise.org)
- Garrido, T., Raymond, B., Jamieson, L., Liang, L., Wiesenthal, A., (2004). Making the business case for hospital information systems. *Journal of Healthcare Finance*, 31(2): 21–22.
- Haux R, Schmücker P, Winter A (1996) Gesamtkonzept der Informationsverarbeitungim Krankenhaus. In: Haas P, Köhler CO, Kuhn K, Pietrzyk PM, Prokosch HU [Eds.]: *Praxis der Informationsverarbeitungim Krankenhaus*. Ecomed Landsberg, pp. 25-37.
- Miller, R. J. (1994). “Modernising Health care through Electronic Medical Record “information System”
- Paras Kumar Bishwakarma, Manish Upreti, Raju Kumar Yadav, Shreedhar Acharya, 17th June 2014, Locusproposal, Hospital Management System).
- Premkumar Balaraman, Kalpana Kosalram, 2013, E –Hospital Management & Hospital Information Systems – Changing Trends. School of Management, SRM University, Vadapalani, Chennai 600026, INDIA).



Paul R. Vegoda (1987). Introduction to hospital information systems. International journal of clinical monitoring and computing, Volume 4, Issue 2, pp 105-109.

Wooton, R., Criag, J., Patteson, V., (eds). (2006). Introduction to telemedicine. London: The Royal Society and Medicine Press