

Accounting Information Systems (AIS) and Knowledge Management: A Case Study

Zulkarnain Muhamad Sori

*Department of Accounting and Finance, Faculty of Economics and Management
Universiti Putra Malaysia*

Abstract

This study seeks to examine the use of Accounting Information Systems (AIS) by ZBMS Sdn. Bhd., and its contribution to the knowledge management and strategic role of the organisation. ZBMS is a company that registered in Kuala Lumpur and operate in construction industry. The company used automated AIS known as 'Contract Plus – Financial & Project Accounting' package commercially developed by a private company (ZYXW). Wide variety of people that involve in the company's operation within and outside the organisation uses accounting information generated by this system for decision-making. Based on input provided by operational level managers, the Contract Plus software produces monthly projects' income statements, balance sheets and statement of changes in financial position for the strategic and tactical managers to plan, control and make decision on the resources allocation. The role-played by AIS enhanced the organisations' accounting functions, and add information value. The automated AIS speed up the process to generate financial statements and overcome human weaknesses in data processing. The system enhances management of resources and the process of monitoring, control and prediction of ZBMS business for better future. With the advent of AIS, the growth of tacit and explicit knowledge could be seen from the intensive training of personnel at the early stage of system implementation to the development and use of company's own manual in training of new staff and assisting the job of existing staff. Given the benefit of AIS to ZBMS, this paper recommended that the source of data should be fully automated, and the existing system should be upgraded through computerise the pre-tendering and post-tendering of projects to enable AIS integration.

Keywords: Accounting Information Systems, Knowledge Management, Accounting Functions, Information Value, Financial Statements

1. Introduction

Accounting Information System (AIS) is vital to all organisations (Borthick and Clark, 1990; Curtis, 1995; Rahman *et al.*, 1988; Wilkinson, 1993; Wilkinson *et al.*, 2000) and perhaps, every organisations either profit or non profit-oriented need to maintain the AISs (Wilkinson, 2000: 3-4). To better understand the term 'Accounting Information System', the three words constitute AIS would be elaborate separately. Firstly, literature documented that *accounting* could be identified into three components, namely information system, "language of business" and source of financial information (Wilkinson, 1993: 6-7). Secondly, *information* is a valuable data processing that provides a basis for making decisions, taking action and fulfilling legal obligation. Finally, *system* is an integrated entity,

where the framework is focused on a set of objectives. The combination of the three words *Accounting Information System* indicate an integrated framework within an entity (such as a business firm) that employs physical resources (i.e., materials, supplies, personnel, equipment, funds) to transform economic data into financial information for; (1) conducting the firm's operations and activities, and (2) providing information concerning the entity to a variety of interested users. Indeed, the combination or interaction between human, technology and techniques would permit an organisation to administer its knowledge effectively (Bhatt, 2001; Thomas and Kleiner, 1995).

Currently, the world and human life has been transformed from information age to a knowledge age (Syed-Ikhsan and Rowland, 2004: 238; Thomas and Kleiner, 1995: 22), and **knowledge** has been recognised as the most valuable asset. In fact, knowledge is not impersonal like money and does not reside in a book, a data bank or a software program (Drucker, 1993). Drucker believed that knowledge is always embodied in a person, taught and learned by a person, used or misused by a person. As the world moving into knowledge era, this paper will examine how ZBMS Sdn. Bhd. manages its knowledge in order to remain competitive amongst the construction industry. Probst, Raub & Romhardt (1999, p.1) stressed that companies must learn to manage their intellectual assets (i.e. knowledge) in order to survive and compete in the 'knowledge society'. Indeed, **knowledge management** is concerned with the exploitation and development of the knowledge assets (Davenport et al., 1998).

This paper seeks to examine the Accounting Information Systems (AIS) used by a Malaysian company named ZBMS Sdn. Bhd. The paper will highlight the users of the system and the way information adds value to the organisation. Also, the paper will investigate the way knowledge is managed through the process of creating, storing, disseminating and applying and how information system plays an important role throughout the process and the AIS contribution in the organisation's strategic role.

The remainder of the paper is organised as follows. The following section describes the background of ZBMS and the use of accounting information systems. The third section provides research findings on accounting information systems employed by ZBMS. The fourth section offer suggestions for future research. The final section concludes the paper and outlines the limitations of the study.

2. The Use of Accounting Information Systems in ZBMS

ZBMS is a private limited company registered in Kuala Lumpur, Malaysia that operate in construction industry, where the main activities ranging from construction of infrastructure, building, power, waste water to property development as well as engineering, procurement, construction and commissioning (EPCC) in the oil & gas sector.

The company used automated AIS known as 'Contract Plus – Financial & Project Accounting' package in their Finance Department, which was commercially developed by a private company (ZYXW). Contract Plus is a fully integrated business solution designed specifically for companies in the engineering and construction industry. The software will generate financial data to be analysed by the accountants and subsequently used by top level of management for strategic decision making, thus, these managers could identify future opportunities and limitations face by the company and industry (McCarthy, Minichiello and Curran, 1987: 243-244).

3. Findings

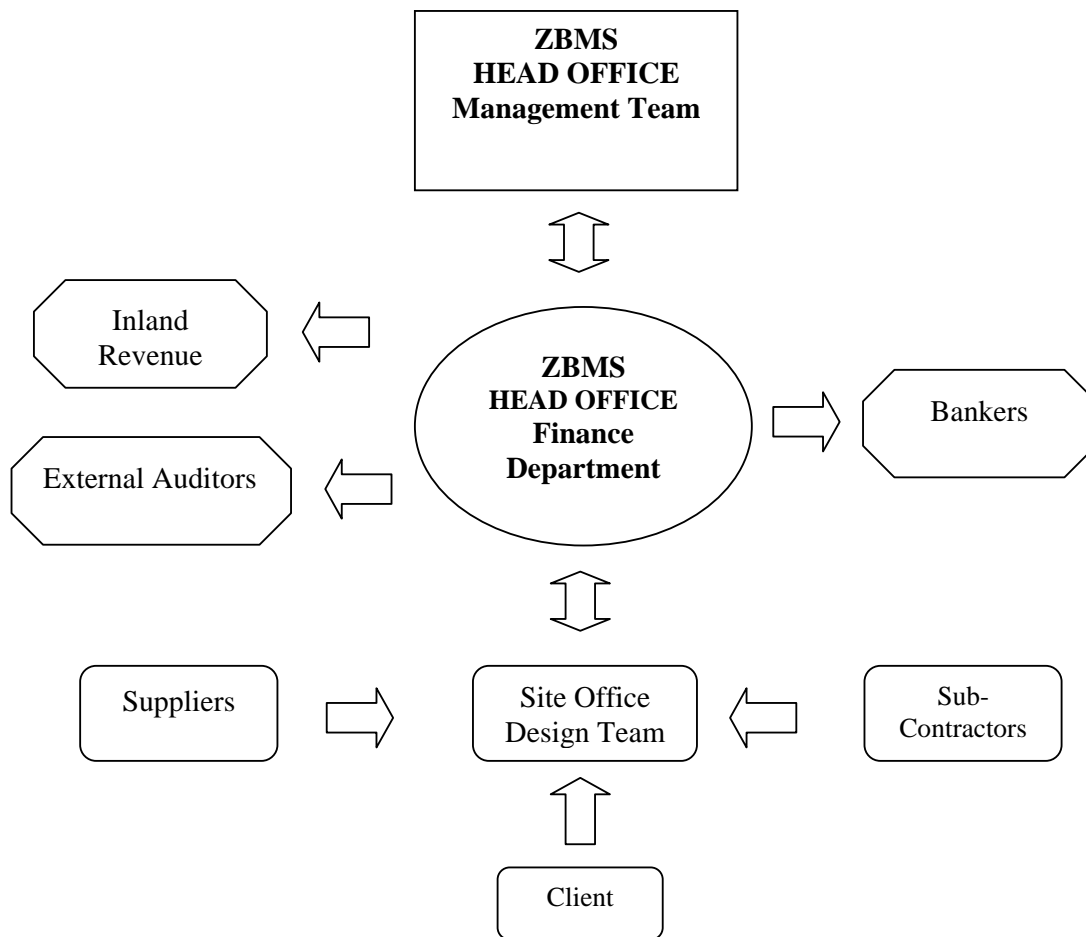
As mentioned earlier in section 2, ZBMS is a company that operate in construction industry. The industry was identified as one of the most difficult to understand due to its complexity mixture of people, plant, materials, locations, technology, knowledge of the law as well as the design and valuation of work done, which are much subjectivity (Capon, 1990: 1). However, these challenges are under control with the advent of technology such as software development that allows systematic data

processing. Therefore, it is important to understand the information flow in ZBMS in order to appreciate the usage of information within the organisation as shown in Figure 1-1 below.

3.1. Users of AIS

As shown in Figure 1-1, the finance personnel that reside at site project office (or called Project Accountants) and head office such as the Financial Accountants, Management Accountants and Finance Manager are the internal users of the system. Also, the management team that consists of Finance General Manager, Chief Operating Officer, Managing Director and Board of Directors are among the internal users of the system. On the other hand, the external users consist of government agency (i.e. Inland Revenue), external auditors and creditors. Indeed, wide variety of people within and outside the organisation uses accounting information for decision-making (Rahman and Halladay, 1988, Renau and Grabski, 1987).

Figure 1.1: Information Flow of ZBMS

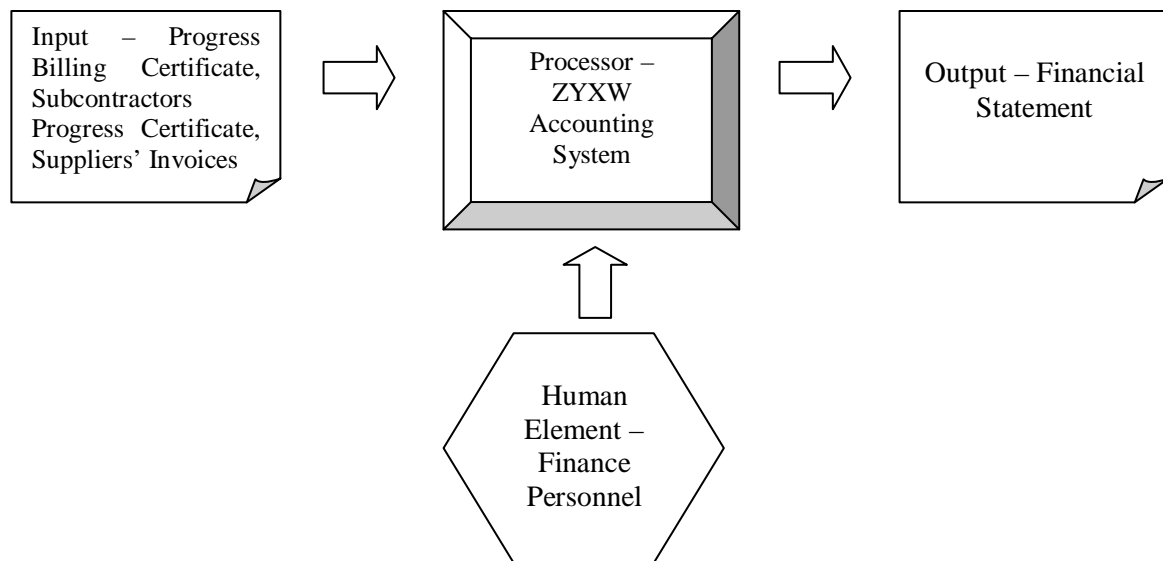


3.2. Function of AIS

The main function of AIS is to assign quantitative value of the past, present and future economics events. At ZBMS, AIS through its computerised accounting system (i.e. ZYXW-Contract Plus) produces the financial statements namely income statements, balance sheets and cash flow statement. The system will process the data and transform them into accounting information during input, processing and output stages that will be used by a wide variety of users such as internal and external users (see for example Wilkinson, 2000: 10-11). Wilkinson noted that an effective AIS performs several key functions throughout these three stages such as data collection, data maintenance, data

management; data control (including security) and information generation. Figure 1-2 summarised the transformation process of AIS.

Figure 1.2: Data Processing in Finance Department at ZBMS



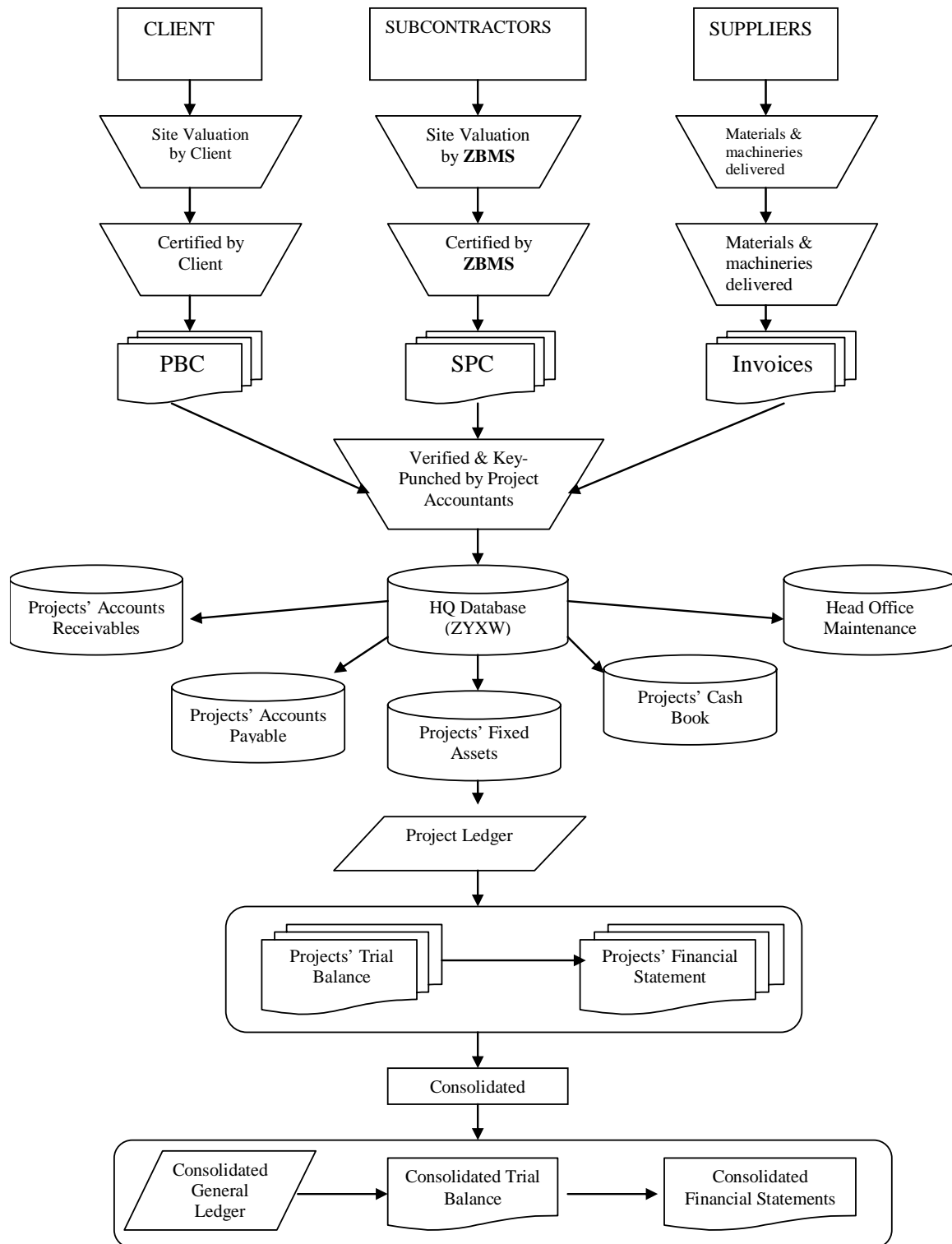
3.3. Usage of Information Within AIS

The construction projects undertaken by the company are divided according to the type of construction activities that comprised of five divisions, namely infrastructure, building, power, wastewater and oil and gas, where each project is treated as a separate company. The number of projects undertaken by each division depends on the contracts being awarded to the company. As indicated by Figure 1-2, the sources of data originated from external parties such as client, subcontractors and suppliers. The Project Accountants will work closely with the Quantity Surveyors to come out with the appropriate information as illustrated below:

Client – The client’s Quantity Surveyors (Qs) will evaluate work in progress (WIP) and come out with percentage of WIP to be agreed by both parties. Once agreed, Progress Billing Certificates (PBC) will be issued by Client’s Qs, which a copy of it will be sent to head office for data processing.

Subcontractors – The ZBMS’s Qs will evaluate subcontractor’s WIP at site and come out with percentage of WIP to be agreed by both parties. Once agreed, Subcontractor Progress Certificate (SPC) will be issued by ZBMS’s Qs and verified by ZBMS’s Project Manager, which a copy of it will be sent to head office for data processing.

Suppliers – Qs and Project Accountants will ensure that the materials and machineries are delivered in good condition at construction site before delivery orders are accepted. The delivery orders will be attached to supplier’s invoice and sent to Head Office for processing.

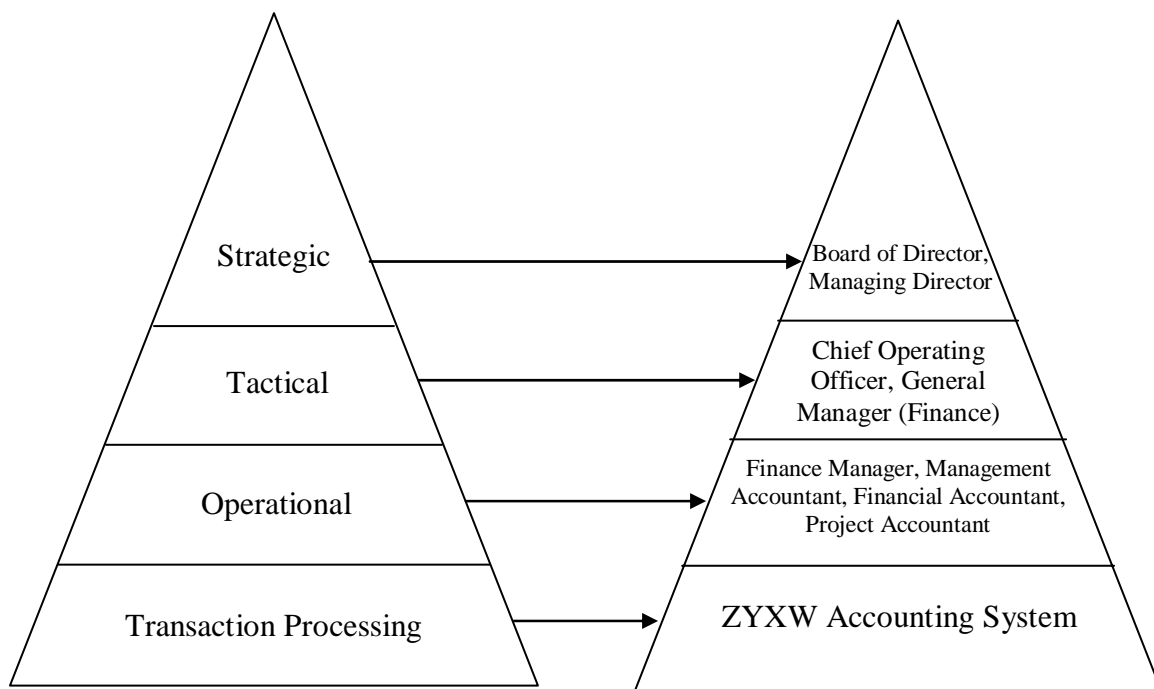
Figure 1.3: Simplifies the AIS within ZBMS:

These documents will be verified and input into the system by Project Accountants. The projects' data will be stored at Projects' Account Receivables, Account Payables, Fixed Assets accordingly. Projects' cashbook will be updated automatically after the data being entered to the projects' Account Receivables and Account Payables. Any expenses incurred at head office will be stored at HQ Maintenance master file by Financial Accountant. The Contract Plus Accounting System software will process the data and produce financial statements of individual company's projects on

monthly basis, which subsequently consolidated at group level. The process flow is shown in Figure 1-3 above.

The automated AIS play an important role in the ZBMS's operational level. As indicated by Rahman and Halladay (1988: 20), most modern organisation's operational control of financial resources depends largely on automated support. This is due to the financial statements are generated by the Contract Plus. As shown in Figure 1-4, projects financial statements are generated by the Project Accountants, while the Financial Accountant generates the consolidated financial statements. The Management Accountant uses the consolidated financial statements to prepare company's Performance Report such as cash-flow forecasts and ratio analysis. Once the Finance Manager (operational level) approve the report, it will then be submitted to the Finance General Manager and Chief Operating Officer (tactical level) to assist them for planning, control and decision making. The Performance Report will provide the information regarding work in progress relevant information. Therefore, AIS plays very important role at operational and tactical level as the activities at these level depend heavily on the information generated by the AIS.

Figure 1.4: Type of Information in ZBMS



3.4. Value Added of AIS

The role played by accounting functions has been enhanced with the development of AIS, which in turn contribute to the profession's value added to organisation. In fact automated AIS employed by ZBMS expedite the process to generate financial statement and reduce the human errors compared to non-automated AIS, which add the existing value of accountants.

AIS also provide information on both actual and budget data of the organisation that helps company's management to plan and control business operation. Good management of resources and better control of cost, budgeting and forecasting enhance the well being of ZBMS to continually generated profits.

The AIS also played a crucial role that contributes to ZBMS's value added by providing internally generated inputs from financial statements. Rahman and Halladay (1988: 19) believed that viable strategic plan must have inputs based on history of organisation, the current assets and capabilities of the organisation, and the trends in operations of the organisation.

3.5. Role of Knowledge

At ZBMS, both tacit and explicit knowledge are used as shown by the extensive use of accounting information system to assist business decision-making. The ZBMS begins its computerised accounting system in 1997. During the transformation process from manual to computerised accounting system, all finance personnel were sent for comprehensive computer training.

Table 1: Relationship of AIS at ZBMS and Knowledge Management System

Development of Automated AIS	Knowledge Management System	Knowledge Conversion
Training by hands-on experience	Creation of knowledge	Explicit to Tacit
ZYXW implemented, staffs learned from vendor's manual	Creation of Knowledge	Explicit to Tacit
Staffs gaining experience; Problems and solution being recorded on paper	Storing of Knowledge	Tacit to Explicit
Improvement on system; Internal manual that suits the ZBMS needs being produced; Widely used in the department; Assists learning process of new staffs	Disseminating of Knowledge	Tacit to Explicit
Explicit to Tacit		
System constantly use in Finance Department to generate monthly financial statements	Applying of Knowledge	Explicit to Explicit

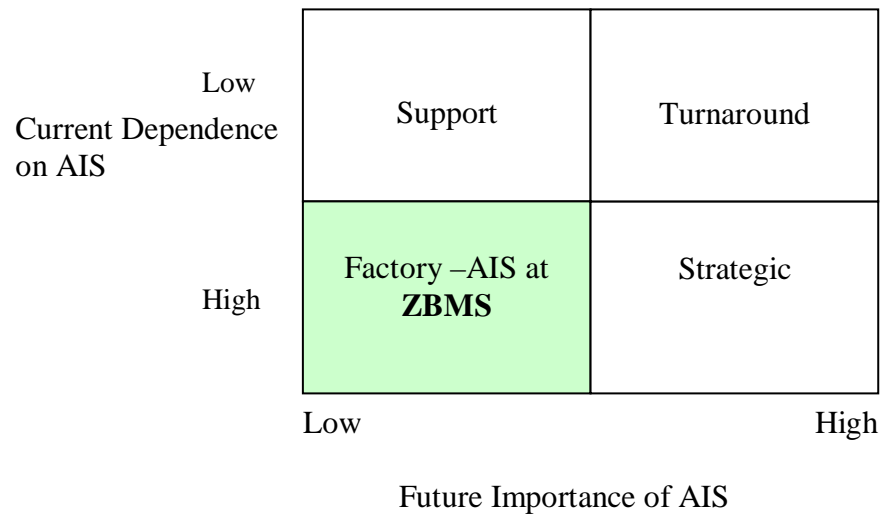
As shown in Table 1, the staffs were given hands on experience on the ZYXW System. During the early stage of system implementation, finance personnel were given flexibility to explore the system due to limited experience on the software at that time, and most of the staffs depend largely on the manual provided by the vendor for trouble-shooting. At initial stage, two-way communications with the vendor were developed to solve problems arised. As the time going on, the personnel were encouraged to record the problems aroused. Problems that have been solved were recorded for future reference.

Currently, the ZBMS Finance Department has its own ZYXW manual that suits with the department needs. The manual provides valuable information to new employees as well as to the existing personnel at Finance Department. Indeed, AIS provide the systematic recording, processing and generating of accounting information, and in the absence of AIS, information would be scattered, random and hard to access, which would become a barrier to the growth of knowledge.

3.6. Strategic Role and AIS

To analyse the AIS strategy in ZBMS, McFarlan Strategic Grid will be utilised., The McFarlan's strategic grid would locate ZBMS to the appropriate category with respect to its information system strategy (Curtis, 1995: 61). Automated AIS is fundamental part of the strategic plan of ZBMS in 1997. It has been improved over the years of implementation and generates accurate and timely accounting information that contributes to a good decision-making.

Realising the benefit brought by the AIS, the source of data must be fully automated. The existing system should be upgraded through computerise the pre-tendering and post-tendering of projects in the primary stages of the construction activities. When the system is upgraded, the ZYXW Contract Plus will integrate the two modules of pre- and post-tendering with the currently automated Financial and Project Accounting. Therefore, the most suitable position to locate AIS at ZBMS on the McFarlan Grid is on Factory Grid as shown in Figure 1-5 below.

Figure 1.5: ZBMS Location on McFarlan's Strategic Grid

4. Direction for Future Research

Having mentioned the above opportunities and challenges to the AIS, future research should investigate the AIS contribution on the organisation's growth of knowledge. Though AIS would organise and structure the data input and knowledge, lack of understanding on the potential effect of human behaviour on the system such as human error, manipulation and work-style. In fact, Ponemon and Nagoda (1990) noted, "the most difficult problems often are caused, or are exacerbated, by those individuals who have erroneous expectations of the new system being implemented" (p. 1). The study would be fruitful with the use of questionnaire and interview survey. Perhaps, the survey should concentrate on a sample of senior managers of the top hundred companies listed on the Bursa Malaysia (Malaysian Stock Exchange), banks and regulatory bodies. These groups could contribute significantly due to their role as a decision maker in their respective organisations.

Secondly, future research should also investigate the possibility to expand the use of AIS to the other areas that still did not use the system such as non-profit organisation and society. Indeed, the current level of usage shows that the benefit outweighs the investment cost. The successful implementation of AIS could save shareholder's money and time. Finally, future research should explore issues on the information value generated by AIS to shareholders and stakeholders in making investment decisions. Case study approach on top companies would be appropriate methodology because the understanding on specific AIS model would be more valuable rather than using questionnaire and interview approach that assumes AIS across sampled organisation is identical.

5. Conclusion

This paper examines the use of Accounting Information Systems (AIS) by ZBMS Sdn. Bhd. The wide varieties of people that involve in the company's operation get the benefits from the implementation of AIS and the use of Contract Plus software developed by ZYXW. The system assists the operational managers to come out with monthly reports for the top managerial level (i.e. tactical and strategic) plan, control and decide resources allocation. In addition, the paper showed that the AIS add value to information processed within the company.

The automated AIS could speed up information process and overcome traditional human weaknesses. As a result, the system supports the resource management and help ZBMS pursue its projection of continuing business profit. The use of AIS indicate the growth of tacit and explicit knowledge, where personnel were trained intensively and experience and trouble shooting were

recorded for future reference and training. Indeed, the successful implementation of an accounting information system can be described as a series of complex, interconnected activities necessitating participants to have technical and managerial skills to sort out prospective problems (Ponemon and Nagoda, 1990: 1).

Note

To keep the identity of the respondent and its software developer anonymous, an imaginary name was used in this study i.e. ZBMS Sdn. Bhd. and ZYXW respectively.

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