CHAPTER 2

THEORETICAL FOUNDATION

This chapter covered the theoretical foundation used in the analysis and implementation process of this thesis. The main terms and concepts that are covered in this section are the *Accounting Information System* (AIS) and the *Expenditure Cycle* (EC), with explanation on the specifically related *Internal Control* (IC), and the *Flowchart* and *Data Flow Diagram* (DFD) as the supporting instruments.

2.1. Accounting Information System (AIS)

The explanation would cover the definition and objectives of the AIS, and its general relation to the *Management Information System* (MIS).

2.1.1. Definition of AIS

In order to fully understand the concept and full definition of AIS it is appropriate to begin with the process of understanding the elements of AIS itself, which could be divided into the definition of *accounting*, *information*, *system*, and *information system*. From the defined terms the concept of *Accounting Information System* (AIS) can be created.

Accounting can be defined as the process of identifying, recording, summarizing, and reporting economic information to decision makers (Horngren et al 2002, p.4). From this definition alone we could stated that accounting is a collection of processes that is integrated one another to fulfill specific purposes, in this case to fully manage the economic and financial information.

In term of *information*, according to Alter (1999, p.48) information is data whose form and content are appropriate for particular use. Meanwhile, Cushing and Romney (1994, p.2) defined it as processing output that is organized, meaningful, and useful to the person who receives it. Both definitions are showing the important characteristics of *information*, which defined it as a processed data that has been organized and turned into intelligence that is meaningful and useful for particular purposes, for the appropriate parties to whom it is intended.

The concept of *system* as defined by Cushing and Romney (1994, p.5) is essentially an entity consisting of two or more interrelated components or subsystems that interact to achieve a goal. Another way to define system is that it is a set of interdependent parts that together accomplish specific objectives (Gelinas and Oram, 1996, p.12). Basically, the major significant characteristics of system that can be brought up are the fact that they are a set or group of interrelated components that interact together in order to achieve its destined purposes, in supporting the company in achieving its objectives.

Based from the definitions on *information* and *system* the concept of *information system* could be formed. An *information system* is a framework by which resources (people, computers) are coordinated to convert inputs (data) into outputs (information), in order to achieve the objectives of an enterprise (Wilkinson 1991, p.4). It is also can be defined as a particular type of work system that uses information technology to capture, transmit, store, retrieve, manipulate, or display information, thereby supporting one or more other work systems (Alter 1999, p.42). Officially, according to CPA Australia (2005, p.21) it is the methods and record established to identify, assemble, analyze, calculate, classify, record and report the transaction and other events that affect an entity, and to maintain accountability for assets, liabilities, revenues, and expenditures. It is clear that *information system* is a system that manages the information needed by the company.

The concept of AIS thus can be formed by combining the characteristics in the definitions of its elements. AIS can be defined as a unified structure within an entity, such as business firm, that employs physical resources and other components to transform economic data into accounting information, with the purpose of satisfying the information needs of variety of users (Wilkinson et al. 2000, p.7). Cushing and Romney (1994, p.16) also defined it as the set of human and capital resources within an organization which is responsible for the preparation of financial information and also of the information obtained from the collection and processing of the transaction data. It is basically a set of different components within the company's system that is responsible in the management of the financial information, which include the process of data capturing (collection), data process, and data presentation.

AIS have five major subsystems each responsible in managing different type of cycle within the company, they are:

1. General Ledger and Financial Reporting cycle.
2. Revenue cycle.
3. Expenditure cycle.
4. Conversion cycle.
5. Human Resource Management cycle.

2.1.2. Objectives of AIS

The primary aim of AIS is to provide accounting information to both the internal and external users. The *internal users* are the information user within the company, while the *external users* are those that are outside the company but either directly or indirectly affected by the company and the decision they take. According to Wilkinson et al (2000, p.8) to support this primary aim AIS has three specific objectives, they are:

1. To support the company's day-to-day operations.
2. To support decision making process, especially by the internal decision makers.
3. To fulfill obligations relating to stewardship.

2.1.3. Relation to the Management Information System (MIS)

It is important to understand the relationship between AIS and MIS in order to differentiate the roles and objectives of both within the company, and also how both integrate each other in the process of providing the supportive roles in achieving the company's objectives. In order to further understand this issue it is essential to clearly understand the definition and concept of MIS, and its objectives within the company.

2.1.3.1. Definition of MIS

MIS can be defined as the information systems at the management level of an organization that serve the functions of planning, controlling, and decision making by providing routine summary and exception reports (Laudon and Laudon 2004, p.43). The definition suggest that MIS is essentially a system that provide management of the company with the information needed in the decision making process.

Another way to define MIS is that it is a man-made system that generally consists of an integrated set of computer-based and manual components established to facilitate an organization's operational functions and to support management decision making by providing information that managers can use to plan and control the activities of the firm (Gelinas and Oram 1996, p.14). This definition is more likely to define MIS as a unit within the company that serves its roles as information provider to the management.

2.1.3.2. Objectives of MIS

The main objective of MIS is to aid management of the company with information needed in the decision making process, which is one of the management responsibility. The range and type of information provided by MIS is highly dependant on the requirement of the management in order to support their decision making process.

2.1.3.3. Relationship with AIS

AIS is considered to be one of the subsystems of MIS. The main reason behind this is because MIS has a supporting role in the company where it serves as the information provider to the management. The range and type of information provide are varied

greatly, highly dependant on the information required by the management in their decision making process. One of the information that is required by the management is the accounting information, which is managed in the AIS. Thus, AIS serves as one of the information provider to MIS, in this case specifically to provide information related to accounting process within the company.

2.2. Expenditure Cycle (EC)

The comprehension on the concept of *Expenditure Cycle* (EC) would cover the understanding on its definition, objectives, types of control, and the documents related in the process.

2.2.1. Definition of EC

According to Gelinas and Oram (1996, p.127) EC can be defined as the subsystem of AIS that consist of the transactions surrounding the recognition of expenditures. It embodies all the activities in the purchasing, accounts payable, cash disbursement system, the applicable parts of the inventory, human resource management, and the general ledger systems. It is essentially the cycle of expenses incurred by the company.

Also, it can be defined as the cycle that encompasses two key business transactions, which are the purchases and cash disbursements. The purchase transaction consists of acquiring resources or services, and in the disbursements transaction includes the preparation of check payment to pay the account balance in the supplier (Wilkinson et al 2000, p.45). EC is a recurring process, thus the management of information related to

the process is crucial in order to properly manage the expenditures accurately associated to the appropriate transactions. It is crucial to accurately manage the information involved in the cycle in order to generate accurate information required by the management.

The operations involved in the EC would include:

1. The preparation and recording of purchase orders.
2. The receipt of goods and the recording of the cost of inventory.
3. The receipt of vendor invoices and the recording of accounts payable.
4. The preparation of employee paychecks and the recording of payroll activities.
5. The preparation and recording of cash disbursements, including payroll.

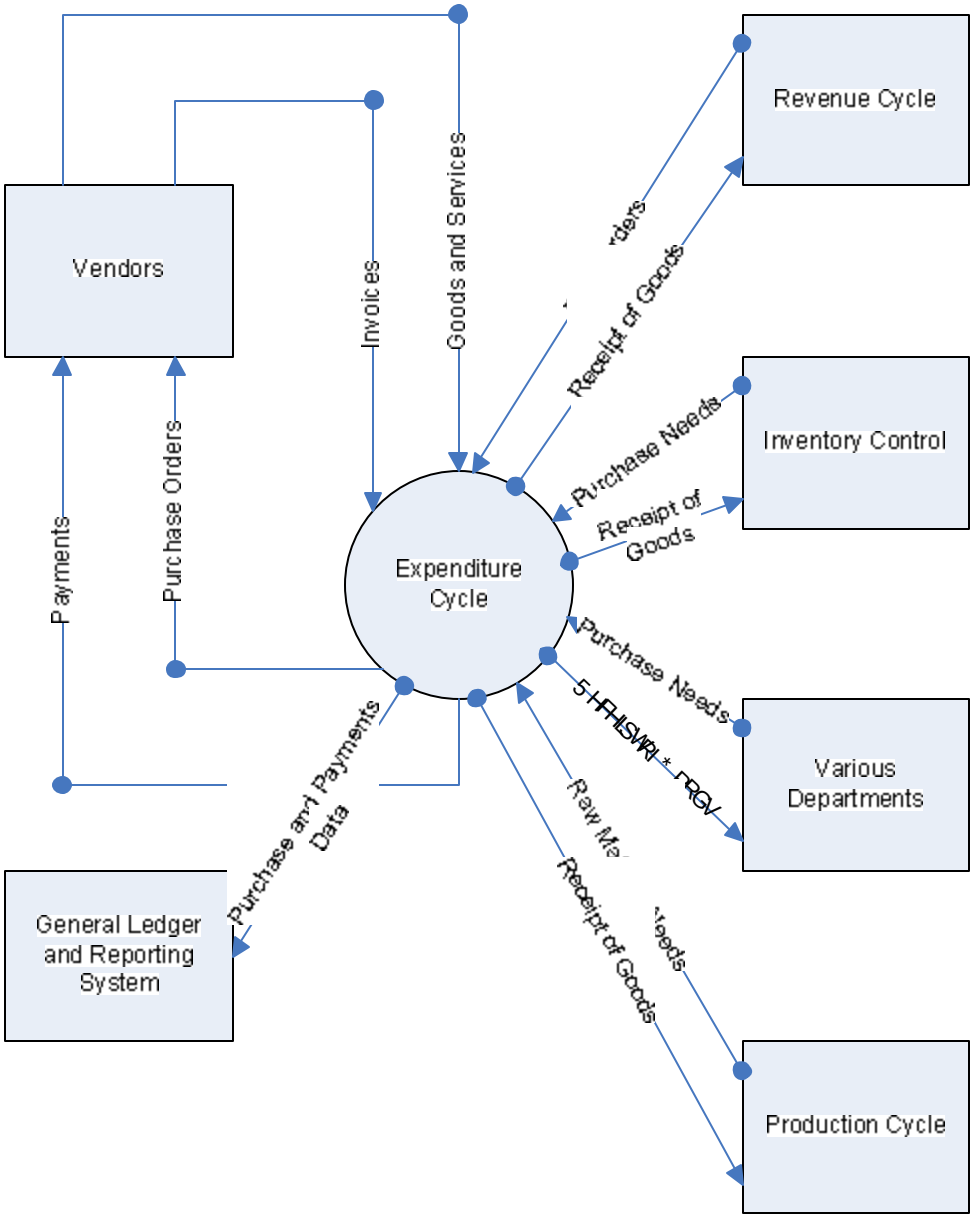

Figure 2.1 Context Diagram of the Expenditure Cycle

(Romney and Steinbart 2006, p.410)

2.2.2. Objectives of EC

The primary objective of in the EC is to minimize the total cost of acquiring and maintaining inventories, supplies, and the various services the organization needs to function (Romney and Steinbart 2006, p.410). Wilkinson (2000, p.469) also added that the major purpose of EC is to facilitate the exchange of cash with supplies (vendors) for needs goods (materials) and services, and this can be further break-down into:

1. To ensure that all goods and services are ordered as needed.
2. To receive all ordered goods and verify that they are in good condition.
3. To safeguard goods until needed.
4. To determine that invoices pertaining to goods and services are valid and correct.
5. To record and classify the expenditures promptly and accurately.
6. To post obligations and cash disbursements to proper suppliers' accounts in the accounts payable ledger.
7. To ensure that all cash disbursements are related to authorize expenditures.
8. To record and classify cash disbursements promptly and accurately.

2.2.3. Documents Related to EC

The EC is a whole process that comprise of different stage such as the input, process, and the output stage. The whole process requires documents that are specifically needed in generating the EC. The documents pertaining to the EC according to Wilkinson (2000, p.472) are:

1. Purchase Requisition.

   The initiating form in the expenditure cycle that authorizes the placement of an order for goods and services.

2. Purchase Order.

   A formal, multi copy form prepared from the purchase requisition that binds the acquiring firm.

3. Receiving Report.

   A document that records the receipt of goods.

4. Supplier's (vendor's) Invoice.

   A billing document from the supplier who provides goods or services.

5. Disbursement Voucher.

   A document within a voucher system that accumulates suppliers' invoices for payment.

6. Disbursement Check.

   The final document in the expenditure cycle that provides payment to a supplier for some goods or services.

7. Debit Memorandum.

   A document that authorizes a purchase return or allowance.

8. New Supplier (vendor) Form.

   A form used in the selection of new suppliers, showing such data as prices, types of goods or services provided, experience, credit standing, and references.

9. Request for Proposal (or quotation).

   A form used in a competitive bidding procedure, showing the goods or services needed and the comparative prices, terms, and so on.

2.3. Internal Control (IC)

As one of the significant aspect within the company *Internal Control* (IC) is crucial in the process of maintaining the business operation in general, and also specifically in managing the AIS and its elements in order for them to operate according to their objectives. Thus, it is important to understand the basic concept of IC, its objectives, and the different types of IC that can be implemented by the company.

2.3.1. Definition of IC

According to CPA Australia (2005, p.22) IC is the dynamic, integrated processes, affected by the governing body, management and all other staff that are designed to provide reasonable assurance regarding the achievement of the internal control general objectives. Romney and Steinbart (2006, p.192) also define IC as the process implemented by the board of directors, managers, and those under their direction to provide reasonable assurance in achieving the company's objectives. It is the safety measures that are taken by the company in maintaining the operation of their business in order to operate in a safe manner, in order to achieve the company's objectives as a general.

IC performs three important functions in the company. As stated by Romney and Steinbart (2006, p.192) those functions can be listed as:

1. Preventive Controls.

   It is the function which deters problems before they actually arise. It stops adverse events from occurring.

2. Detective Controls.

   This function discovers problems as soon as they arise. It acts as a searching control that detects problems that has affected the company.

3. Corrective Controls.

   It acts as a remedy for the problem that has been discovered. It aid on fixing the cause of adverse threats that have been detected.

2.3.2. Objectives of IC

According to Romney and Steinbart (2006, p.192) the general objectives of IC can be defined as:

1. To maintain effectiveness, efficiency, and economy in business operations. These related to the manner of how the IC will help the company in managing the objectives/goals, the right processes necessary in achieving the objectives, and the resources required for the process.
2. To maintain records in sufficient detail to accurately and fairly reflect company assets.
3. To provide assurance on the reliability of management, and assurance that the financial reporting has been prepared according to the applied GAAP.
4. To safeguard assets, including preventing or detecting, on a timely basis, the unauthorized acquisition, use, or disposition of material company assets.
5. To encourage adherence to prescribed managerial policies.
6. To manage the compliance with applicable laws, regulations, and internal policies.

2.3.3. Types of IC

IC can be classified into two different categories, according to Romney and Steinbart (2006, p.192) they can be listed as:

1. General Controls.

   It is designed to make sure an organization's control environment is stable and well managed. It pertains to all activities involving the company's AIS and resources, and other specifically related activities and elements involved in the process.

2. Application Controls.

   It is designed to prevent, detect, and correct transaction errors and fraud. They are concerned with the accuracy, completeness, validity, and authorization of the data captured, entered into the system, processed, stored, transmitted to other systems, and reported. It relates to the processing of specific accounting tasks or transactions.

2.3.4. IC on EC

In term of EC the IC can be specifically assigned to the system in order to create a more thorough protection against possible threats, mainly to those potentially affecting the involved documents and processes. Also, it could prove to be important in maintaining the system's operation in its role as a supportive part of the company's effort in achieving their objectives, specifically in maintaining crucial information regarding expenditures.

General Controls concerning EC can be categorized into seven different types of controls, they are:

1. Organizational Controls.
2. Documentation Controls.
3. Asset Accountability Controls.
4. Management Practices Controls.
5. Data Center Operations Controls.
6. Authorization Controls.
7. Access Controls.

Application Controls on EC can be classified into three major categories, they are the input, processing, and output. Each control provides some sort of assurance that would increase the credibility to the systems in the company, specifically the EC. Together they create a fully-integrated and complete application control required in managing the EC (Wilkinson et al 2000, p.500).

2.4. Flowchart

The description on *Flowchart* would include discussion on its definition and various types of flowchart that can be utilized in supporting the illustration and documentation process. Specific to this the flowchart used is the *document flowchart*.

2.4.1. Definition of Flowchart

According to Romney and Steinbart (2006, p.70) flowchart can be defined as an analytical technique used to describe some aspect of an information system in a clear, concise, and logical manner. It use a standard set of symbols, each have special purpose in order to describe the transaction processing procedures used in the company.

The different flowchart symbols can be divided into four categories, they are:

1. Input / Output Symbols.

   It represents devices or media that provide input to or record output from processing operations.

2. Processing Symbols.

   It either shows what type of device is used to process data or indicate when processing is performed manually.

3. Storage Symbols.

   It represents the device used to store data that the system is not currently using.

4. Flow and Miscellaneous Symbols.

   It indicates the flow of data and goods. They also represent such operations as where flowcharts begin or end, where decisions are made, and when to add explanatory notes to flowcharts.

Further explanation on various elements of flowcharts will be defined in Appendix 1. The explanation will clearly define each symbols used in this thesis.

2.4.2. Types of Flowchart

Different types of flowchart can be utilized differently according to the specific purpose required by the company. Each type illustrates different information flow / process involved within the company. The different types of flowchart are:

1. Document Flowchart.

   It illustrates the flow of documents and information among areas of responsibility within an organization.

2. System Flowchart.

   It illustrates the relationship among the input, processing, and output of AIS.

3. Program Flowchart.

   It depicts the sequence of logical operations performed by a computer in executing a program.

This thesis will specifically use the *document flowchart* to illustrate the movement of the documents related to the EC in the company. This type of flowchart will best illustrate the movement of one of the most important element in EC, which are the EC-related documents.

2.5. Data Flow Diagram (DFD)

The explanation on *Data Flow Diagram* (DFD) would cover its definition, elements which composed the DFD, and the *DFD Context* which will be used as one the supporting instrument in this thesis.

2.5.1. Definition of DFD

DFD is used to illustrate the process modeling, which involved graphically representing the process that capture, manipulate, store, and distribute data between the system and its environment and among components between the systems (Valacich et al 2000, p.156). It can be defined as a graphic that illustrates the movement of data between external entities and the processes, and the data stores between systems.

Meanwhile according to Alter (1999, p.76) DFD can be defined as the diagram that represents the flows of data between different processes within a system. It describes the interactions between data and processing. It is also the primary tool for structured analysis that graphically illustrates a system's component processes and the flow of data between them (Laudon and Laudon 2004, p.467). Both emphases on the important use of the tool to illustrate flow of data within a system.

According to Romney and Steinbart (2006, p.62) DFD is a graphical description of the source and destination of data that shows data flow within an organization, the processes performed on the data, and how the data are stored. DFD could be generally defined as the supportive tool utilized in displaying information regarding the flow of data within an organization or a specific part of it.

2.5.2. Elements of DFD

Romney and Steinbart (2006, p.63) stated that DFD is composed of four basic elements, they are:

1. Data Sources and Destinations.

   It represents the organization or individual that sends or receives data that the system uses or produces.

2. Data Flows.

   It represents the flow of data between processes, data stores, and data sources ad destinations.

3. Processes.

   It represents the transformation of data.

4. Data Stores.

   It represents the temporary or permanent repository of data.

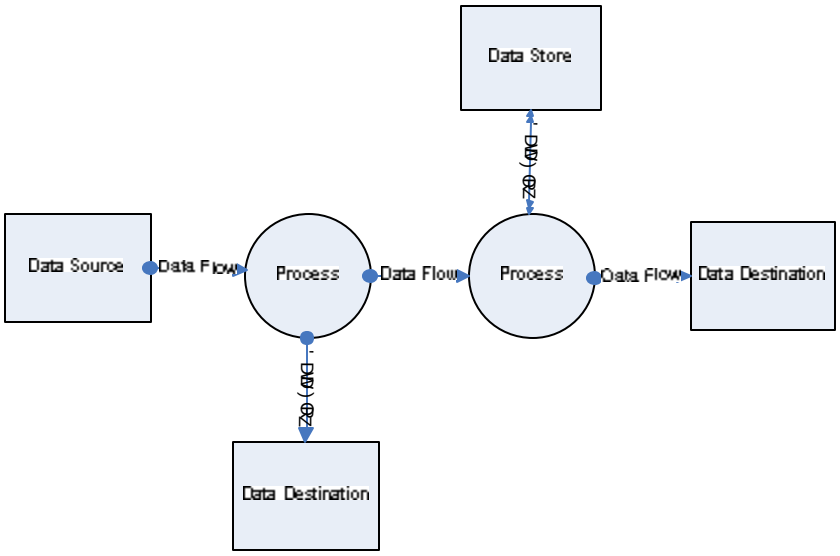

Figure 2.2 Typical DFD Elements

(Romney and Steinbart 2006, p.64)

Further explanation on the elements of DFD will be explained in Appendix 2. The explanation will specifically define the different symbols used in this thesis.

2.5.3. DFD Context

One of the types of DFD that is going to be used in this thesis is the DFD Context. Valacich (2000, p.160) define DFD Context as a DFD of the scope of an organizational system that shows the systems boundaries, external entities that interact with the system, and the major information flows between the entities and the system. It can also be defined as a top level view of an information system that shows the system's boundaries and scope (Shelly et al 2001, p.155).

This type of DFD would show the general overview of the specific data flows within the company, which include the entities that interact with the company, and the boundaries that limit the flows of information involved in the process.