ANAESTHETIST ROSTERING WEB APPLICATION FOR HOSPITAL CANSELOR TUANKU MUHRIZ

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ABSTRACT

Hospital Canselor Tuanku Muhriz (HCTM) is one of the hospitals that provide medical, surgical treatment and nursing care for patients. An anaesthetist is a specialist doctor that is responsible for providing anaesthesia to patients which are mainly used in the surgical department. The hospital's administration must ensure that an anaesthetist is available to treat the patients. Making a roster for anaesthetists is difficult because it is tied to their location, work shift, and workstation when using a manual method. This project aims to create a web application that can be used to control and manage anaesthetist scheduling in real-time. PHP is the programming language, MySQL is the database, and Laravel is the web application platform for this method.

1   INTRODUCTION

Currently, the anaesthetist rostering in Hospital Canselor Tuanku Muhriz (HCTM) uses a manual system using Google Form, Microsoft Excel and Microsoft Word to collect the requests and organize the roster. This manual method appears to be ineffective, difficult to maintain, and inefficient. Therefore, this work proposes the design and development of a web application for an anaesthetist rostering at HCTM. The purpose of this system is to help the roster maker to arrange the roster for anaesthetists.

The web application must be able to manage the roster planning regarding the workstation demand for the anaesthetist and the request for every anaesthetist. In the next section, we begin with the literature review and the methodology for an anaesthetist rostering web application. Next, we present the result of the development and end it with the conclusion.

2   LITERATURE REVIEW

Pressure, nausea, vomiting, and ill may occur after surgery, as well as stress-induced catabolism, decreased pulmonary function and increased cardiac demands..These issues can lead to complications, hospitalization, postoperative exhaustion, and a longer recovery time. By providing minimally invasive anaesthesia and pain relief, as well as working with surgeons,

surgical nurses, and physiotherapists to minimize risk and pain, the anaesthetist plays an important role in promoting early postoperative recovery (Kehlet & Dahl 2003). In the last decade, the reach of anaesthetists' work in hospital practice has broadened. Anaesthetists are experts in emergency medicine, intensive care, and the treatment of acute and chronic pain. Some anaesthetists may have testing, teaching, or administrative responsibilities (Kinzl et al. 2005).

The assigning of tasks to employees through a schedule is known as duty scheduling. It is the method of analysing an organization's workload, the time available to execute the workload, and the task allocation based on the available time (Yange et al. 2020). Staff rostering, or the preparation of work schedules in healthcare organisations is a complex and time-consuming activity that affects healthcare workers all over the world daily. It's especially difficult because different personnel requirements exist on different days and shifts, resulting in a variety of constraints (Zhu et al. 2019).

Personnel scheduling, also known as rostering, is the method of creating work schedules for employees so that a company can meet the demand for its products or services (Ernst et al. 2004). The majority of healthcare workers do use a manual system to keep track of their schedules. The schedulers must also be mindful of the doctors who are on call and who are on vacation. An operation may be conducted without a scheduled anaesthetist due to a scheduling error (Scholiadis et al. 2005). Overestimation of operational time results in unused operating rooms, whereas underestimation results in unplanned extra work or case cancellation, all of which may raise costs (Wright et al. 1996).

3   METHODOLOGY

3.1   The Existing System

HCTM uses a manual technique to generate an anaesthetist rostering. The roster is prepared for every month and week. Mostly, the whole process is done by the roster maker which is the head of the anesthesiology department.

3.2   The Proposed System

The proposed system is the anaesthetist rostering web application. This web application will prepare the roster for the anaesthetist into shifts based on workstation demand and requirement. This system generates a new duty roster every month. The roster maker can manage the workstation demand and next the system can generate the roster for the anaesthetist.

3.3 Use Case Diagram

The use case diagram for the proposed system as shown in Figure 1 depicts the actors (anaesthetist and admin) and their interactions with the system.
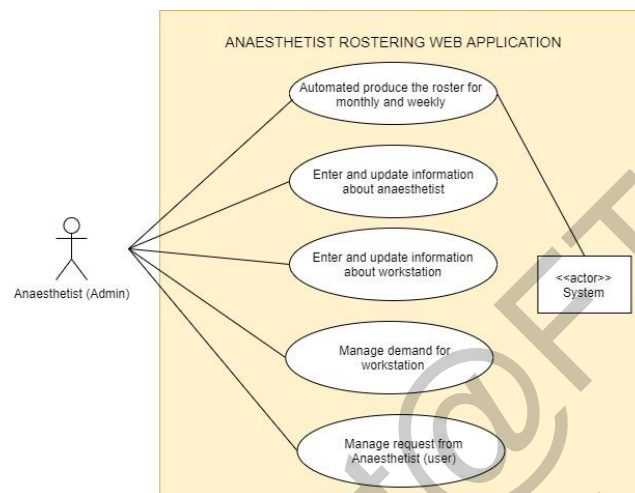
4 RESULTS

Figure 1 Use Case for anaesthetist rostering web application

The system was evaluated to ascertain its compliance with the requirements. The sample outputs of the newly proposed system are shown in Figure 2 and 3. Figure 2 show the roster page for the anaesthetist rostering web application. This page extracts the anaesthetist schedule based on their level and workstation. Figure 3 show the interface for the workstation demand. This page is used to manage the workstation demand for the roster

Figure 2 Interface for roster

Figure 3 Interface for workstation demand

5   CONCLUSION

In a nutshell, this system is still in the development phase and soon will be integrated with the artificial intelligence engine (to automatically construct the anaesthetist roster using a meta-heuristic approach) and tested on a real-life anaesthetist roster at HCTM. Research carried out shows that the computerized system yields more advantages than the manual system of rostering (Paschou et al. 2015). Further works are still required to make the system have more functionality.

6   ACKNOWLEDGEMENT

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