



**MINISTRY OF EDUCATION AND TRAINING
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**ANALYSING AND DESIGNING
ACCOUNTING INFORMATION SYSTEMS
IN PUBLIC HOSPITALS**

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LIST OF ANNOUNCED SCIENTIFIC ACHIVEMENTS

1. Huynh, T.H. Hanh, Nguyen M. Toan, (2014), “New Requirements for AIS in public hospitals”, *Journal of Economics and Development*, No 204 (II), 91-98.
2. Truong B. Thanh, Huynh T.H. Hanh (2014), “Inadequacies in finance autonomy in public hospitals-A cost analysis based on performance level approach”, *Journal of Economics and Development*, No 200 (II), 35-39
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INTRODUCTION

i. Rationale

Public hospitals play a crucial role in providing health services, training and researching in medical area. In order to motivate public hospitals' activities towards the efficiency and sustainable development, the Government has authorized a particular financial mechanism as well as medical-fee policies to fit the public hospitals' context. This will obviously lead to basic changes in accounting information systems (AIS) in public hospitals. AIS's function is not merely to process the records or calculate expenses, but more importantly it has to be able to provide the leaders with fundamental information so that they can operate every single hospital effectively and optimally. In addition to providing and handling with the accounting information under the demands of the managers, AIS has to focus on management accounting, especially the cost management so as to improve the hospitals' operating efficiency. Apart from this, AIS has to be a crucial part which is inseparable from the overall management of the hospitals, an important bridge linking functional divisions in the hospitals.

Recognising the importance of AIS in public hospitals in implementing the financial autonomy, people involving in financial activities should foresee the necessity of doing an in-depth research about AIS in order to identify new demands, analyse and evaluate the current management system with the aim at designing and building a suitable AIS, which performs its functions at maximum. For this reason, the topic "Analysing and designing AIS in public hospitals" is chosen in this doctoral dissertation.

ii. Aims of study:

The analysis and design of AIS is based on IT application facilitating the effective financial management and operation in public hospitals in the current finance autonomy mechanism.

iii. Subjects and Scope of Study:

- AIS in public hospitals using IT applications.
- Public hospitals which rank the third or over.
- Attention will be first paid to diagnosing and treating

iv. Methodology:

Both quantitative and qualitative approaches are used to achieve the aims of study.

v. Contributions of the study:

The theoretical contributions include:

- (1) Systemization and development of theoretical foundations for AIS in hospitals.
- (2) Identification and organization of four accounting cycles in public hospital i.e supplying, treatment, collecting medical-fee and financing.
- (3) Building the model of factors affecting the success of AIS in hospitals.

The practical contributions include:

- (1) Identifying new requirements for AIS in public hospitals
- (2) Organising cost collection in the application of information technology subject to the combination between finance accounting and management accounting.
- (3) Designing in detail AIS in public hospitals in conjunction with the application of information technology oriented by integrated management solutions

vi. Design of Study:

Apart from Introduction and Conclusion, the paper is divided into four chapters.

Chapter 1: Literature review of AIS in hospitals

Chapter 2: Methodology

Chapter 3: Findings of AIS analysing and identification of new requirements for AIS in public hospitals

Chapter 4: Designing AIS in public hospitals

CHAPTER 1. LITERATURE REVIEW OF AIS IN HOSPITALS

1.1 Literature review of AIS

1.1.1. Nature of AIS

The understanding of the nature of AIS can be approached by many ways as follows.

- The approach to object accounting is the most popular way.
- The approach to the accounting organization and accounting mechanism, which focuses on people is a popular one.
- The approach functioning as an information system (IS), regarding AIS as a part of IS which has input, process and output.
- The approach which is made via the components of AIS including: (1) human, (2) procedure and information process, (3) data about its operation, (4) IT platform which consists of computers and information linking devices, (5) accounting software including accounting data and (6) internal controlling tools
- The approach based on the cycle, aiming to the objects using the accounting information. This is an approach consistent with the IT applying conditions.

1.1.2. The role of AIS

Providing accounting information to facilitate strategic planning, management control and operation control.

1.1.3. Ways of studying AIS

Studies related to AIS assessment

- Assessing AIS relying on the quality of the output information.
- Assessing AIS through the measurement of functions.
- Assessing based on the satisfaction of information users.

Studying AIS in the association with ERP application

- Analysing the benefits of ERP application: improving the quality of accounting information and the accounting efficiency.

- Analysing data security and decline in the efficiency of internal control system.

Studies related to analyzing and designing AIS

The participation of users plays a crucial role in the AIS design process.

1.2. Literature review of AIS in hospitals

1.2.1. An overall introduction of hospitals

The structure of hospitals is usually divided into 3 major divisions: logistics, clinical practice and pre-clinical practice (PC).

1.2.2. AIS in the application of Integrated Management Solution

- The organization of AIS has to attach much importance to building the relationships with other IT functions.

- Organizing all the activities professionally.

1.2.3. Researches on AIS in hospital

Researches on hospital AIS focus on assessing AIS, ERP application with the hospital's characteristics as well as modern accounting methods assisting the cost control and improving the operation effectiveness of the hospital.

1.3. Literature review of the public hospitals' AIS in Vietnam

The researches have portrayed a panoramic picture of the AIS organisation in public hospitals in Vietnam, recognising the improvement of AIS and putting forward some measures to improve AIS on the financial accounting side and taking the first step in implementing accounting management and IT application.

CHAPTER 2. METHODOLOGY

2.1. Context and hypotheses

2.1.1. Context

- There are shortcomings in the implementation of financial autonomy mechanism at public hospitals
- Promulgating regulations on the operation and financial mechanism of public health centers.
- Building the procedure of adjusting health service prices by calculating the cost fully and correctly.
- Aiming to the payment-based-on-the- health case.

2.2.2. Hypotheses

- Hypothesis 1. AIS needs to provide new information to support the management and operation of hospitals.
- Hypothesis 2. Methods of handling AIS's information have to be based on the IT platform and be directed to the overall hospital managing solution.
- Hypothesis 3. Information quality, system quality and the awareness of the benefits of AIS have mutual impact and affect the success of AIS in the hospitals (assessment based on the users' satisfaction).

2.2 Methodology

2.2.1. Quantitative Research Methodology:

Case study research is used to aim at an understanding of operations in public hospitals. In addition, focus groups are used to record

experts' opinions about research hypotheses, which lays the foundation for designing the questionnaire.

2.2.2. Qualitative Research Methodology

The respondents are managers at different levels in public hospitals.

- Samples: 238 questionnaires are delivered to executive managers and 125 to accountants. Qualitative Research Methodology includes descriptive statistics, EFA, CFA, SEM.

2.3. Methodology of designing AIS

In accordance with current AIS and the tendency of designing current AIS, the chosen methodology of designing AIS is the objects-oriented one.

CHAPTER 3: FINDINGS OF AIS ANALYSING AND IDENTIFYING NEW REQUIREMENTS FOR AIS IN PUBLIC HOSPITALS

3.1. Analysing relationships between AIS and IS of other functions in public hospitals in the direction of cycle approach

3.1.1. Supply cycle

Supply cycle in hospitals has two main functions namely purchasing and making payments to suppliers. These include (1) Making supply chain (2) Organising bidding (3) Receiving medicines/ appliances and storing (3) Monitoring payments

The functions of AIS consist of accounting for inventory, monitoring and making payments to suppliers.

3.1.2. Cycle of examining and treating patients

Cycle of examining and treating patients is the bridge connecting fee-collection and supply including receiving patients, examining, treating out-patients and in-patients, doing check-out.

AIS is in charge of accounting, allocating expenses related to activities of examining and treating.

3.1.3. Cycle of collecting medical fee

Cycle of collecting medical fee calculates the exact fee for each patient and collects it. This includes four steps namely calculating fee, collecting fee, creating the spreadsheet, recording and clearing the account with the medical insurance company on the medical fee of each insured patient.

3.1.2. Cycle of financial activities

This cycle involves receiving and using the budget, putting up capital and using the capital raised from external resources, calculating employees' salary and their financial contributions extracted from the salary, setting the budget for buying fixed assets, processing the records, preparing balance sheets, identifying and analyzing operation result of hospitals.

3.2. Analysing the correlation between components of AIS basing on the overall and multidimensional approach

In order to provide a thorough understanding of AIS, the research is done not just by individual approaches but systematic ones. This dissertation will introduce a new approach which presents overall and multidimensional characteristics. Furthermore, the dissertation will briefly and visually describe the correlation and unity of AIS's components. This lays the foundation for designing AIS in hospitals.

3.2.1. Relation between operation cycle and accounting objects

A lot of accounting objects get involved in each operation procedure in hospitals. They are monitored, accounted and provided with information by the correspondent accountant. On the contrary, the change of any accounting objects will have impact on a specific operation cycle and functional departments in hospitals. The recognition of this relation is of great importance in organizing AIS in cycles and effectively coordinating the operation of accounts department and of other functional departments, especially in association with IT applications.

3.2.2. Relation between accounting objects with resources, method and procedure of accounting

All activities carried out in a hospital are part of a specific cycle and each cycle correlates with accounting activities. Accountants collect, check documents, classify them, record them and report the concerned information about accounting subjects with the help of technology. In the whole process, internal controlling tools are also used to promote the implementation of each cycle aiming at achieving the hospital's goals.

3.3. Identifying new requirements for AIS

3.3.1. Content of supplementary information

The findings show that supplementary information includes information about selling price of each medical service, each patient and information about examining and treating service, about medical fee and derivative expenses of each department, about inventory of medicines and each patient's accumulated fee at a specific time.

3.3.2. Handling information

In addition to the application of accounting software, the findings represent the necessity of handling information in accordance with data link among functional departments in hospitals. This acts as premise directing to the application of overall management in hospitals.

Hypothesis 2 is acceptable.

3.3.3. Evaluation of AIS in hospitals at present

- *Actual situation of providing information about medical fee to patients:* Information about medical fee of groups of patients is well –handled at hospitals. Some are able to provide information about medical fee to every department and accumulated fee of each patient at any time. However, a

few public hospitals have not carried out processing and supplying information on medical fee in accordance with code of patients very well. This leaves a room for our dissertation to put forward some measures in organising AIS meeting the requirement.

- *Actual situation of accounting, allocating and providing information on expenses:* The accounting of expenses on medicines, medical appliances and salary is done well at public hospitals, However, some hospitals have not done the accounting and allocated indirect costs and so there is a high proportion of hospitals unfulfilling the setting of selling price of each medical service.

- *Actual situation of accounting the health service activities:* 90% of public hospitals offering health services have collected and separately accounted the revenues from such activities. However, nearly 30% of hospitals have not yet identified the actual cost of the health services.

- *Actual situation of IT application:* The survey results show that most of the public hospitals have applied the accounting software and done well in automatically setting medicine prices and service price. However, the data link between the accounting and pharmaceutical department, pharmaceutical department and the department in charge of treating patients, the department in charge of treating patients and accounting department has not been paid attention to. Only 20% of the hospitals in the survey have applied the overall hospital management solution.

3.3.4. Research result on the relationship between the ability of providing information and handling information

The analysis of the Pearson correlation coefficients between the overall hospital management software and the cost of every single case can assert that the overall management software application is one of the important solutions supporting the collection, processing and providing accounting

information accounting information in accordance with requirements in management.

3.4. Research result on factors affecting the success of AIS in public hospitals

3.4.1. Scale assessing

- The Cronbach Alpha coefficients of the scales are qualified.
- The conditions of EFA show that the data are consistent with exploring factor analysis.
- The factor analysis has identified 5 groups. They include information quality, system quality, function guarantee, awareness of utility and satisfaction.
- Scale testing by EFA shows that the model is consistent with real data. All of the scales meet the requirements of composite reliability, extracted variance and converged values.

3.4.2. Model testing and the research hypotheses

SEM result shows that this model is compatible with the real data. There are 2 hypotheses of the model being rejected, the other relationships have the statistical meanings.

3.4.3. Implications of research results

- A successful AIS has to be qualified to implement the functions of AIS namely informing and controlling.
- The quality of the information handling system has to be high so as to provide qualified information and help guarantee the AIS functions to be well implemented.
- To improve the quality of the system, the first thing to do is to raise awareness of the leaders of the role of AIS.

3.5. Orientation of designing AIS based on the research results

- The design of AIS has to be directed to the provision of new accounting information based on actual needs.
- The design of AIS has to be based on the IT application in the direction of overall hospital management solutions.
- The design of AIS in conjunction with IT application has to follow the accounting cycles.

CHAPTER 4. DESIGNING THE AIS IN PUBLIC HOSPITALS 4.1. Establishing the codes for the objects

4.1.1. Exploiting and using the standardized codes of the industry

Hospitals should follow the standardized codes of the medical industry such as the active medicine code, health management code, procedure surgical code, health insurance card code, etc.

4.1.2. Establishing the hospital's own codes

To manage the specific objects relevant to the characteristics of managing objects as well as the operation and the size of hospital, specific codes need to be set. As every object may have a lot of different characteristics which need to be managed, codes in hospitals should be designed based on the code pairing or decentralization method.

4.2. Designing AIS in the supply cycle

4.2.1. Organizing the database

Establishing the file DANH_MUC_THUOC_VAT_TU to store and update the information of the content and characteristics of every medicine, medical appliance. Additionally, each file should consist of some fields as follows:

- ID_TY_LE_BHYT_TH_TOAN: manage information on the ratio of payment made by medical insurance company per each kind of medicine and medical supplies.

- ID_NOI_DUNG_VIEN_PHI: facilitating the classification of different costs so as to make spreadsheet of healthcare fee)

- SL_TON_KHO_TOI_THIEU: showing the minimum inventory of each kind of medicine and medical supplies.

- SL_DAT_HANG_TOI_UU: giving information on the maximum number of orders for each kind.

- SL_TON_KHO_HIEN_TAI, which is updated after each entry is recorded, represents the actual inventory of each kind of medicine and medical supplies at a definite time.

4.2.2. Organising data and handling the procedure of storing medicine and medical supplies.

- *Pharmaceutical Department/Machine-Medical supplies Department:* is in charge of checking, warehousing, updating data and generating warehouse receipts. Detailed data about warehousing of each kind of medicine and medical supplies will be entered in file PHIEU_NHAP_KHO (backing up information on warehouse receipts) and file CHI_TIET_PNK (showing the number, unit price of each medicine stored in the warehouse).

- *Accounting Department:* is responsible for checking warehouse receipts, updating and supplementing clauses and backing up information in “warehouse of general data” which consists of two files namely NHAT_KY and CHI_TIET_NK. NHAT_KY file is linked with CHI_TIET_NK file via ID_CHUNG_TU field and functions as a general data warehouse handling the synthetic accounting.

In order to monitor suppliers, TK 3311 is used to update information in field TK_NO/ TK_CO located in file CHI_TIET_NK, ID_NHA_

CUNG_CAP, which is registered in CHI_TIET_TKNO or CHI_TIET_TKCO so as to do the accounting of suppliers' credit-controlling.

4.3. Designing AIS in the treatment cycle

The basic function of AIS in the cycle of health examination and treatment is to note and do the accounting of costs which are related to examining and treating patients..

4.3.1. Principles of organizing database and accounting costs

Principle of organizing database

- Every patient is controlled by an ID_BENH_NHAN
- For every period of treatment given to each patient: ID_BENH_AN is used
- For every period of treatment when patient is examined several times: ID_LAN_KHAM is used.
- For everytime of examing using specified medicines: subclinical medicines and services are used
- Each specified examination can be carried out by different functional departments in hospitals.

Designing the cost list

Designing the cost list is an important part to do the accounting, aggregation and cost allocation. All the costs for examning and treating including direct and indirect cost. Besides, in compliance with the regulation of combining financial accounting and management accounting, the design of cost list in public hospitals needs to be attatched to the content table of Government budget. In the list, each item of incurred cost content has to be consistent with the title and subtitle of the content table of Government budget.

The rules of accounting cost

Direct costs related to each patient, each type of medical technical service, each department, each activity are all gathered directly. Account 6612 is used if the incurred costs related to each compulsory activity of examining and treating and Account 631 is used if those related to examining and treating on demand.

4.3.2. Designing IS to monitor each patient's information

Information on patient is stored and managed in the file HO_SO_BENH_NHAN, which belongs to the main field ID_BENH_NHAN. The functional divisions are allowed to exploit and use information on patient from this file.

4.3.3 Designing AIS of patients' expenses on the basis of each individual department

ID_GIUONG is used in the file DANH_MUC_GIUONG_ BENH to identify patients receiving treatment at a specific ward under the control of a specific department and their transfer to a different department or ward.

Along with organizing data file DANH_MUC_BUONG_BENH and DANH_MUC_KHOA_ PHONG, the accounting of examination and treatment costs at every department in-charge can be done. In addition, organizing data file tin CHUYEN_KHOA_ BUONG leads to an efficient management and provision of information about the process of transferring patients from one department to another and from one ward to another within a department.

4.3.4. Designing AIS of patient costs subject to each time of examination

File ID_LAN_KHAM generated by the system itself in the file KHAM_BENH is used to store general information and result of each time of examination for out-patients, in-patients and boarding-patients.

4.3.5. Designing AIS of patients' fee subject to each type of cost

- Organising the file tin CHI_DINH_THUOC to store information about each type of medicine, blood, infusion, specified medical supplies, kinds of medicine provided to patients in the field SO_LUONG_DUOC_CAP and SO_LUONG_CAP_CHO_BN in this file. This is a basic foundation for accounting costs of medicines, blood, chemical, infusion employed in the treatment given to each patient, doing the statistics of costs for each kind of medicine.

Additionally, in the cycle of examination and treatment, the file CHI_DINH_DVKT_CLS needs to be created to monitor the implementation of instructions about specified technical as well as subclinical services offered to patients. This aims at calculating incurred costs and then the price of these services.

4.3.6. Designing AIS of patient cost subject to each treatment period

Each treatment period is monitored in the patient's medical records, each of which has ID_BENH_AN connected with the patient in each treatment period. The number and kind of medicine or medical supplies in use is stored in the file CHI_DINH_THUOC while the number and kind of medical technical services is stored in the file CHI_DINH_DVKT_CLS. Information on the ward, the bed in use can also be exploited from the files HO_SO_BENH_AN, KHAM_BENH, CHUYEN_KHOA_BUONG. Based on the link between file KHAM_BENH and HO_SO_BENH_AN, users can do the statistics of kinds of medicine, medical supplies, technical and subclinical services provided to each patient in each of their treatment period.

4.3.7. Designing AIS of cost and selling price for each medical service and each patient

The dissertation puts forward organizing the file CHI_TIET_CHI_PHI_KCB to collect the incurred costs subject to cost central/ various subjects for the sake of facilitating the accounting of costs and prices.

By forming the cost list in hospitals and linking data at different fields ID_KHOA_PHONG and ID_DVKT_CLS, AIS is able to do the accounting of each cost subject to each department. In this method, when accounting the credits in Account 6612/631/Account 642 in the field TKNO of the file CHI_TIET_NK, the system requires updating the costs related to the arising affairs, the departments in concern (cost central), technical and subclinical services (cost subjects). Then these costs are stored in field ID_CHI_PHI, ID_KHOA_PHONG and ID_DVKT_CLS of the file CHI_TIET_CHI_PHI_KCB.

With regard to allocating general costs, the dissertation suggests ways of allocating costs using top-down approach, which sets priority for general costs related to the departments as follows.

Step 1: Allocate costs of administrative management

Step 2: Allocate costs of equipment maintenance and sanitation

Sep 3: Allocate costs of pharmaceutical management

Step 4: Allocate costs of subclinical departments.

The procedure mentioned above will lead to the fact that the total incurred costs are collected and allocated to all departments. The accounting of total costs to subclinical departments, operation rooms along with the medical services carried out brings about a basic foundation for setting price for each medical service. Furthermore, the collection of private costs and allocation of general costs to clinical treatment departments lays the foundation for calculating the price for each patient.

4.4. Designing AIS in medical-fee collecting cycle

In order to support the collection of all incurred costs and then group them in different categories so as to print out the list of examination and treatment costs, the dissertation suggests organizing file THANH_TOAN_RA_VIEN, where the data about medicine use, medical supplies and medical services employed in the treatment will automatically be updated into the file from the other files like CHI_DINH_THUOC and CHI_DINH_DVKT_CLS. Additionally, in the file DANH_MUC_THUOC_VTYT and DANH_MUC_DVKT_CLS there is the field TY_LE_BHYT_TH_TOAN used to identify kinds of medicine, medical supplies, technical and subclinical services which are fully-paid, partly-paid or unpaid by the insurance company. This helps identifying the fee that each patient and the insurance company have to pay. Apart from it, the file THEO_DOI_TAM_UNG needs to be created to monitor advance receipts and advance-return receipts.

Basing on the lists recording the collected fee, advance and advance-return fee made at the end of the day, cash accountants write receipts and do the synthetic accounting at the correspondent accounts.

In order to process the differences between receipts and payments for each activity, accountants are supposed to write the own receipts and entering them in Account Payable 111 / Account Receivable 5111 for the fee fully paid by normal patients and partly fee paid by insured patients, entering them in Account Payable 111/ Account Receivable 531 for the fee paid by out-patients.

4.5. Designing AIS in finance cycle

4.5.1. Designing AIS of salary

File DANH_MUC_NHAN_VIEN is organized to update and store information about personnel management and important input information such as employees' salary level and allowances. This file also provides information about employees' Id.cards, bank accounts used to effect salary

payments. Furthermore, the field ID_KHOA_PHONG needs to be created in this file to manage employees and account employees' salary within each department.

File LUONG_VA_THU_NHAP is organised to update, back up information about salary and other payments to employees. In order to account each of the salary costs subject to department/unit, when entering it in the Account Payable 6612/631/642 of the field TK_NO in the file CHI_TIET_NK, the system requires updating the cost as “*salary*” in the departments or units in concern and store it in field ID_CHI_PHI, ID_KHOA_PHONG of file CHI_TIET_CHI_PHI_KCB.

4.5.2. Designing AIS of fixed assets

File DANH_MUC_TSCĐ is organised to manage fixed assets. Apart from general information about content, characteristics and actual condition of fixed assets, the classification based on main sources (ID_NGUON_VON), purpose of use (ID_MUC_DICH_SU_DUNG), department-in-charge (ID_KHOA_PHONG) needs to be carried out. It functions as a base for fixed asset management for the sake of identifying the budget used in reinvesting fixed asset as well as figuring out the financial results of hospitals' trading operation.

- Fixed assets purchased from the state budget and used to fulfill the hospital's functional duties are accounted as depreciation and entered in the Account Payable 466/ Account Receivable 214 at the end of financial year.

- Fixed assets originated from the state budget and only used to carry out trading activities are accounted as depreciation and entered in the Account Payable 631/ Account Receivable 214 monthly; accounted as depreciation and entered in the Account Payable 466/ Account Receivable 431 at the end of financial year.

- Fixed assets purchased from loan, trading budget or other resources and used for for-profit business are accounted as depreciation, added to trading

costs and entered in the Account Payable 631/ Account Receivable 214 monthly or periodically. Accounted as depreciation and entered in the Account Payable 466/ Account Receivable 431 at the end of financial year. For the fixed assets which are originated from the state budget and used in serving insured patients and patients-on-demand, allocation approach is deployed to identify wear-and-tear value of fixed assets subject to each activity logically calculated to cost.

Because of the complication in calculating and accounting fixed asset depreciation, it is advisable to organize the file KHAU_HAO_TSCD which consists of field PHAN_BO identifying which fixed asset needs to be invested in and field TIEU_THUC_PHAN_BO used to allocate each of the fixed asset relevant to each activity.

4.5.3. Designing AIS to identify financial results

On the basis of accounting and allocating costs mentioned above, cost accounting for each activity can be done (in Account 6612 or 631), in each of which close monitoring to cost activity in each department or unit and to receipts from each activity (accounted in Account 511 or 531) will be performed. This proceeds a constant supervision on each activity done by every department/ unit. The approach is beneficial to hospitals in identifying the difference between receipts and payments in each activity done by every department/ unit.

4.5.4. Designing AIS to provide accounting information

- Organise file SO_CAI which is used to print out the ledger and to prepare financial reports and budget accounting report.

- Organize files containing special details such as CHI_TIET_PNK, CHI_TIET_PXK, CHI_TIET_CHI_PHI_KCB, THEO_DOI_TAM_UNG or organize detailed monitoring fields such as CHI_TIET_TKNO, CHI_TIET_TKCO in file CHI_TIET_NK. This helps to process, provide and print out detailed accounting books on demand.

4.6. Recommendations for implementation AIS design in public hospitals

4.6.1. Difficulties

The implementation AIS design oriented by total management solutions may face difficulties from the perception of hospital leadership, capacity of worker force, the coordination of the functional units , IT infrastructure ...

4.6.2. Recommendations

- Review and complete the assigned work, clearly identify the specific functions and responsibilities of each department.
- Perform analysis of business processes of the hospital to make the requirements for AIS.
 - Investment in IT infrastructure
 - Upgrading of IT for employers.
 - Select the method for designing software.

SUMMARY

Over the past years, the implementation of finance autonomy mechanism has resulted in the need for a change in AIS so as to better promote the role of AIS in efficient management and operation in public hospitals. The dissertation “ Analysing and designing AIS in public hospitals” is written based on a sound reasoning basis, primary and secondary database and a combination of both quantitative and qualitative research method, which are applied consistently with its aims and background. The dissertation can be summarized as follows.

Results of the dissertation

- Synthesizing all of the researches on AIS.
- Identifying and organizing AIS in public hospitals with four cycles and developing an overall and multidimensional approach about AIS in hospitals

- Establishing and testing model of factors affecting the success of AIS in public hospitals via the AIS users' satisfaction. Apart from three factors namely information quality, system quality and awareness of the usefulness of AIS, the research introduces the factor "task fulfillment" relevant to the awareness of AIS and operation characteristics in Vietnamese hospitals.

- Conducting a survey on large scale with 200 respondents (who are executive officers at different levels in hospitals) and employing appropriate analysis methods to identify new requirements for information and ways of handling information.

- Analyzing the ability to meet new requirements of AIS in public hospitals via a survey conducted at 125 public hospitals nationwide. The results acts as a useful base that helps managerial organizations in making finance management policies, building mechanism for receipt-payment monitoring, accounting state budget and building an accounting system relevant to public hospitals' operation.

- Establishing operation procedure describing the relation between functions and components in accounting cycle to aim at ensuring the efficient collection, processing and provision of information.

- Designing codes, identifying the structure of files and the relation among database files. The most important contribution is to suggest a solution in managing and designing appropriate database files as well as using accounts and method of analyzing the data to integrate finance accounting with management accounting and so meeting the needs for information of users.

New contributions of the dissertation

- Organising AIS in hospitals with a new approach – cycle approach, which includes four cycles namely supply cycle, examination and treatment

cycle, medicare-fee collection cycle and finance cycle. All are suitable with the operations of hospital.

- Putting forward an overall and multidimensional approach on AIS. This provides a better understanding about the nature of AIS – an untouched research area in Vietnam.

- Introducing the model of factors affecting the success of AIS and case studies in public hospitals.

- Organizing and monitoring costs in IT application and allocating operation costs in examination and treatment using top-down method in hospitals.

Limitation of the dissertation

- The study was carried out in public hospitals so research results can only have practical value in the public hospitals in Vietnam. The results may be different when studied in other types of activities.

- Research conducted mainly in the locality Central Highlands and the convenience sampling method and sample size large enough to analyze the general model. The next study to a larger sample and spread throughout the country to ensure the results more reliable.

- Subject limit the scope of the study hospitals with relatively large scale, primarily research activities and the examination and treatment HTTTKT design focuses on database design should be limited generality and want applied in practice to implement a more comprehensive study.

Recommendations for future research

In addition to these results, the field of study of AIS at public hospitals can carry out further research in several directions such as: research on factors affecting the application of the total management solution in public hospitals Vietnam, research on application of modern management accounting tools, especially cost management to manage and run hospitals optimally and efficiently...

In a nutshell, the dissertation has achieved the goals set in difficult conditions such as a large research scope and limitations in accessing to real data. The findings make meaningful scientific contributions towards the knowledge treasure in the research area of AIS in general and AIS in public hospitals in particular. In addition, the dissertation has practical meaning. It can be used as a good reference source for managers in building and improving AIS in public hospitals for the sake of best meeting the current needs.