Development of Flexible Hospital Management Information Systems and End User Training Improve Hospital Performance

Anggun Nugroho, Shofwan Hanief, and I. Wayan Karang Utama
Institut Teknologi dan Bisnis STIKOM Bali, Denpasar, Indonesia
{anggun,hanief,karang_utama}@stikom-bali.ac.id

Abstract. Hospital management is very challenging because of the many activities, services, transactions, and information flows. Data and information management also plays an important role in the provision of nursing services which can be improved by the role of information and communication technology, especially during the CoViD-19 pandemic such as current limiting human movement. With the hospital management information system (HMIS) based on the responsive web, it will improve service quality. This study aims to clarify what information and communication systems are available for nursing management in hospitals. The main finding is that many information and communication systems have been developed to support the management of hospital management information, but most of them do not meet specific needs. Many found incomplete information systems, there are also information systems that are too complex so that they are less efficient. The method used is to process qualitative data through questionnaires and quantitative to determine the success of the hospital in implementing the HMIS and conduct ongoing training for its end users. This study shows that End User training is very important for the successful implementation of HMIS. Likewise, a flexible HMIS is needed, which can meet the specific needs of each hospital.

Keywords: development · flexible · hospital management information system · training

1 Introduction

Hospitals are organizations where healthcare professionals provide complex care using special knowledge and equipment to meet patient care needs. Conventionally, hospitals consist of different clinical departments and functional units (Aas, 1997) [1], where the provision of care is a collaborative task including professionals from doctors, nurses, and health professional staff, as well as services regarding administration, rehabilitation, diagnostics, nutrition, maintenance and other patient support services (Sultz and Young, 2011). Hospitals can be described using Weber’s (1978) thinking about bureaucracy in which authority, command, and power are central concepts. Hospitals usually have a hierarchical structure with clear roles and regulations. The distribution of power and
authority depends on placement in the hierarchy, and responsibilities are well defined for all members (Mintzberg, 2002; Virtanen and Kovalainen, 2006) [2]. An important factor that manages the sustainability of information systems is the availability of qualified and experienced personnel. These studies show that End User training is very important for the successful implementation of Hospital Management Information systems. Without users trained in their tasks, the chance of failure increases substantially.

2 Background

Systematic information management and the increasing role of information and communication technology improve the quality of care and reduce costs (Hillestad and Bigelow, 2005; Winter et al., 2011) [3]. Various information systems have been developed to improve information management and support organizational functions. There are Laboratory, Pharmacy and Radiology Systems; Clinical Data Repository System (CDRS); Service Delivery Order Entry System (SDOES); Nursing/Clinical Documentation system; Clinical Decision Support System (CDSS) and Image Archiving and Communication System (IACS) (Springmann, 2012) [4]. But information management and information system development in health service organizations are still recognized as areas that need improvement (Haux, 2006) [5]. Organizational design, information management, and technology are all important factors in improving the quality of health services in the future (Glickman et al., 2007) [6].

Information is needed in managerial decision-making when organizational goals are achieved through planning, implementation, and control (Thompson and Cats-Baril, 2003). This information is generally spread across different systems, managers can also receive inaccurate or unreliable information. Information management problems are caused by several factors.

- First, most clinical information systems are developed to support only one specific clinical task, such as diagnostic or drug administration, and there are usually challenges in communication between these different systems (Cantrill, 2010; Springmann, 2012) [7].

- Second, a large amount of information causes an excess of information (Wilson, 2001). Reasons for excess information in health care settings according to Hall and Walton (2004) [8]:
  - Increasing the availability of information
  - New and fast of information and communication technology
  - The nature of work is changing to become multi-professional
  - The active behavior of the end-user in finding information.

However, information overload may also depend on the ability to interpret information, not on the amount of information (Sutcliffe and Weick, 2008). Information technology can be used to reduce information overload and to support managerial decision-making (Thompson dan Cats-Baril, 2003).

- Third, there may be difficulties in managing or obtaining information needed for decision making (Hall dan Walton, 2004; Kontio et al., 2013) [9].
The information needs of decision-makers in hospitals also depend on the placement of the organization and the area of responsibility that depends on the organizational structure. Information needs at different levels in hospitals vary accordingly (Lin et al., 2007) [10]. Their information needs usually concern patient care, available resources, administration, and management (Winter et al., 2011; Kivinen and Lammintakanen, 2013) [11].

3 Purposes

In general, the purpose of flexible HMIS and training in the context of implementing hospital management information systems is to improve employee performance which results in improved service quality. This study aims to determine whether flexible HMIS and human resource competency training can improve hospital employee performance.

4 Method

4.1 Training Type Analysis

Naturally, hospitals together with employees have the responsibility of developing Human Resources competencies. However, the hospital as an organization has the ability and greater strength to create a system/mechanism for developing staff competencies. The following is the training/learning pyramid as shown in Fig. 1.

There are many methods of developing staff competency, including the following:

Fig. 2. Training/Learning Philosophy

- SELF-LEARNING: 1. E-learning, 2. Literatur, and 3. Pendidikan formal

Thus, it should be underlined that not all competencies must be achieved by training. And, again, keep in mind that training is not a one-stop solution. This means that not all problems with underperformance can be overcome by sending staff to take part in certain training. A lot of training was attended by staff, but the expected outcomes were not necessarily achieved. So much funding has been budgeted by hospitals to involve staff in various training, but staff performance and productivity may not necessarily be better. The following is the training/learning philosophy, as shown in Fig. 2.

4.2 Training Needs Analysis

For training to be effective and efficient, hospitals need to do several important things. The first important thing is to conduct a training needs analysis, then determine the type/method of training, and conduct a follow-up including an evaluation of the training that is held/attended. Not always a low company outcome comes from the competency gap. In analyzing training needs, hospitals need to review/identify problems in business constraints or competency gaps that have the potential to influence existing problems.

Constraints/internal hospital business problems can include implementation of new systems, procedures, programs; the development of certain service products; low employee productivity; and the low quality of employee services. In addition to these matters, several things become a potential source of the need for training/staff competency development.

5 Result and Discussion

The flexible hospital management information systems (HMIS) and Training in the context of implementing HMIS can be in the form of practical training or workshops. This type of training will be very effective because it is directly practiced on an ongoing system, which is under each part of the task so that data appears to flow along with the production of data and information produced.
5.1 Ways of Data Collection About Types and Training Needs

To be more targeted, accurate data is needed on what type of training is needed and whether the training is needed. Data collection needed in the analysis of employee training needs can be obtained from meeting with related work units, the questionnaire, interview, focus group discussion, documents and reports, performance appraisal data, and competency assessment report.

The information obtained from the data collection above is then managed to review staff training needs. Thus, management cannot simply wash their hands by “putting” their staff into training that is considered “necessary” only by managers. After the training has been carried out or followed, further follow-up must be done by assessing outcomes based on pre-determined indicators and conducting continuous monitoring and evaluation.

5.2 Analysis of HMIS Functional Needs

The functional requirements of the hospital management information system include user needs and process requirements. The type of user needs are as follows: Admin, Doctor, Nurse, Laboratory, Pharmacist, Accountant, and Patient.

The process requirements of each user are as follows:

- Admin (managing doctors, managing patients, managing nurses, managing pharmacists, managing laboratories, managing accountants, prescriptions, payments, blood banks, medicine, surgery reports, birth reports, death reports, room allocations, managing announcements, managing arrangements, and manage languages)
- Doctors (manage patients, manage appointments, manage prescriptions, see blood banks, manage reports, and see room allocations)
- Nurses (manage reports, manage patients, manage blood banks, and manage room allocation)
- Laboratories (managing blood donors, managing blood banks, and managing more diagnoses)
- Pharmacist (Manage drug categories, manage drugs, and prepare drugs)
- Accountant (manage bills and payments)
- Patients (see doctors, see recommendations, see appointments, see prescriptions, manage payments, and see blood banks).

Access rights for users vary according to their needs and authority. The rights of each user can be illustrated by the use case diagram, as shown in Fig. 3.
6 Conclusion

From the background and analysis above it can be concluded that: 1. The flexible HMIS is very important according to organizational needs, and 2. The training carried out when implementing a hospital management information system (HMIS) in the form of practical training or workshops is very effective and efficient. The availability of qualified and experienced personnel is the important factor that manages the sustainability of information systems.

Comprehensive training is needed for each part of the user so that the information flow can be seen from time to time through a series of activity processes for each user. These studies show that flexible HMIS and End User training are very important for the successful implementation of the Hospital Management Information System.

Acknowledgment. Special thanks to my wife and children who inspire me. This work was supported in part by a grant from the director and lecturer friends of ITB STIKOM Bali.

References

4. Springmann T 2012 Information technology in Buchbinder SB and Shanks NH (Eds.): Introduction to Health Care Management 2nd ed (Sudbury: Jones & Barlett Learning)

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter’s Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter’s Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.