

CHAPTER 6:

DISCUSSION AND CONCLUSION

6.0 Discussion and Conclusion

6.1 Problems Encountered

During the project studies, analysis, and development some major problems were encountered. These includes:

1. Cooperation from the medical centres

At the initial stage of this study, it was difficult to garner support and cooperation from the medical centres for the surveys and interviews. Many medical centres were approached for the surveys, interviews, and also preview of the existing system but very few responded. There are two main reasons for this. Firstly, the medical centres are wary of the fact that research collaboration link could affect work in their centres. Secondly, it may be due to high privacy of medical data.

2. Choosing the development tools and programming language

There are many ways and tools available to develop a medical information system. Choosing a suitable technology and tools to integrate statistical package reporting, and sound effects to the system proves to be a critical process as all tools has its strength and weakness. Besides this, availability of the required tool for development is also a major consideration.

To determine which approach to use, various study were conducted on the existing system at the medical centres and surfing through the Internet.

3. Determining scope of the system to be built

As the name Analyzing Patient History implied, to build a full-scale complete system is impossible within the given time frame. Inexperience with the current patient history procedure in the real world was another hindrance to implement a big-scale true workable procedure.

Many discussions were held with the medical staffs to understand the necessary medical terms and to outline the scope of the project to be built during the initial stages of the project.

4. Implementation of new technology

Using anything new will always result in initial teething problems. This is no different when implementing new technology. The technology used in the medical system implementation is not only new to the developer but also considered new themselves.

As an offshoot of this problem, error correction also proved to be difficult. Time and effort had to be spent understanding the nature of the error in order to correct it and at times locating the source of the error prove to be very challenging

6.2 System Strengths

The following points illustrate the strengths in the AZ-Phis system:

1. Simple and User-friendly Interface

The application makes full use of Windows, Icons, Menu, and Pointer (WIMP) techniques, allowing the use of visual objects to navigate through the

system. In addition, the user interfaces are designed to suit a wide spectrum of user. It is designed specifically for individual pediatric practices, group practices and hospitals, and provides a robust feature set for managing and tracking day-to-day patient history activity within a single intuitive and easy-to-use interface.

2. User ID and Password

AZ-Phis is a password-protected application. By giving authorize user a User ID and Password, unauthorized users are prohibited from accessing its records stored in the database.

3. Technical Specifications

AZ-Phis is a powerful management tool, which can be scaled from a simple single-user installation to a large networked environment. It is capable of running on the following operating systems, DOS, Windows 95/98, and WindowsNT.

AZ-Phis Single-User runs on personal computer workstation in the clinical environment. In small clinics, AZ-Phis keeps all patient data on the local hard drive. AZ-Phis multi-user runs on multiple personal computer workstation in a larger clinic, hospital environment, practice management organization or health maintenance organization. Each workstation can support a separate practitioner, clinical or treatment area, while leveraging the power of networking to share data on a single database located on a network server.

4. System Reliability

AZ-Phis is a reliable system as it caters for almost all-possible error encountered. Input by users is validated and verified through the back-end processing. Appropriate feedback will be generated to the user should any error occur. User-friendly message is generated to inform the user about the error and at the same time the system would recover from the error and continues to be used. Transaction involving more than one operation (e.g: batch processing) is canceled should any error occur in the midst of processing. This is to ensure data consistency in the database.

5. System Transparency

System transparency in the AZ-Phis system refers to the condition where the users do not need to know where the database resides, the system structure, its database management system and other features related to the system built. For instance, the information retrieval and downloading of records are similar to a system accessing the local database. This is to ensure that the users are not confused especially in the process of retrieving information.

6.3 Limitations and Weaknesses

There are a number of limitations and weaknesses in the study of patient history, analysis and development of the Analyzing Patient History system.

a. *Limitations*

1. Current Platform

The implementation of Analyzing Patient History system depends heavily on the use of Microsoft technology, which is “open”. However, the real world situation is that these technologies are still limited in implementation by individual platforms. Until the time that these technologies are implemented widely, the current implementation of AZ-Phis system is limited to the Windows operating system.

2. Data Transfer Program

In order to convert non-Stata format data files into Stata format files, a software package has to be purchased. Currently the non-Stata format data files are exported to the data editor of Stata. This process is tedious and time constraining. There are two reasons for not purchasing the transfer program. Firstly, it is due to the cost of the software package. Secondly, due to the time constraint of developing the system.

3. Search Functions

Currently there are only two search functions in the AZ-Phis system. The search functions are mainly on patient history. Therefore, other search capabilities are limited.

b. Weaknesses**1. Security**

Presently, a user is required to enter the login ID and password before accessing the system. This is not secure enough to ensure that the medical data are actually accessed only by the authorized users. There is a possibility that a user might succeed by wild attempts or use a proxy to access the system on behalf of the authorized user. A more foolproof identification method at login, such as digital thumb printing or iris pattern matching, can be employed to overcome the problem.

2. Statistical Analysis

Some participants from the selected medical centres commented that the process of performing the statistical analysis is rather complicated. This could cause the analysis to be performed wrongly. This weakness can be overcome by giving proper training to the users of the system. Other than that, user help manual or set of pre prepared commands can be useful to overcome the problem.

6.4 Further Studies, Future Enhancements and Expansions

From the analysis of the research outcomes and the comments from the participants, further studies, enhancements and expansions have been identified.

A system development knows no boundaries as new requirements and better implementation methods continue to arise and evolve. There are several enhancements that could extend the usability of the developed system.

1. More Administration Task

Administration task can be further enhanced to include more features to ease maintenance process. Among the features that may be included are multiple users grouping according to access right (authorization), data mining, and database backup.

2. More Search Functions

The search functions assist the users to search for their necessary information without going through the entire system. In future the search functions should include search by diagnosis. This feature will help users to search only by diagnosis in more systematically way.

3. Higher Degree of Management Controls

The implementation of this project was done generally under a small environment. Perhaps in future implementations, greater management controls can be implemented. This has the function of better unifying effort and standardizing of design implementation. The goal of which is to give the development effort greater focus and direction.

4. Increased Security Implementation

A greater amount of security can be implemented in the Analyzing Patient History System by the addition of security during information transfer and user verification. Currently, these application and process are insecure in terms of lack of encryption.

5. Transfer Program

For the future enhancement, the transfer program should be purchased. One of the programs is Stat/Transfer, which is available for Windows 98/95/NT and Windows 3.1. The transfer program reads and writes data in a variety of formats, including Microsoft Access, Excel, Stata and others.

6. Greater Customization Ability of Interface

The current implementation uses a fixed interface with standard features for all users. Perhaps in the future, a means for making this interface customizable for individual user can be implemented and thus greater personalized user interfaces.

Contributions to the Society

The contributions of this dissertation is to the following category of people as described in Table 6.1:

Table 6.1: Category of People Who Benefits From the Dissertation

Category of people	Description
Developers	Developers of medical information system and medical statistical analysis
Medical community	Medical practitioner, health staff, medical students and researchers.
General	Public who are concern with the health care information

6.5 Conclusion

This research has considered an important application of technology to medicine in particular an intelligent interface for analyzing patient history. It begins by trying to define the perceived issues and attempts to study the actual situation at hand. It uses a variety of research disciplines and applies practical computer science knowledge for achieving its objectives mainly in developing the system.

To evaluate the current medical systems in the medical centre, it was necessary to conduct surveys and interviews in selected medical centres. It was important to seek the cooperation not only of the administrative staff, but also the physicians, nurses, and other medical staff involved directly or indirectly in these areas in order to obtain the required information. It was also important to get the assistance from the staff at the Malaysian Medical Association.

A system is a set of interrelated elements, each contributing to the accomplishment of an aggregate activity. A system for analyzing patient history encompasses all the essential functions in an information system including reporting and analyzing features. In order to achieve the objectives of the project, different tools were integrated in a single environment.

The project has also succeeded in its objectives of creating a foundation for continual development of the Analyzing Patient History System. Future growth can be made based on the current client/server architecture and the addition of new modules into the current Analyzing Patient History System has been made easier with a central core that focuses on simplicity of integration.

It is the researcher's sincere hope that this study has made some significant contributions to the medical field, particularly in the realm of analyzing patient

history, for which there was limited information available previously. However, this is only the beginning of a series of studies in this existing arena.