CHAPTER 1

INTRODUCTION

"Almost anything you do will seem insignificant but it is very important that you do it. . . . You must be the change you wish to see in the world."

Mahatma Gandhi

1.0   Introduction

1.1   Definition of the Title

The definition of each word of the title is defined separately. The following definitions apply to the title of this project.

System:

a collection of elements or components that are organized for a common purpose *or* a system that consists of hardware components that have been carefully chosen so that they work well together and software components or programs that run in the computer.

Keep track of:

to stay informed about

Medical:

of or relating to the study or practice of medicine.

Expertise:

expert knowledge or skill; expertness *or* one who is very skilled in or knowledgeable about a particular thing.

Therefore, a system to keep track of medical expertise simply means, a collection of elements or components that are organized for a common purpose so as to stay informed of one who is very skilled in or knowledgeable about the practice of medicine [Whatis, 2000].

1.2   Problem Domain

Advancements in medicine and health care are being significantly influenced by the exploding information technology (IT) developments. In health care, the fundamental force that is shaping the industry is the transition from the traditional cottage industry organization to an integrated networked system [Roadmann, 1995].

With the changing lifestyle environment, an issue, which has come out strongly is how to manage, allocate and distribute medical expertise from various specialties to the many people in Malaysia. This is due to the fact that, medical centres see a greater benefit in doing all they can to align physicians, generally and medical expertise, particularly with certain hospitals. But, the benefits are not captured by the general population. This is because many of the medical expertise are co-located in a single area. The scarcity of a system to keep track of medical expertise is evident. Furthermore, patients also need convenient and instant access to current information pertaining to the medical expertise. Patients need this information to locate an expertise to treat their disease. So, a need has emerged for the development of a system, which encapsulates the fundamental knowledge along with the basic functions. With a system that can keep track of the medical expertise, this IT application will offer benefits to the health care administrators and public.

This project was undertaken after the informal preliminary investigations that were carried out on the selected hospitals and clinics. The initial investigations studied the current status of keeping track of medical expertise in Malaysia. Among the areas investigated include:

- the distribution and allocation of medical expertise,

- the current system used (if any) especially in keeping track of medical expertise,

- a system for patients to access information on medical expertise,

- a suggested tool that will accommodate the needs of health care administrators as well as the public, and

- the future plans to incorporate such a system at their respective medical centre.

From the initial investigations, it can be concluded that the distribution of medical expertise is still unequal and there is a shortage of medical expertise in various specialties at certain medical centres. The results also show that most of the medical centres (only the ones that were surveyed) have yet a system that analyzes the current medical expertise. Furthermore, the results indicated too, that there is yet a system that a user can use to locate a particular medical expertise in this country. However, all of the medical centres that were involved in the preliminary investigations were very keen in having a tool that can keep track of the medical expertise. Therefore, a way of overcoming the problems of dispensing information on medical expertise is through the provision of a system that keeps track of them.

1.3   Objectives of the Project

The main objective of this project is to develop a system that caters to the needs of health care administrators, doctors and general users (i.e. lay public) in maintaining and dispensing information on medical expertise. Therefore, the system should be able to carry out a variety of functions, which requires database design, interface design, use of reporting tool and a statistical package.

This system will provide the health care administrators with the much needed information and analytical tools that they need to make informed decisions

concerning the allocation and management of scarce resources. This capability will enable the health care management or administrative staff to 'drill-down' through the available information, looking at levels and views of data never before possible [Uchello, 1995]. For example, health care administrators can make effective decisions regarding their current number of expertise in a particular specialty or which services should be out-sourced, while at the same time ensure quality service is provided to their patients.

As health is a primary concern, public is more health conscious and they want to get more information, which are fast and reliable. Thus, the next objective of this project is to have a system that provides information that will help public, generally and patients, particularly in locating a specific medical expertise throughout this country.

In addition, this project will also demonstrate the integration of the various tools in a single system. Tools such as reporting, statistical, database, authoring software, and program-coding package will be integrated in the developed system.

1.4   Sequence of Tasks

The following tasks were carried out throughout the completion of this project. Some of these tasks were carried out concurrently with others. The tasks are as follows:

- discuss with the respective supervisor on the problem domains, objectives and the new concept that will be brought into this project paper

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- discuss with the respective supervisor on the problem domains, objectives and the new concept that will be brought into this project paper

- perform an initial study at the current practices of the allocation and distribution of medical expertise in Malaysia

- determine the users of the system

- prepare the survey questionnaires and questions to be interviewed for the respective users

- determine the participants for the initial survey questionnaire

- analyze the questionnaire forms that were returned

- draw up detailed requirements specification.

- determine the tools that are to be used to develop the system

- determine the integration of all the tools that will be used for this system

- develop a system based on the initial findings and survey

- evaluation by the users to determine that the system developed fulfilled the requirements and objectives

- analyze the evaluation forms to determine for enhancements

- carry out the enhancements of the system required by the users

1.5   Research Methodology

A number of research methodologies were undertaken during the course of this project. These include the survey questionnaires, interviews, development of a system and system testing. The survey questionnaire method was used to gather information and to draw conclusions based on the responses of health care administrators in the hospitals and clinics as well as from public in Malaysia. Three questionnaire forms were designed for this project.

The Requirements Gathering form was designed prior to the development of the new system. This survey form was used to gather data and requirements of the system to be developed. It also investigates the current practices of keeping track of medical expertise. In addition, interviews were conducted at selected hospitals and clinics to gather supporting information where feasible. The MediX Administration and the User Feedback forms were designed for the evaluation of the developed system. Furthermore, a system that keeps track of medical expertise was developed and tested to further support the objectives of this project paper. A more detailed description of the research methodologies and activities are discussed in chapters three, four and five.

1.6   Contents of Dissertation

This report comprises of six chapters. It includes introduction, literature review, research activities, system development, system evaluation and conclusion.

Chapter 1 is an introduction of this project. It discusses the problem domains, objectives, sequence of tasks performed and research methodology of this project paper. A brief description of the contents of each chapter is also given.

The literature review of the project is discussed in chapter 2. General reviews on medical expertise, medical organizations, reviews on existing systems, and proposed tools for the development are described briefly. A sketch of the proposed system is presented at the end of the chapter.

Meanwhile, chapter 3 focuses on the research activities for this project. These include survey questionnaires and interviews. Detailed analyses are done on the

questions and the outcomes are presented in table forms as well as in graphical representations.

Chapter 4 discusses the development of the system, MediX with all the phases of the system development life cycle. It includes the requirements specification and analysis, which describes the functional and non-functional requirements. Architectural, program, user interface and database designs are the issues covered in system design phase. The system development tools and the successful integration of all of the tools used are discussed in the system implementation phase. Lastly, the system testing phase is described.

The user acceptance of the developed system is investigated in chapter 5. Two evaluation forms were designed specifically for two different types of users. Detailed results of the evaluations are reported in this chapter.

Finally, chapter 6 highlights the problems encountered during the research study and the development of the system. This chapter also includes the features of the system developed and the limitations as well as the weaknesses. Suggestions for future enhancements as well as the areas for further research are also discussed. This chapter concludes with the contributions of this project to the society.