BUDGETARY CONTROL SYSTEM FOR UNIVERSITY OF KARBALA IRAQ BASED ON ADAPTIVE BUDGETARY CONTROL FRAMEWORK

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Abstrak

Setiap organisasi yang berjaya adalah bergantung pada bajet, dan langkah-langkah kawalan belanjawan untuk meningkatkan prestasi melalui peruntukan sumber yang mencukupi. Belanjawan dan kawalan belanjawan, kedua-dua di peringkat pengurusan dan operasi merancang masa hadapan serta menggariskan apa yang perlu dicapai. Berdasarkan tren yang sama, Universiti Karbala Iraq perlu melaksanakan sistem kawalan belanjawan kerana sejak tahun 2002, KU adalah salah satu universiti yang terbaik dalam negara Iraq dan juga di peringkat serantau Arab dengan kira-kira 12,000 pelajar yang belajar di 16 fakulti yang berbeza seperti: Fakulti Perubatan, Perubatan Veterinar, Farmasi, Fakulti Kejuruteraan, Fakulti Sains Gunaan Perubatan, Pendidikan, Pengurusan dan Ekonomi, Fakulti Undang-Undang, Fakulti Sains, Fakulti Pertanian, Fakulti Sains Islam, pelancongan agama, Fakulti Pendidikan, Kemanusiaan, Fakulti Sains Pendidikan Tulen dan, Kejururawatan. Pada masa ini, tidak ada sistem kawalan belanjawan yang telah dilaksanakan di universiti Karbala Iraq. Dalam aspek universiti Karbala Iraq, sistem kawalan belanjawan ini telah direka untuk mengurangkan keperluan semasa yang telah diintegrasikan kepada pemohon bajet, kelulusan bajet dari kementerian dan peruntukan bajet oleh jabatan kewangan universiti. Kajian ini mengenal pasti hubungan antara bajet dan kawalan belanjawan dengan mengkaji beberapa rangka kerja kawalan belanjawan dan seterusnya mencadangkan satu rangka kerja kawalan belanjawan baru yang telah diadaptasi diikuti dengan kawalan belanjawan pembangunan sistem prototaip. Sistem ini telah dinilai melalui soal selidik dengan 10 orang yang telah ditemuduga di Universiti Karbala Iraq.

Kata Kunci: Belanjawan, Sistem Kawalan Belanjawan, Rangka Kerja Konseptual, Sistem Bersepadu.

Abstract

Every organisation doing exceedingly well relies heavily on budgets, and in essence budgetary control measures to improve performance through adequate resource allocation. Budget and Budgetary control, both at management and operational levels. Following the same trends, University of Karbala Iraq needs to implement a budgetary control system as since 2002, KU is one of the best university within Iraq and also in the Arabic regional level with approximately of 12,000 students studying in 16 different faculties which are as follows: Medicine Faculty, Veterinary Medicine, Pharmacy, Faculty of Engineering, Faculty of Applied Medical Sciences, Education, Management and Economics, Faculty of Law, Faculty of Science, Faculty of Agriculture, Faculty of Islamic Sciences, religious tourism, Faculty of Education, Humanities, Faculty of Education Pure Sciences and Nursing. Currently, there is no budgetary control system has been implemented at university of Karbala, Iraq. In the aspect of university of Karbala Iraq, budgetary control system has been designed to mitigate current needs which have been integrated to the budget applicants, budget approval from ministry and budget allocation by the university Finance Department. This study identifies the link between budget and budgetary control by studying several budgetary control frameworks and then finally proposed a new adaptive budgetary control framework followed to budgetary control system prototype development. The system has been evaluated by the questionnaire with 10 respondents from University of Karbala Iraq.

Keywords: Budgetary, Budgetary Control System, Conceptual Framework, Integrated System.

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ABBREVIATIONS

AQA   Accounting Quality Assurance

BCS   Budgetary Control System

IFMIS   Integrated Financial Management Information System

KUI   Karbala University of Iraq

KU   Karbala University

MCS   Management Control System

OECD   Organisation of Economic Co-operation development

SMEs   Small & Medium Enterprise

USAID   United States Agency International Development

<center>**CHAPTER ONE**</center>

<center>**BACKGROUND OF THE STUDY**</center>

1.1   Introduction

This chapter provides brief idea of financial management system for Karbala University (KU), and financial management system is derived from financial management framework. The problem statement will be related to existing KU financial management issue, and the research question will be formulated based on the problem statement; thus, the objective will be formulated, and research will go on to overcome the current financial issues.

1.2   Background of the Study

Karbala University has been established on 1ˢᵗ March 2002. Nowadays, there is a very clear expansion in the number of colleges. The number reaches to 16 colleges in various scientific and human fields (www.uokerbala.edu.iq, 2014). KU is noble with approximately 12000 students studying in 16 different faculties which are as follows: Medicine Faculty, Veterinary Medicine, Pharmacy, Faculty of Engineering, Faculty of Applied Medical Sciences, Education, Management and Economics, Faculty of Law, Faculty of Science, Faculty of Agriculture, Faculty of Islamic Sciences, Religious Tourism, Faculty of Education, Humanities, Faculty of Education Sciences Pure, Nursing (www.uokerbala.edu.iq, 2014). The university library is furnished with approximately 25,000 books and journals and it is equipped with internet connection. KU is the first higher learning institute which is known in innovative management and academic development. KU focuses on different levels of

Science, Art and Humanities, Medicine and Social Sciences. KU aims to provide excellence in every fields. The university is seeking to achieve the performance of scientific and administrative efficiency and distinction by attracting and developing faculty and staff, and they attempt to do so by taking part in different courses, conferences and workshops inside and outside Iraq. Currently, University employs its potential scientific and research community service and development to provide education and training services and consultation in different fields, like Cognitive Science. KU is working on the aim of gaining the Arab and international standards in higher education to ensure quality and performance. The faculties are expanding their working area which involves budget that may leads KU to think about budgetary planning (www.uokerbala.edu.iq, 2014). In today's competitive higher learning environment, Higher learning institutes across all universities are looking forward to providing quality budgetary control and services while at the same time cutting costs, saving energy and doing more with less. Automated budgetary control systems is the ultimate facilitator for achieving these goals.

1.3   Problem Statement

KU is dealing with many financial or budgetary pacts, and it is trying to obtain budgetary independence as the state is maintaining monitoring functions for their 16 individual faculties, and it requires accountability. The reason behind this is that increasingly the size and complexity of individual institutional budgets can no longer manage the function itself with a manual system. The budgetary control system has been maintained with excel sheets, which is time consuming and erroneous. Thus, a web based integrated budgetary control system is needed to communicate among the

budget applicant, users from ministry and the users from Finance Department of KU. However, achieving the integrated web based Budgetary Control System (BCS) is one of the hard jobs (Aartsen, 2011; Baloyi, 2011) in current scenario of KU and in terms of its needs. Moreover, operation of budget management at the Department of Finance in KU is still at initial stage, which is manual and paper based. This has caused a setback to the university in terms of keeping financial record and management, which shows lacking of tracking financial history. Thus, it causes total mismanagement of financial tracks. To propose a suitable financial system, the researcher needs to identify the best BCS framework. If the best financial framework is not available, this study will adapt financial framework to make it suitable in KU financial environment. Therefore, this research aims to design an integrated budgetary control system for KU.

1.4   Research Questions

The completeness of this research will be achieved by answering the following research questions:

  i.   What is the suitable framework that is capable of dealing with budgetary control and allocation processes for Finance Department of KU?
 ii.   How to integrate budgetary control system at Finance Department?
iii.   How to evaluate the proposed budgetary control system prototype?

1.5 Research Objectives

The main objectives of this research are as follows:

i. To identify the suitable framework based on the criteria according to the budgetary needs by KU.

ii. To design and build the integrated budgetary control prototype in Finance Department KUI.

iii. To evaluate the proposed budgetary control system prototype.

1.6 Scope of the Research

This research basically focuses on a prototype design for integrating budgetary control system in Finance Department, KU. The use of integrated budgetary control system in the Finance Department allows prompt decision in planning, directing and managing the activities on a daily basis (Marcela and Knox, 2004; Lucey, 1995). Moreover, structure approach would be used in the computerization of the designed budgetary control system through PHP and MySQL (Morris et al., 2010). Besides that, evaluation of the designed budgetary control system prototype would be conducted by ten executive staffs of Finance Department, University of Karbala Iraq.

1.7   Significant of Research

Designing the integrated budgetary control system in Finance Department, KU Iraq would be advantageous for both the budget applicant, users from Ministry of Finance and users from Finance Department of KU. The main significance of the system is that it is integrated and web-based, and developed based on the adapted budgetary control framework. The focus of this research is on atomizing the manual budgeting control system by the development of budgetary control system prototype. The system prototype was developed based on the adapting framework which has been evaluated by ten (10) users. Since the system prototype has satisfied the users, this system has the potential to be used by KU.

1.8   Organisation of the Dissertation

This report comprises of five chapters and the following represents an overview of each chapter:

Chapter One presents the introduction of the research, the problem, and how the solution to the problem would be achieved. Moreover, the benefits of this research are included.

Chapter Two represents reviews of the previous and related literatures about budgetary control system.

Chapter Three discusses the adapted research methodology aimed at achieving the set objectives.

Chapter Four focusses on the development of BCS prototype and evaluation of the system.

Chapter Five presents the evaluation of budgetary control system prototype.

Chapter Six presents the conclusion and recommendation.

1.9   Summary

This chapter presents the background of this research and shows the existing challenges faced by the Finance Department of KU, and justification of the problem. In addition, the chapter contains research questions which are in line with the research objectives. Indeed, the scope of the research which delimits the research is discussed in this chapter, together with the research significance. Finally, the organisation of the dissertation which represents the organisation of the study highlighted in this chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers relevant literatures that are related to the context of this research. Most of the literatures that are highlighted in this chapter are part of the need for the success framework for integrated budgetary control system for KU, Iraq. Basically, it discusses information management system and where it is applicable.

2.2 Budget

Budgeting is a familiar and very important type of short range plan; a plan that is expressed in a numerical terms, and it shows how the resources of a company can be distributed to attain a desired profit. Since working out a budget forces a company to determine how much money will be coming in, what cost will be incurred, it serves a dual purpose to become a controlling as well as a planning operation. Since the budget is a guideline to what will take place over a lengthy period of time, a great deal of careful thought must go into its planning (Agu, 2006).

Integrated budgetary control is an information system that tracks financial events and summarises financial information. It supports adequate management reporting, policy decisions, responsibilities and the preparation of auditable financial statements. In its basic form, an budgetary control is little more than an accounting system configured to operate according to the needs and specifications of the environment in which it is installed (Rodin-Brown, 2008). Furthermore, it refers to the automating of financial operations (Hendriks, 2012).

The introduction of integrated budgetary control has become a core component of financial reforms to promote efficiency, security of data management and comprehensive financial reporting. Integrated Financial Management Information System (IFMIS) provides an integrated computerised financial package to enhance the effectiveness and transparency of public resource management by computerising the budget management and accounting system for a government. It consists of several core sub-systems which plan, process and report on the use of public resources (Marie Chêne, 2009). Previous studies have shown that public and private organisations, firms, and especially departments have been suffered from the crisis caused by lack of using present technique of dealing and managing the financial activities in the respective organisations (Goodhart et al., 2013, Melchor-Ferrer & Buendia-Carrillo, 2014,; Moyer et al., 2012).

However, manual processes pose the biggest threat to efficiency and effectiveness of automation under the BCS. For example, commitments made off the system and only regularized after the fact, or revenue receipts and budgetary expenditures that may not be captured on the system, will limit its effectiveness for fiscal control and reporting. The system will only be good to the extent to which off system processes and controls are aligned with it. To the extent possible, the BCS should be enabled to capture all financial transactions to minimize off system transactions (Semakula & Muwanga, 2012).

However, the improvement in science and technology in the developing countries has led to the exploration of modern techniques to upgrade both private and

public financial management (Hendricks, 2012; Moyer et al., 2012). In the light of this, researchers have suggested the use of the Budgetary Control System (BCS), which assists the organisations to achieve efficiency, effectiveness and accountability in their financial activities (Chene, 2009, Moyer et al., 2012).

Pursuing this further, one can notice that the BCS is described as an information system that traces event of financial activities and information through concise managerial reporting and provision of auditable statement of account (Rozner, 2008; Dorotinsky, 2003). According to Rodin-Brown (2008), general BCS performs the functions of accounting system, which is computerised. It is based on the requirement of the environment it dedicated for; therefore, it is automated in nature. Moreover, researchers have stressed that BCS has been useful in all field of activities where issue of finance is of important factor (Goodhart, 2013).

Furthermore, the BCS is known in the government sector as the computerisation of public financial management processes, budget, preparation of accounting and reporting through the use of integrated system (Goodhart, 2013; Rozner, 2008). For this reason, successful implementation of BCS in an organisation is capable of handling data classification to record financial events, control over data entry, and it is also capable of processing and eliminating duplicated data entry. In the case of higher learning institution, BCS has been seen as a package that stimulates and stabilises fast processes of their pay-roll issue, budget planning, efficient resource distribution across the department within the universities to ensure accountability (Melchor-Ferrer and Buendia-Carrillo, 2014; Goodhart, 2013).

Planning is the primary, and control is the last function of management. Budgeting and budgeting control occupy an important role among the various techniques which are used in performing these functions (Badu, 2011).

A budget is a functional statement prepared prior to a predetermined period of time of the policy to be pursued during that period for the purpose of obtaining given objectives. Budgeting and budgetary control systems play a leading role in every company or institution by helping in establishing an efficient management control system for creating sustainable competitive advantage (Badu, 2011).

Following this further, one can observe that both public and private universities, especially in the developed countries have shown passion for the use of BCS in their various Finance Departments due to the benefits it provides (Denneen & Dretler, 2012). Moreover, many of higher institutions of learning in the developing countries, like Iraq are still at the initial stage in using the BCS, and BCS should serve as one of the mechanisms for competing with other countries in the world. Indeed, researchers have emphasised that using the BCS at the Finance Departments in higher institution of learning would serve as managerial tool which provides both financial and non-financial information for the universities (Diamond & Khlemani, 2006).

One of the benefits of the BCS to the higher learning institution is the provision of financial management, which gives confidential and truthful budget through understanding and translucence of information it provides (Chene, 2009). Indeed, many researchers have emphasised the adequacy of budget planning and timely execution of data processes provided by the implementation of BCS in some

universities in Europe (Chene, 2009; Baloyi, 2011). Besides, a well-designed BCS functions and features that is capable of detecting double-payment, such as payment to the ghost workers, fraud and theft within the academics sectors (Aartsen, 2011; Baloyi, 2011). However, achieving the objective of introducing the BCS is one of the challenges that it confronts with the implementation of BCS, especially in the university set-up (Aartsen, 2011; Baloyi, 2011); on the other hand, the KU in Iraq is not an exception.

Pandey (2003) defines budget as a short term financial plan. It is an action plan to guide managers in achieving the objectives of the firm. Lucey (2003), in his formal definition defines budget as a qualitative statement for a defined period of time, which may include planned revenue, expenses, assets, liabilities and cash-flows. A budget provides focus for the organisation, aids the coordination of activities and facilitates control whereas control is generally exercised through the comparison of actual and flexible budget.

Lucey (2003) in his recent definition of budget defines budget as a quantitative expression of a plan of action prepared for the business as a whole for departments, and for functions, such as sales and production or for financial resource items, like cash, capital expenditure, manpower purchase and so on.

The process of preparing and agreeing budgets is a means of translating the overall objectives of the organisation into detailed, feasible plans of action. Welsh (2003) opines that budgeting is the only comprehensive approach to manage the extent of development that if is utilized with sophistication and good judgment, it can fully

recognize the dominant role of the manager and provide a framework for implementing fundamental aspects of scientific management as management objectives, effective communication, participative management, dynamic control, continuous feedback, responsibility accounting, management by exception and management flexibility. The Tennessee board of Regents (2006) defines budget as the process whereby the plans of an institutions are translated into an itemized, authorized and systematic plan of operation, expressed in any currency for a given period.

2.3 Budget Control and Allocation

Researchers have argued that management control system is sometimes referred to as budgeting processes, which are able to equip companies with information that are relevant to their operations and financial plans through communication, coordination, controls, incentives and performance evaluation (Anthony and Govindarajan, 2007; Chenhall, 2007). Therefore, in order to achieve company objectives, there should be a budgeting system that is appropriate to the culture of the organisation. Additionally, both knowledge of management and attitude vis-a-vis characteristics of budgeting system together with the impact of the budgeting system on employee behaviour are fundamental factors for determining the effectiveness of budgeting system (Frow et al., 2005).

According to Chika Agu (2006), in the case study of budgeting and budgetary Control in Business Organisation, Budgetary control is the use of the budget as an instrument for the guidance of business operations. In that case, budgets serve as a yardstick to execute control of operation, to determine the extent to which planned

goals and objectives are being attained and to arrest off-line drifts on "time"; on the other hand, agreeing that budgetary control follows budget preparation.

Prior studies on budget systems have ended in inconsistent results, and the cause behind this is the result of choosing wrong budget planning model or framework (Covaleski et al., 2003). A budget planning type indicates the monitoring of the budget by the head administration, focusing on achieving budgetary targets, controlling, participating in decisions on the budget and linking budget targets (Merchant, 1981; Van der Stede, 2001). Moreover, divided budget planning models into two categories based on the style of control employed by the organisation are flexible, and the models allow active participation of employees and influence budgeting when the tight model is other way round (Van der Stede, 2001).

2.3.1   Characteristics of Budget Control

Making use of budget as a tool to control depends on the properties of the budgeting system and the field on which this budget will be spent (Merchant, 1981). Going by the process theory of institutions, one can stress that the existence of budget makes budget targets, and that appears more appropriate and reasonable (Cooper and Hopper, 2007). Brownell (1983) mentions that bigger instruction on the budget needs a budget design with more scalability to maximise the emotional effect and improve employee pro-activity. Moreover, the emotional effect complains with budgetary participation and good communication can improve employee satisfaction of budgetary goals and the value of reaching these goals leads to effective financial management system (Brownell and Dunk, 1991).

2.3.2 Budget Planning Models

A budget planning model shows the budget controllers (top supervisors or managers) the budgetary target's restrictions and the contribution of employees in the creating, monitoring and communicating budgetary targets (Merchant, 1981; Van der Stede, 2001). A related study of Van der Stede (2000) shows that the causes of using budgets are varied depending of their circumstances; making use in a proper way of the budget is directly connected with the budget planning characteristics. Moreover, top managers show more attention to the bottom-line than of detailed line-items by focusing on diagnostic communication and placing less restriction on achieving the goals of the budget in the short term.

2.3.3 Monitoring of Budget

Controlling the budget gives an early alert if the progress is moving out of the budgetary goals track and warning the top managers to take the needed corrections. Merchant (1998) defines budget monitoring as the hesitation, detail and timely controlling of budget performance. Managers use budget monitoring to take decisions, exercise, and control and make the continuous improvement easier. However, putting tough processes by top managers may give little lateness and may also interfere with the decision-making activities of the rest under levels employees. Merchant and Manzoni (1989) showed that top management gives higher attention on the budget's bottom-line than on specific budget line-items which help in achieving the goals of budgeting(Van der Stede, 2001).

2.3.4 Budget Communication

Communication is one of the main basics of the budgeting process. For instance, operations coordination between different departments in an organisation through the budgetary communication improves the overall efficiency of organisational operations (Brownell, 1982; Donaldson, 2001). However, the budget functions as communication buffer that can be used as tools in budgeting processes by the managers (Van der Stede, 2003). In addition to that, Simons (1995) adds an idea of interactive and diagnostic budget control in interactive communication, which includes regular budget-related discussion among top managers and their employees, ignoring the actual budget performance. Diagnostic communication, on the other hand, is only alerting management when performance falls a lot below expectations (Van der Stede, 2001).

2.3.5 Budget Emphasis

The effectiveness of budgeting as an instrument of control depends on the characteristics of the budget system and the importance that top management places on budgeting (Anthony & Govindarajan, 2007). An emphasis on the budget helps achieve budgetary objectives by strengthening its relationship with employee motivation. Moreover, Otley (1978) finds that a strong emphasis on the budget leads to higher budget accuracy and reduce dysfunctional employee behaviour. In other words, Brownell (1982) argues that a strong emphasis on the budget can enhance performance through the control and emotional incentives of flexible budget planning models.

2.3.6   Types of Budget

Kpedor (2012) defines budget as Fixed and flexible budget, cash budget, master budget, operation budget, financial budget, sales budget. They are given in the following.

- **Fixed and Flexible Budget**

A fixed budget is a budget which is designed to remain unchanged irrespective of the volume of output or turnover attained. That is, it is a single budget with no analysis of cost. The purpose of a fixed budget is targeted at the planning stage when it serves to define the broad objectives of the organisation where there is no analysis of cost that are fixed and variable. The fixed budget is unlikely to be of any real value for control purpose except the level of activity turned out to be exactly as planned.

Flexible budget is a budget which by recognizing different cost behaviour patterns, is designed to change as the volume of activity changes for control purpose; it is vital in the sense that flexible budgeting is used only by comparing what the cost should have been with the expenditure incurred at the actual activity level where any control can be exercised.

A flexible budget often reflects, increases or decreases in business activity throughout an organisation. In some organisations, changes may be greater in some departments, and they can be smaller in others. Some departments have the ability to produce more units without incurring high additional cost while in another departments, cost increases or decreases in direct proportion to production's increase or decrease. The flexible budget attempts to deal with this situation with a fair degree

of accuracy. It keeps the expense to the level of activity as much as possible, so it facilitates the control of expenditure and comparison of expense with revenue or volume of production. In order to be able to prepare flexible budgets with some degree of accuracy, it is necessary to classify overhead cost into fixed, variable and semi-variable. With variable cost, a specific sum per unit of output or standard hour is set and total variable cost is obtained by multiplying the unit cost by units or hours.

- **Cash Budget**

    A cash budget involves detailed estimation of anticipated cash receipts and payments for the forth-coming year or period. This is because while it may be possible for an organisation to exist and continue to survive without profit, the existence of an organisation is doubtful without liquidity. A cash budget identifies potential period of cash deficit or cash surplus to the organisation. This organisation will, therefore, assist the adverse effect of cash squeeze (lack of cash) by arranging an overdraft facility or maximize the benefit associated with surplus funding through short-term investment.

- **Master budget**

    The master budget also known as profit plan is a comprehensive set of budget, covering all phases of an organisation operations for a specified period of time. The master budget is the principal output of a budgeting system. It is a comprehensive profit plan, and it ties together all phases of an organisation operations. It is comprised of many separate budgets that are independent. They are 1) Operation budget and 2) Financial budget.

- **Operation Budget**

This shows how operations will be carried out to produce an organisation's goods and services. The essence of operational budget is for the organisation to be able to meet the demand of its goods and services.

- **Financial Budget**

This shows how an organisation will acquire financial resources during the budget period.

- **Sales Budget**

Sales budget shows the quantities of each product that the company plans to sell, and it relates the intended selling price. This budget is very important because it is an estimation of the revenue to be generated by the organisation from its operations. It provides the prediction of the total revenue out of which cash receipts from customers will be estimated, and it also supplies the basic data for constructing budgets for production cost and for selling, distribution and administrative expenses. The sale budget is the foundation of all other budgets since all expenditure is ultimately dependent on the volume of sales. This budget also serves as a tool for inventory management.

2.3.7 Challenges Affecting Budgetary Control

Existing literature has evidently revealed that budgets controls have myriad challenges that can at times be a hindrance towards achieving the overall effects of

budgetary control. According to Margah (2005) many of the increasing problems experienced by organisations attempting to manage their budgetary control procedures have been laid at the door of the budget, presenting a fixed (preset and unchanging target) target. In a world of constant change and uncertainty, a budget can become outdated during the budget year or even before it begins; thus, it renders little or no value to its intended purpose. Present day economic environment demands that organisation should adapt new practices. Given the new competitive realities, there is need for management to embrace flexible and adaptable budgetary planning and control system which has the ability to quickly respond to environmental changes and complexities.

A good budgetary planning and control system must involve not only an analysis of capital allocation requests, but also an analysis of all the capital needed to generate information, such as market research, prior implementing budgeted activities. Neely (2001) has carried out a study on weaknesses of budgetary controls. The study is primarily based on the review of empirical literature from similar studies. Neely's finding has maintained twelve cited weaknesses of budgetary control systems, and those pose a challenges in the use of the systems. These weaknesses included are in the following: restraining of responsiveness and acting as barriers to change, budget are rarely strategically focused and often contradictory, they add little value, especially given the time required to prepare them, they concentrate on cost reduction and not value addition, they strengthen vertical command and control, they do not reflect emerging network structure that organisations are adopting, they encourage gaming and perverse behaviors, they reinforce departmental barriers rather than encourage knowledge sharing , and make people feel undervalued. Prendergast (2002) has

claimed that budgeting for planning and control purposes have a number of problems. Firstly, a lot of focusing is involved in the budgeting process, and the uncertainties in business environment may provide a challenge in bringing out reliable and accurate predictions and could bring meaningful effect to an organisation.

A study on challenges facing budgetary control systems in developed countries by OECD, (2007) shows that budgets fail due to reasons, and the reasons are budgets used as pressure tool, central decision making process, lack of job security and managers' lack of training. Nafula (2004) has noted that public Institutions in Kenya are faced with problems related to efficiency in financial transfers from districts to the facility, and this affects the execution of the budget goals. Nafula, has not however indicated the overall effect of interfered budget execution process on financial performance. According to McMillan (2001), most often, capital budgeting and expense budgeting are distinct processes. For instance, organisations that do practice capital budgeting make assumptions about future cash flows that are dependent on certain advertising and sales promotion outlays. However, these outlays are typically covered by the expense budget. Boquist (2008) has noted that even in organisations in which the determination of the expense request is tied at the outset of capital request, and the people who are approving the two requests do not necessarily try to ensure consistency between the two budgets.

2.3.8 Budgetary Control Framework

As per the diagram below (Figure 2.1), the reason for the performance result of the budget is to enable management to use budgetary control to monitor and

compare the actual results, so that action can be taken to modify the operation of the business as time passes or possibly to change the budget for the operation if it becomes unachievable. The Accounts Quality Assurance (AQA) budget and budgetary control framework is exhibited in Figure 2.1, (Harrison, I., 2013).
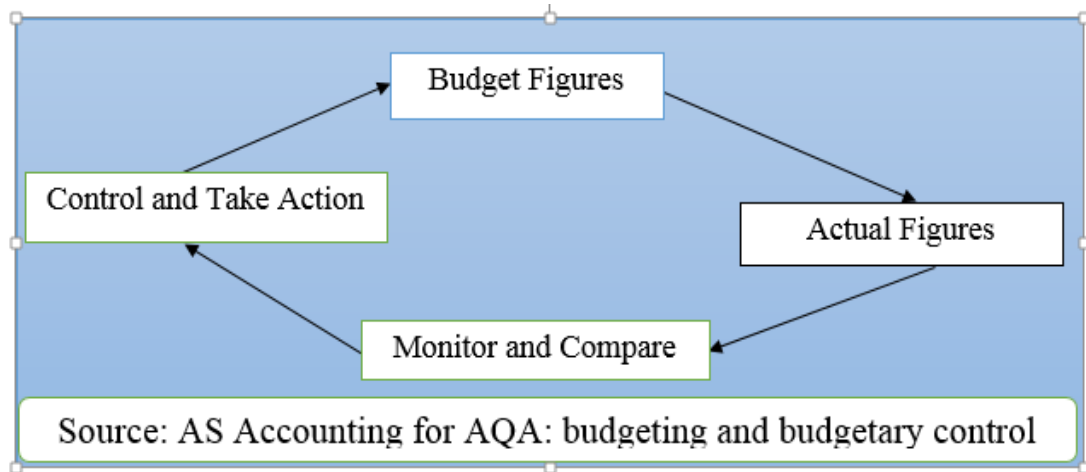
Figure 2.1: **AQA budget and budgetary control framework, (Harrison, I., 2013)**

The AQA (2013) budget and budgetary control framework comprises of four modules, namely: budget figures, control and take action, actual figures and monitor and compare. Budget figure refers the annual budget life-cycle that includes figures and documents. This phase provides detailed information on the annual budget life-cycle. In the phase of Actual figure, it shows the differences between budget assumptions and actual outcome. The Budget vs actual figure (realization) report lists the Income and Expense account balances and budget figures. In the monitor and compare phase a monitoring technique is being used whereby actual results are compared with budgets. Any differences (variances) are made the responsibility of key individuals who can either exercise monitoring action or revise the original budgets. Control and take action phase is to take sure the budget includes all the key

indicators a company wish to control. It gives responsibility for budget items only to individuals with the authority to control the outcome, schedule regular reviews of budget performance. It also review budgeted figures to identify cash flow or other problems which can be anticipated and tackled in advance and it also compare margins, working capital and other key ratios with historical figures to identify how performance is expected to improve or deteriorate (Harrison, I. 2013).

The conceptual framework derived from Blocher et al. (2002) as shown on Figure 2.2 explains the relationship between the variables under the study, the budgetary controls act as Independent Variable and the level of financial performance acts as Dependent variable. The budgetary control comprises of three phases namely: budgeting and planning, modelling and control, and Analysing & feedback. Financial performance comprises of three phases namely: infrastructural development, service delivery and expenditure related activities. This framework also introduces intervening variables between dependent and independent variables. The intervening variables are namely: Government policies and incentives.

Budgetary controls

- Budgeting and planning
- Monitoring and control
- Analysing & feedback

Perceived Financial Performance

- Infrastructural development
- Service delivery
- Expenditure related activities

Intervening Variable

- Government policies
- Incentives
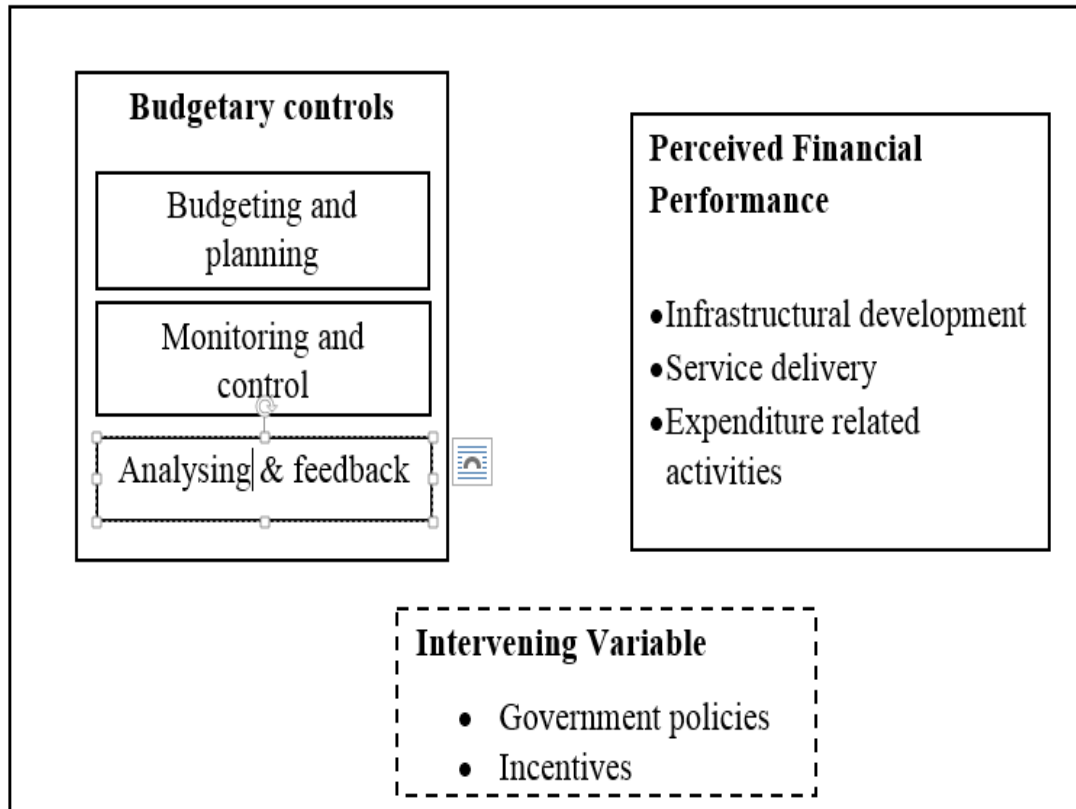
Figure 2.2: **Conceptual Framework for budgetary control (Blocher, 2002)**

In Figure 2.2, the Budgetary Control process comprised of budgeting and planning, which provides a formal basis for Monitoring and Controlling the progress of the organisation as a whole and its component parts, towards the achievement of the objectives specified in the budgeting and planning stages, thus providing feedback necessary to be able to make corrections to current operations and activities in order to meet the original objectives and plans, thus enabling the determination of the performance of the organisation in financial, efficiency ratings, infrastructural and units produced terms.
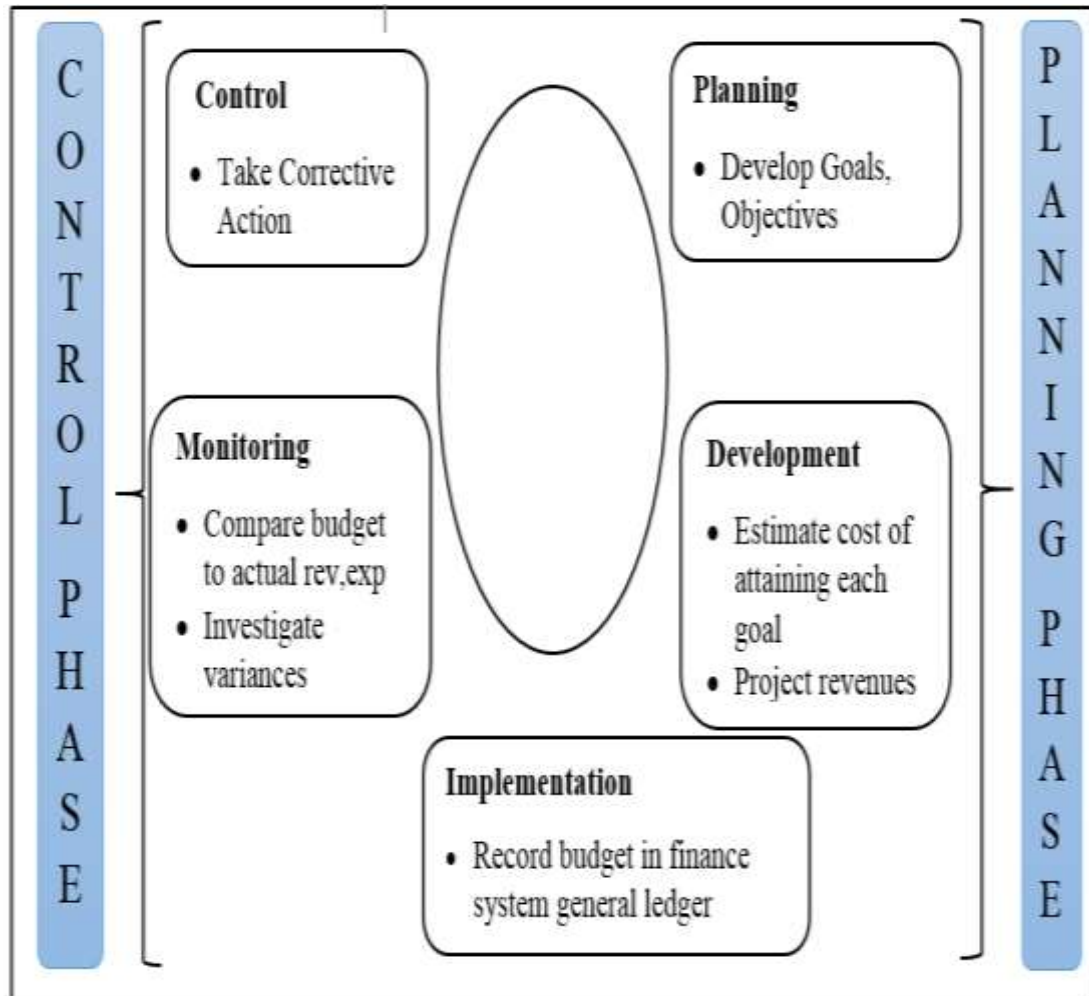
Figure 2.3: **Budget Cycle (Bhimani, 2006).**

The budgeting process (Refer to Figure 2.3–The Budgeting Cycle) is considered to be based upon a cycle within a Management Control System (MCS). It is comprised of two main phases: the planning phase and the control phase (Jones, Parast & Adams, 2010).

The planning phase quantifies the corporate goals to be attained during the fiscal year, and the financial plan is necessary to achieve them; therefore, it proves a benchmark to which performance can be assessed in the control phase (detector)

(Coltman & Jagels, 2001). When actual revenues and expenses vary from the plan articulated by the budget, the control phase provides the efficient assessor for this, and the management functions within an effective MCS takes the appropriate action for improvement (effector) (Bhimani, 2006).

Figure 2.4 describes an extensive review of the literature for both budgeting and performance. This phase is subdivided into the phases of theoretical analysis of budgeting impact on performance in general, and of the budgeting-performance relationship towards SMEs, particular Chinese SMEs, in specific. Through this logical exploration of the existing bodies of literature, an initial conceptual framework of budgeting-performance relationship in Chinese SMEs has been established. Based on the implication of the conceptual framework, the tentative propositions also has been generated as assumptions, which has been checked by empirical results later on. The literature review, on the other hand, identify previous research deficiencies or gaps. It will then provide a place for current research to make the corresponding development towards those limitations and gaps. The second process of this framework is conducting a sample study aimed at obtaining empirical research findings. Within this process, some subdivided phases are grouped, such as crafting instruments, monitoring questionnaires, analysing quantitative data from the survey, reporting empirical findings, modifying hypothesis (if need be) or providing more explanation of the existing literature, and finally reaching conclusions. The Impact of the Budgeting Process on Performance of SMEs in China (see Figure 2.4) (Yang, 2010).
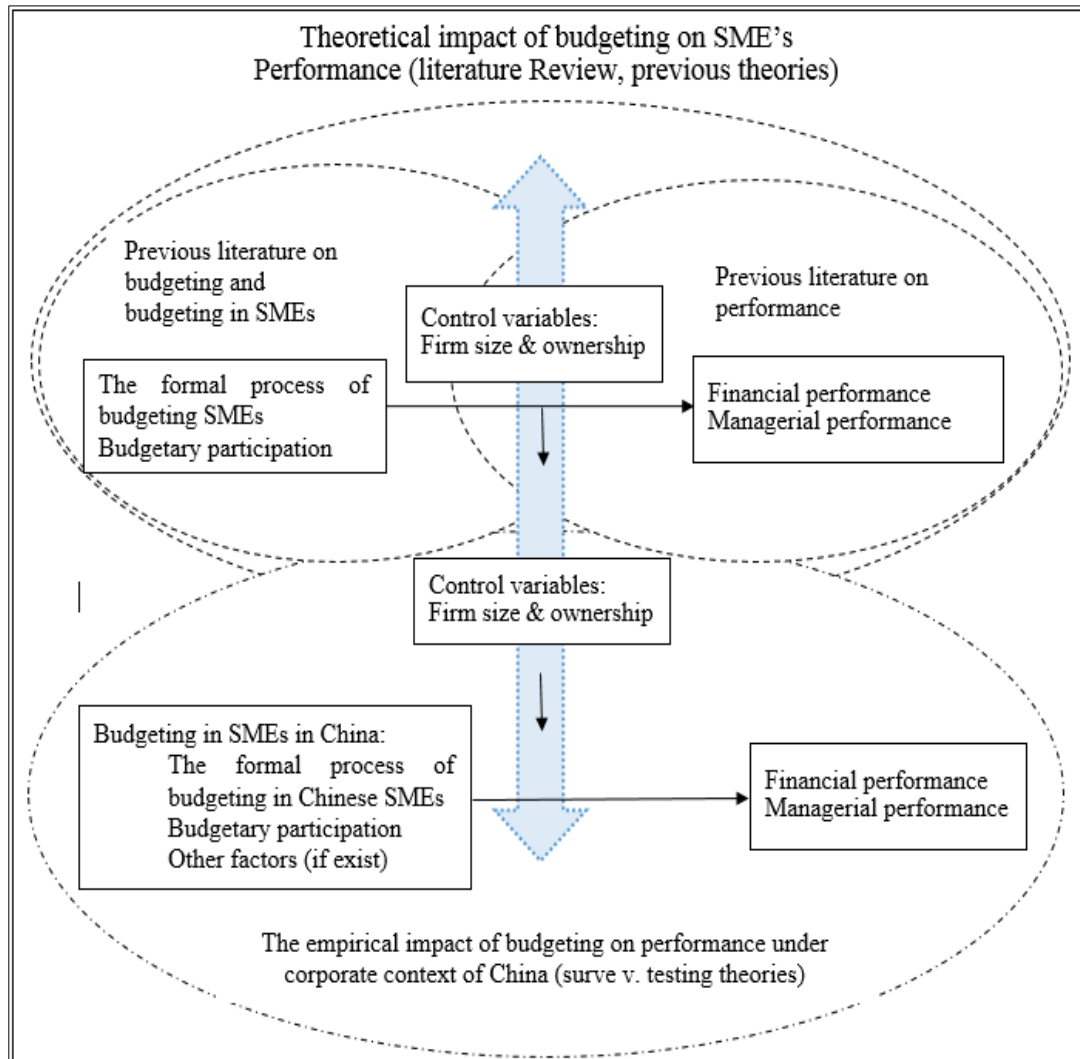
Figure 2.4: **The Impact of the Budgeting Process on Performance of SMEs in China.**

Gitman, (2006) gives an illustration on Budgets Interrelationship (Figure 2.5) which gives an explanation of the various items of the master budget on the basis of the model in manufacturing organisations, and it shows how they are related. Generally, the process of short-term planning is actually the process of preparing the master budget. The key inputs of the master budget include the sales budgets, the cash budgets, and full budget.

Figure 2.5: **The Different Types of Budgets Interrelationship (typical model in manufacturing sector)**

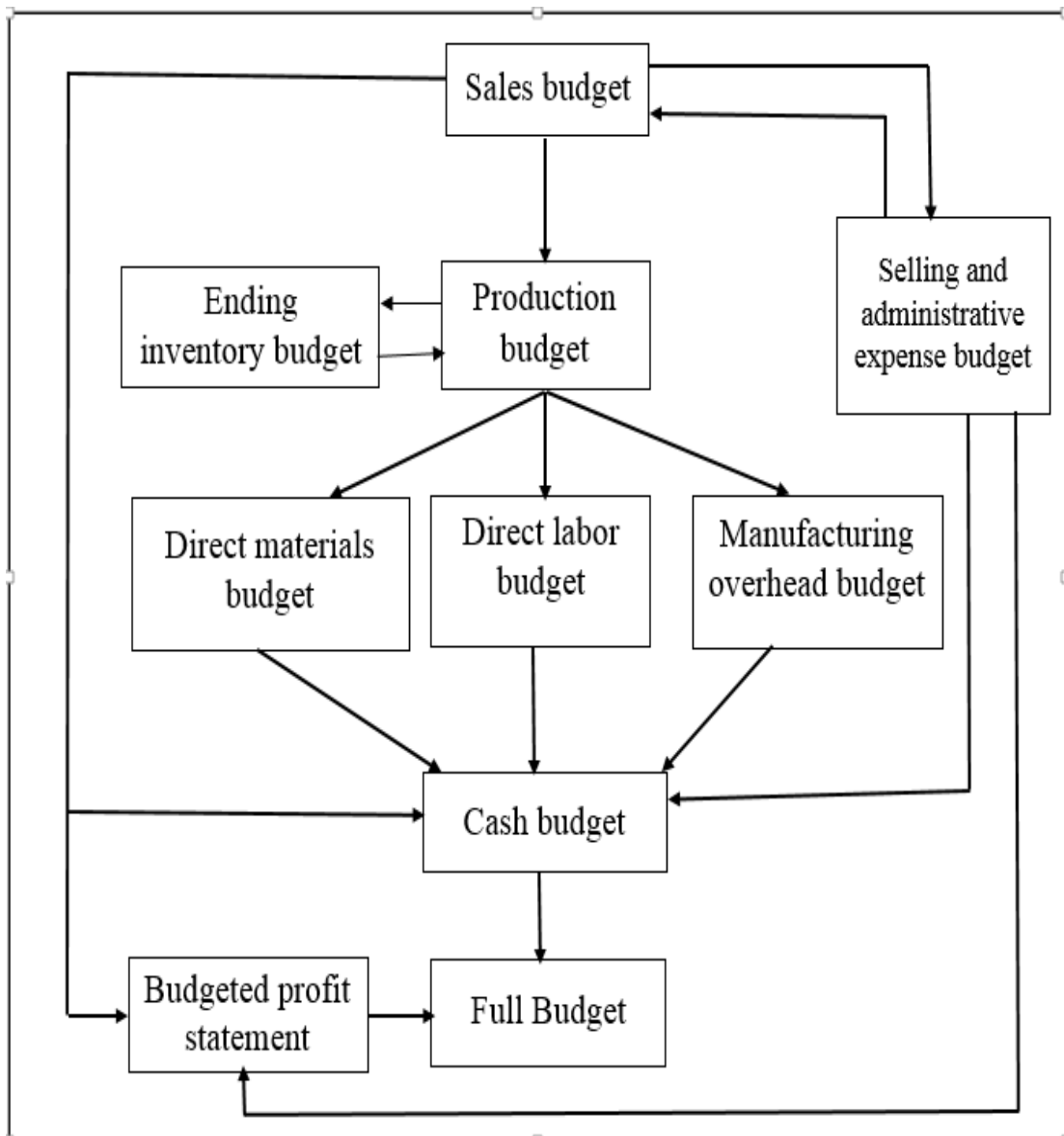There must be a capability for taking action, so deviations from objectives can be reduced. In 2000, Drury has further introduced a mechanical control system (as shown in Figure 2.6).
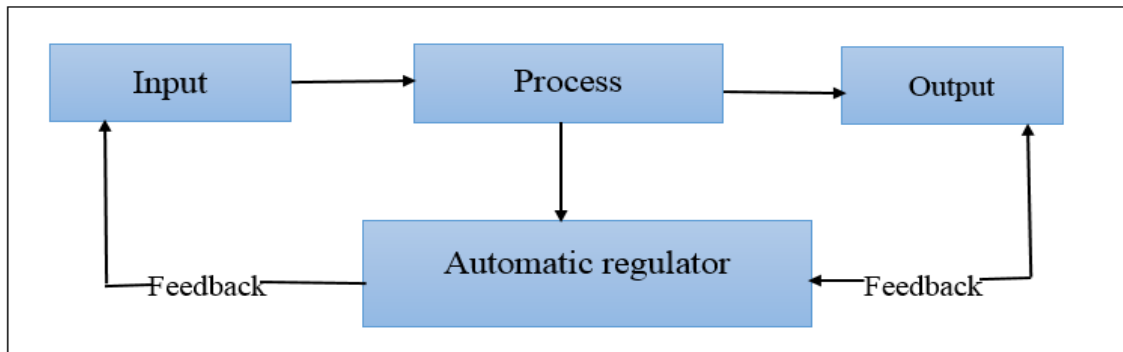
Figure 2.6: **Mechanical Control Process (Drury, 2000)**

The system consists of several processes and they are in the following: the process is continually monitored by an automatic regulator, deviations from a predetermined level are identified by the automatic regulator, and corrective actions are started if the output is not equal to the predetermined level. The researcher has mentioned in the former section (2.5), in theory, that the budget system may not automatically achieve the function of control, but it can contribute to the use of control. Therefore, there are some overlapping between budget and control. It is reasonable to conclude that the elements used in a mechanical control process can also be applied in a budgetary control system (Figure 2.7).

Figure 2.7: **Budgetary Control Process (Glynn, et al., 2008)**

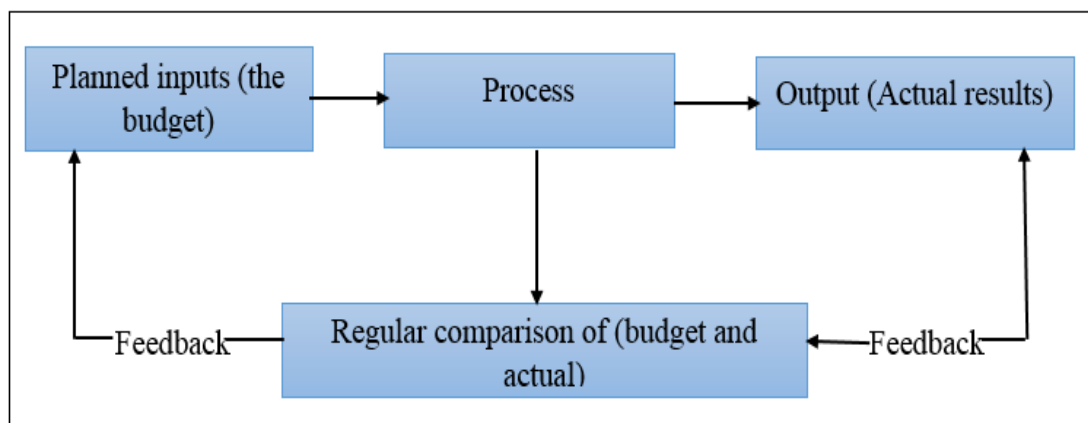Adongo (2013) has produced a conceptual framework for Budgetary Control as a Measure of Financial Performance given below (Figure 2.8).
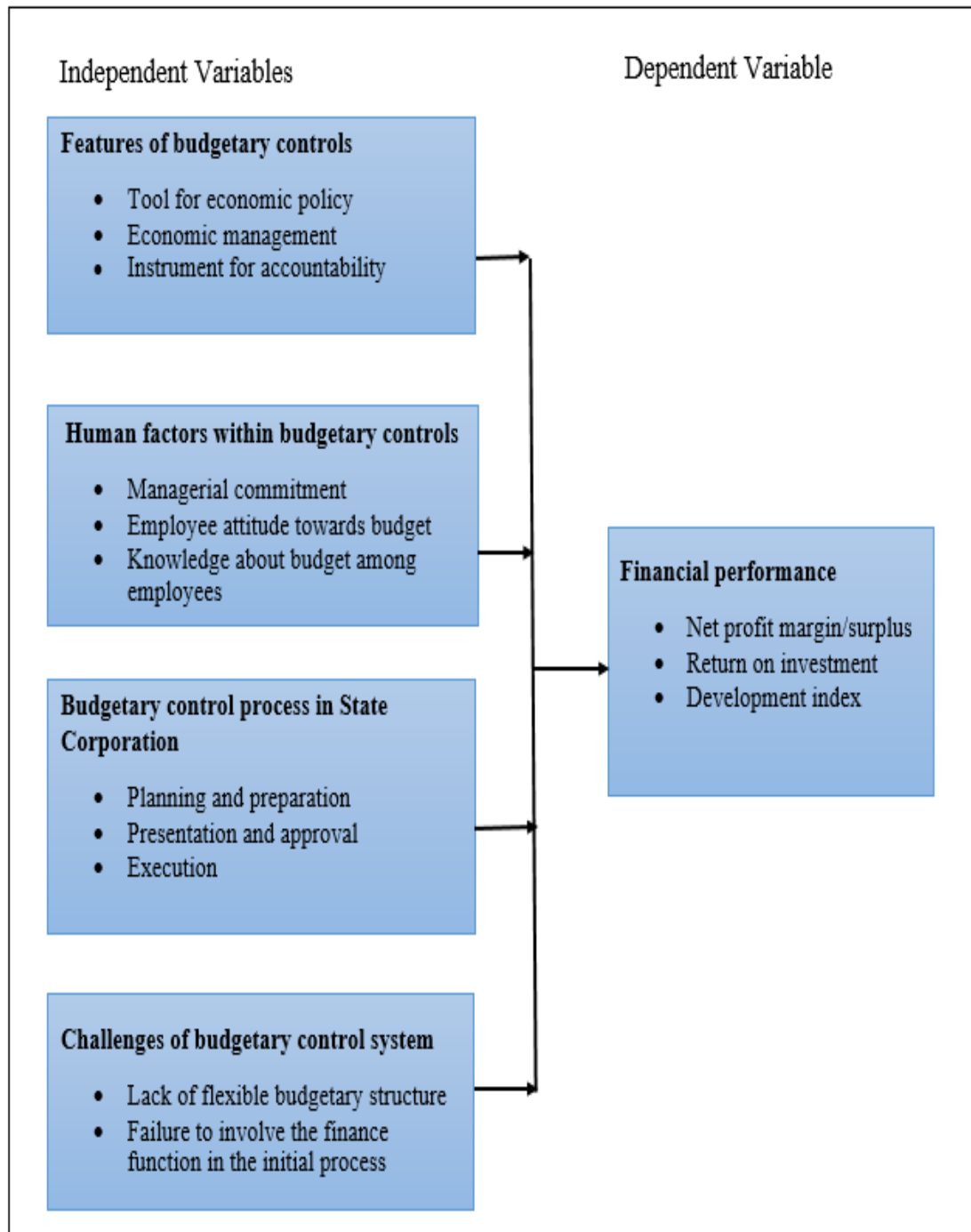

Figure 2.8: **Conceptual Frameworks for Budgetary Control as a Measure of Financial Performance (Adongo, 2013)**

In this framework the researcher interrelates budgetary control that an organization put's in place with financial performance. The financial performance of an organization in this study was defined as the subjective measure of how well a firm can use assets from its primary mode of business and generate revenue. The measures of financial performance include company's total earnings or profit, share value and growth index. Similarly, highlights non-financial and financial measures of financial performance. In his classification, return and the development index. The author mentioned that the importance of financial stability in enabling an organization to function efficiently and maximize the potential for service delivery cannot be underestimated. The quest for better service delivery under new public management in public organizations. The study sought to determine the salient features of budgetary controls in state corporations, establish the human factors within budgetary controls, establish the process of budgetary control in public organizations, and determine the challenges affecting budgetary control. A descriptive survey design was used to gather data from the state corporation's managers of the sampled state corporations. Human factors within budgetary controls thus managerial commitment, employees' motivation, employee training, competence as well as the attitude affect the budget control process. Budgetary control process exhibited a positive significant influence on financial performance of state corporations through influence on financial objectives, the allocation of funds as well as investment ventures that organization undertakes. The study recommends sensitization of management and employees of state corporations on the importance of budgetary controls in enhancing financial performance, avoidance of political interference in the budgetary process and use of budgets as tools for management efficiency.

2.3.9   Summarized Factors on Budgetary Control Framework

The summarization of several budgetary control factors are given in Table 2.1.

Table 2.1: *Comparison between the Budgetary Control Frameworks*

Author	Focused factors in budgetary control framework	Selected and contributed factors in this study
Harrison, 2013	Budget figures, **Control** & take action, Actual figures, **Monitor** & compare	Planning and budgeting Resource allocation Operating and monitoring Evaluation Reporting
Blocher, 2002	**Budgetary & planning, monitoring & control**, Analyzing & Feedback and others	
Jones, 2010	**Control, Monitoring, planning,** development, implementation	
Yang, 2010	Formal process, **Control**, financial performance and others	
Adongo, 2013	Features of budgetary **control**, **human factors (resource allocation)**, **process**, **planning**, challenges and others	

2.3.10 Comparison between the Budgetary Control Frameworks

The common feature or the criterion is one of the important components for the budget control, so based on the comparison Table 2.1, it proposes budgetary control system framework summary with the contributed factors given in Figure 2.9 which will lead to develop a prototype of budgetary control system for KUI.

Table 2.2: *Comparison of the Existing Budgetary Control Framework*

Common Features	Framework 1: Harrison, 2013	Framework 2: Blocher, 2002	Framework 3: Jones, 2010	Framework 4: Yang, 2010	Framework 5: Adongo, 2013
1st	Control	Budgetary Control	Control	Control	
2nd	Monitor	Monitoring & Control	Monitor		
3rd		Planning	Planning		Planning

From the literature review the researcher has found 5 elements in common (see table 2.2) to produce a budgetary control framework (see Figure 2.9), which are considered to be the appropriate elements to be adopted in the budgetary control system prototype for KUI.

Figure 2.9: **Common Factors in Budgetary Control System**

2.4 Summary

The concept of budgetary control system for higher institution of learning is presented some elements from frameworks have been used as the main elements in the proposed framework. Hence, these elements lead to the development of the proposed budgetary control system prototype for KU.

3.1 Introduction

This chapter presents method that would be used to achieve the main objective. The chapter discusses the method to be used for achieving Budgetary Control System framework at KU, Iraq. In addition to it, the technique to validate and evaluate the system is also presented in this chapter.

3.2 Research Method Design

In this study, the general research methodology is adapted from Nunamaker and Chen (1991). Figure 3.1 shows the steps adapted for developing the Integrated Budgetary Control System.
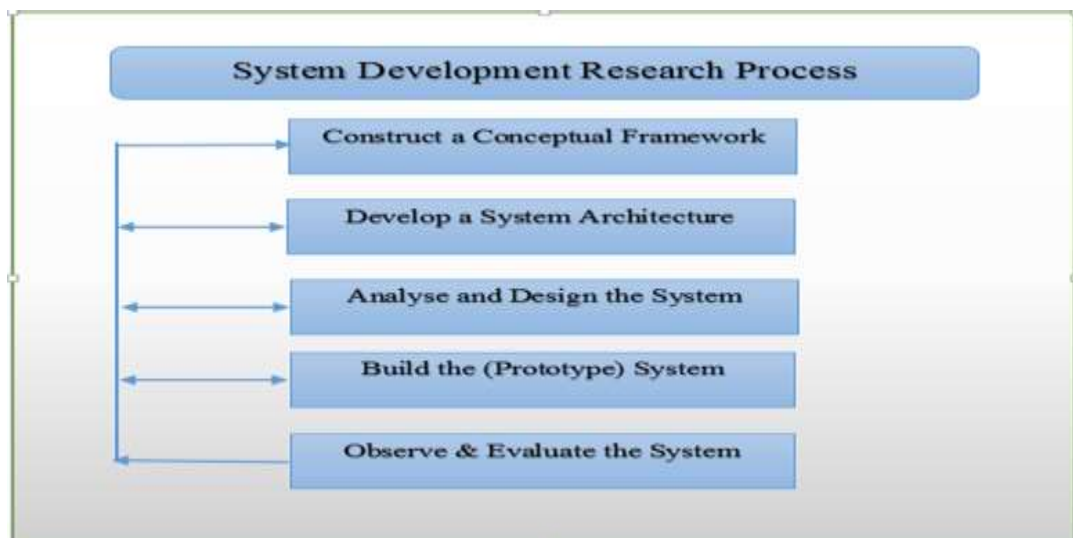

Figure 3.1: **Process of Developing the Integrated Budgetary Control System**

3.2.1 Constructing a Conceptual Framework

In this study, the conceptual framework depicts the basic steps or basic elements to develop the prototype of budgetary control system. The element of the concept to mitigate current needs of KU is shown in Figure 3.2. This framework has been developed by user requirement study (see Chapter 4, section 4.2). In KU needs, there are three types of users, such as budget applicant who applies budget for various purposes, users from ministry approves the budget and Finance Department of KU that allocate the budget accordingly.

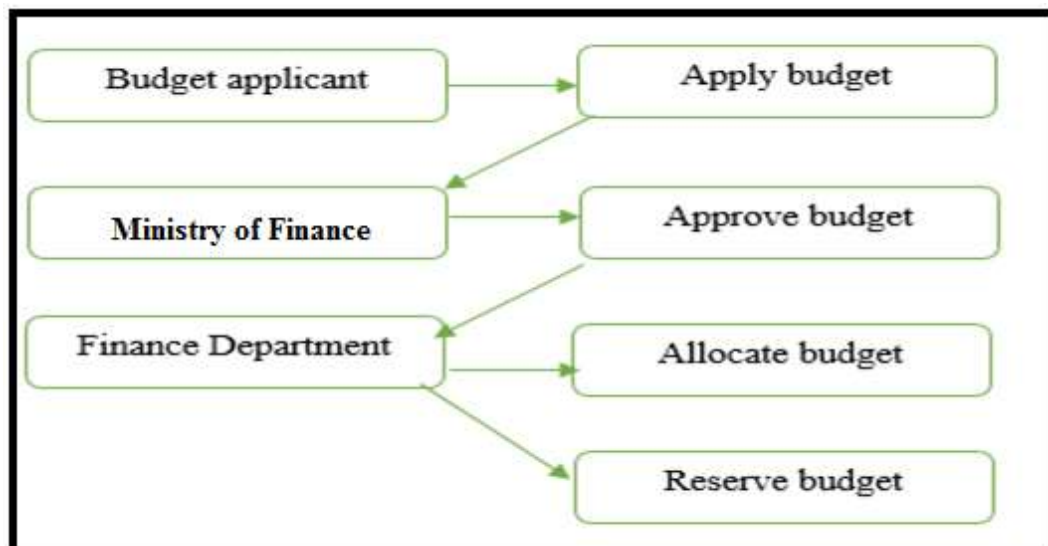
Figure 3.2 **Conceptual Framework of the BCS**

3.2.2 Developing System Architecture

To achieve the objective of the study, it is important to develop a system architecture which can be easily understood by an activity diagram given below.

3.2.2.1 Activity Diagram

The activity diagram for the applicant is given below.

a. Log In

In this phase, the user needs to provide user ID and password; after that the system will check the credentials with its database. If the provided user ID and password match with existing database, the user can login successfully; otherwise, it will provide error message.

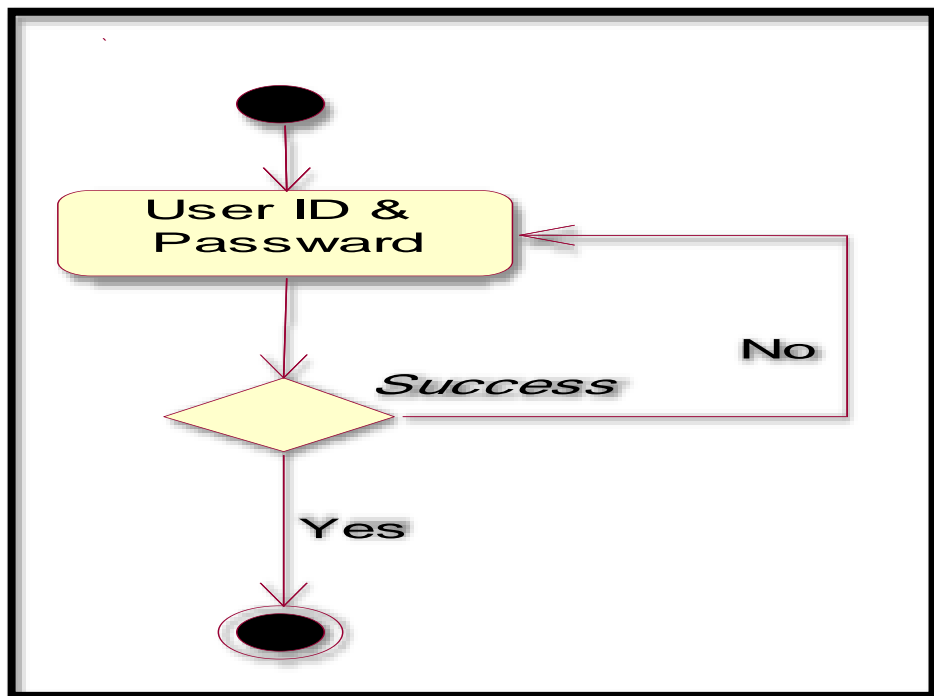*Figure 3.3:* **Log In**

b. Create User

The user needs to be registered with the system by the help of prescribed form. When user fills-up the for ms, and successfully does his registration, his/her detailswill be kept in the system for future log in.
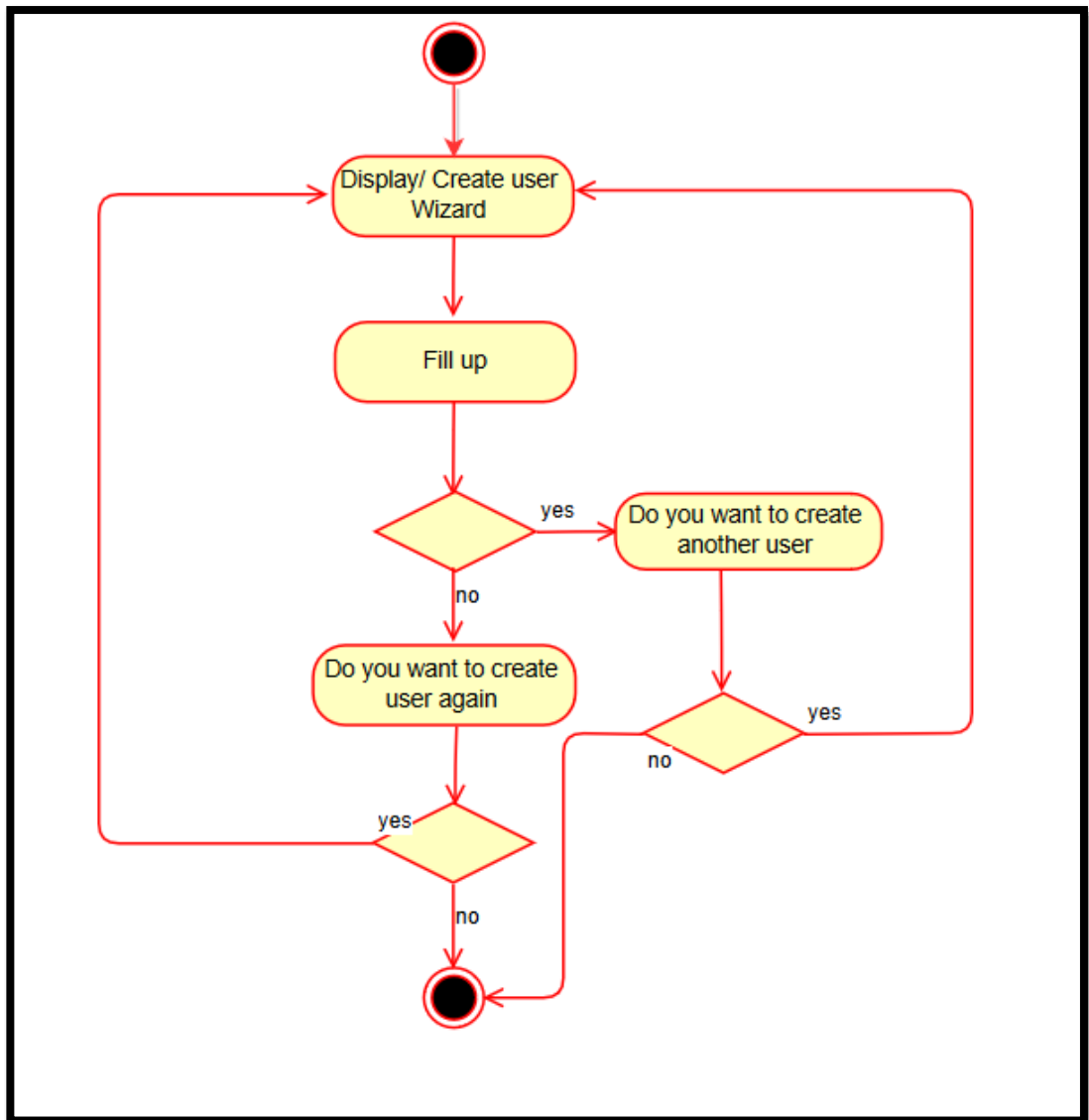
Figure 3.4: **Create User**

c. Delete User

This feature is only available for the admin who has access to the data base built by "Php myadmin". The admin can delete users.When admin deletes a user successfully, the system will remove the user.
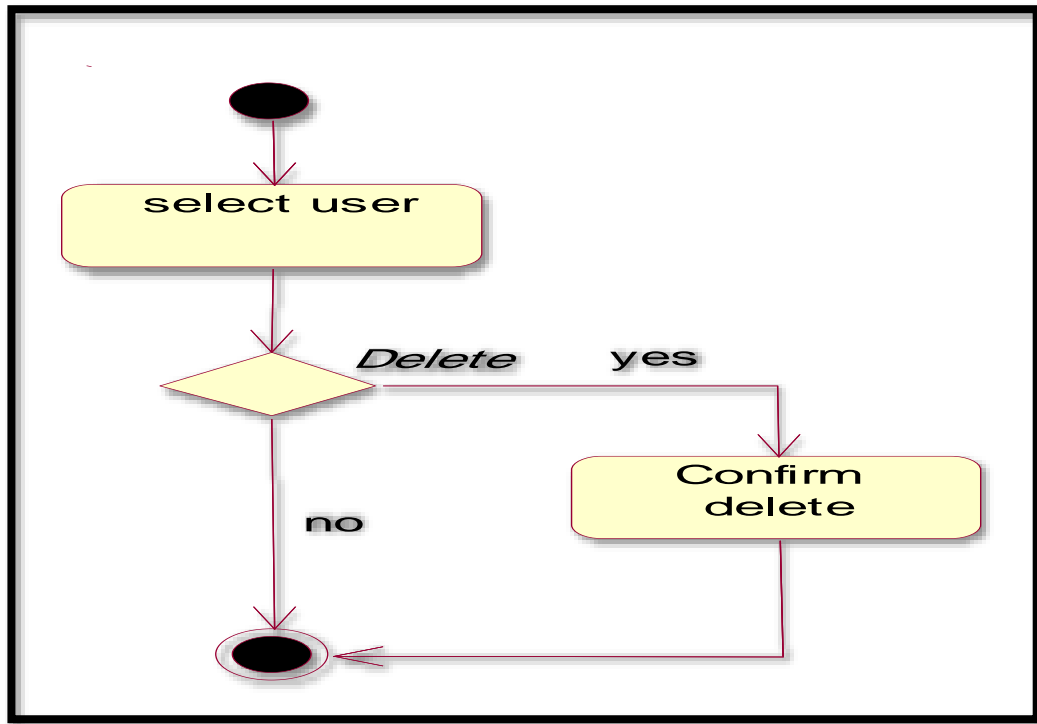
Figure 3.5: **Delete User**

d. Apply Budget

This is the main focus of this project. The applicant needs to login to use the system. In this place budget applicant can apply budget. If the budget application is successful, the system will update the application.
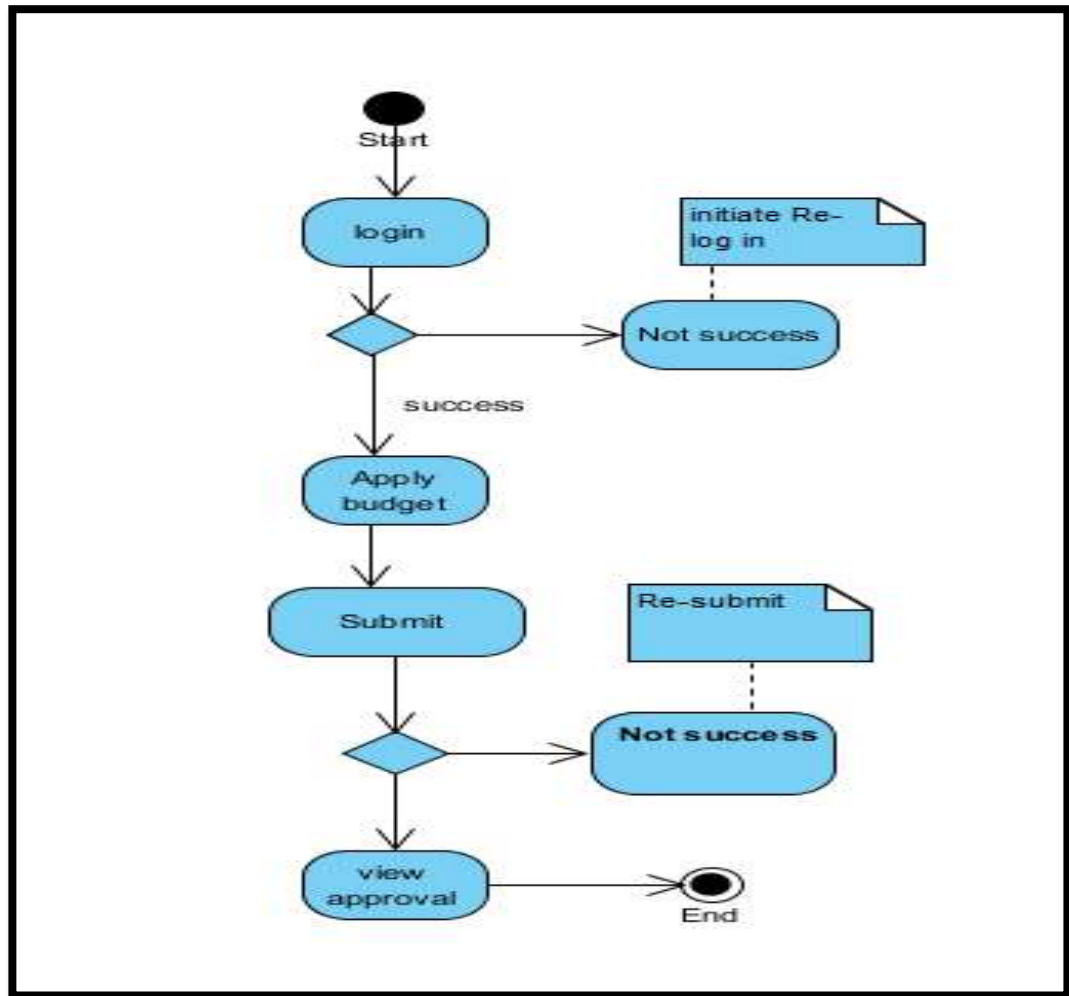
Figure 3.6: **Apply Budget**

e. Approve Budget

Approval of the stipulated amount of budget is done from the ministry. If the ministry approves the budget, the system will be updated according to the budget amount. If it is not, the system shows 'decline' message after the rejection of budget.
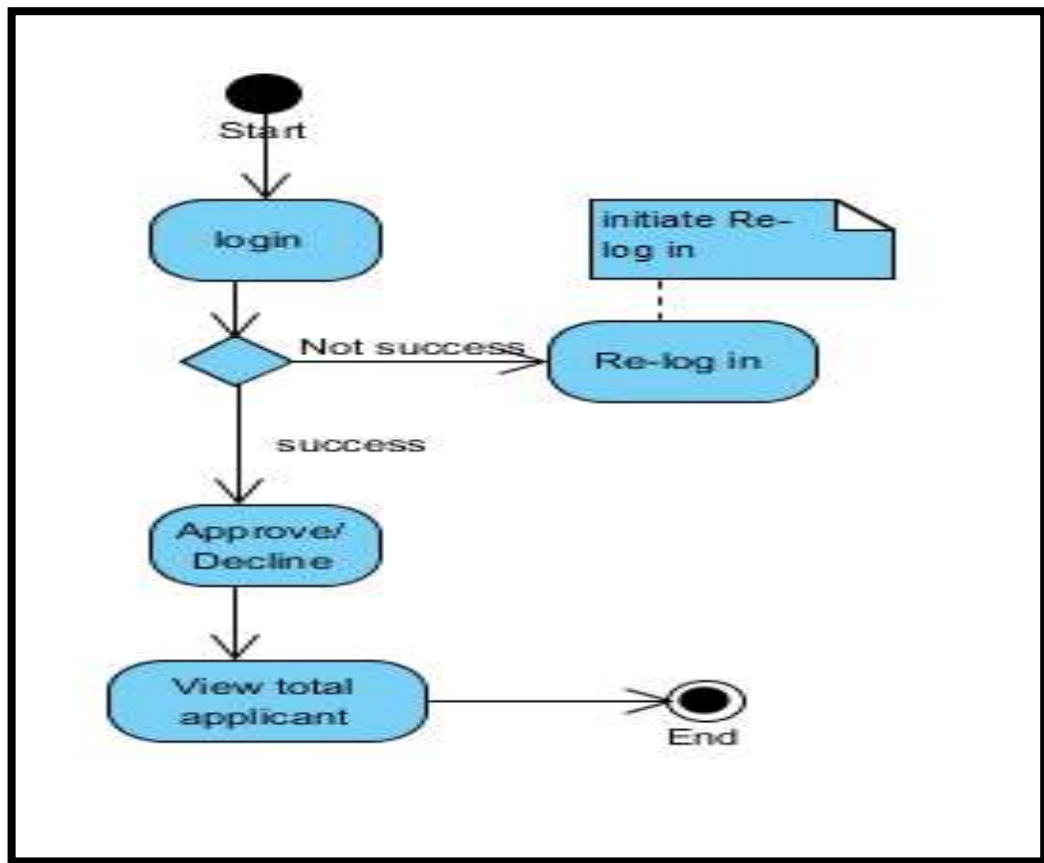
Figure 3.7: **Approve Budget** (**Ministry of Finance**)

f.   Allocate Budget

The university Finance Department has the rights to allocate and reserve the budget. When the Finance Department user successfully log in, he/she can allocate the full budget and also can reserve some portion of it.
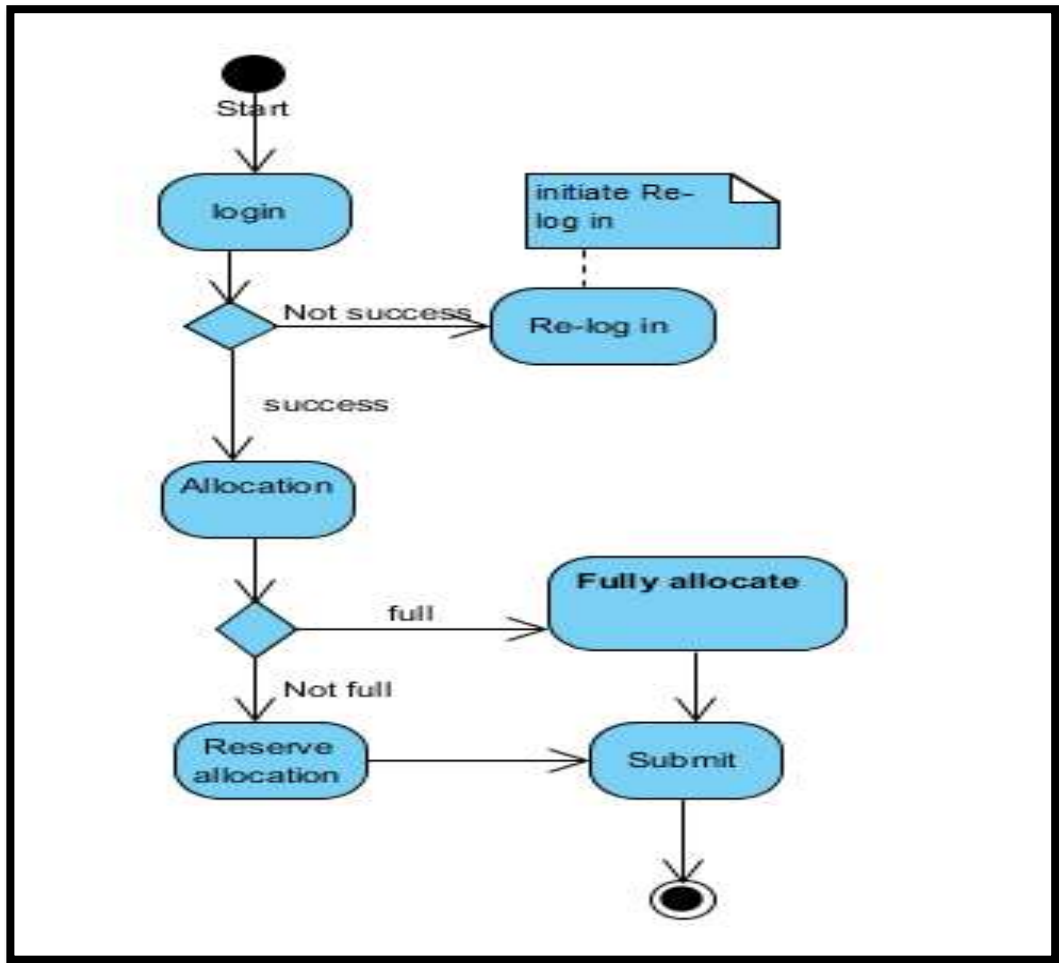
Figure 3.8: **Allocate Budget (University Finance Department)**

3.2.3   Analysing the System

This section analyses the user requirement (see details in Chapter 4, section 4.2) based on the current needs to the KU Iraq in order to design the BCS prototype. The analysis phase includes the functional requirements. The functional requirement includes the functions of the BCS that are mandatory, optional and desirable by the user, and it also includes non-functional requirements to mitigate reliability issues and usability issues.

3.2.4   Building the System Prototype

The prototype of the system is given in Figure 3.9. The system has been designed for three users, such as budget applicant, ministry users and university Finance Department.

Figure 3.9: **Prototype of BCS**

The budget applicant needs to register in the system to apply budget (see figure 3.10). If the applicant is already a registered user, s/he can choose the option "already registered user Log in"

Figure 3.10: **Registration**

When the user from Ministry of Finance log in to the system, s/he can see the applications sent by budget applicant (see figure 3.11)

Figure 3.11: **Budget Applicant List**

The Finance Department user can see the budget approval and can search the individual list and can allocate (figure 3.12) the budget too.
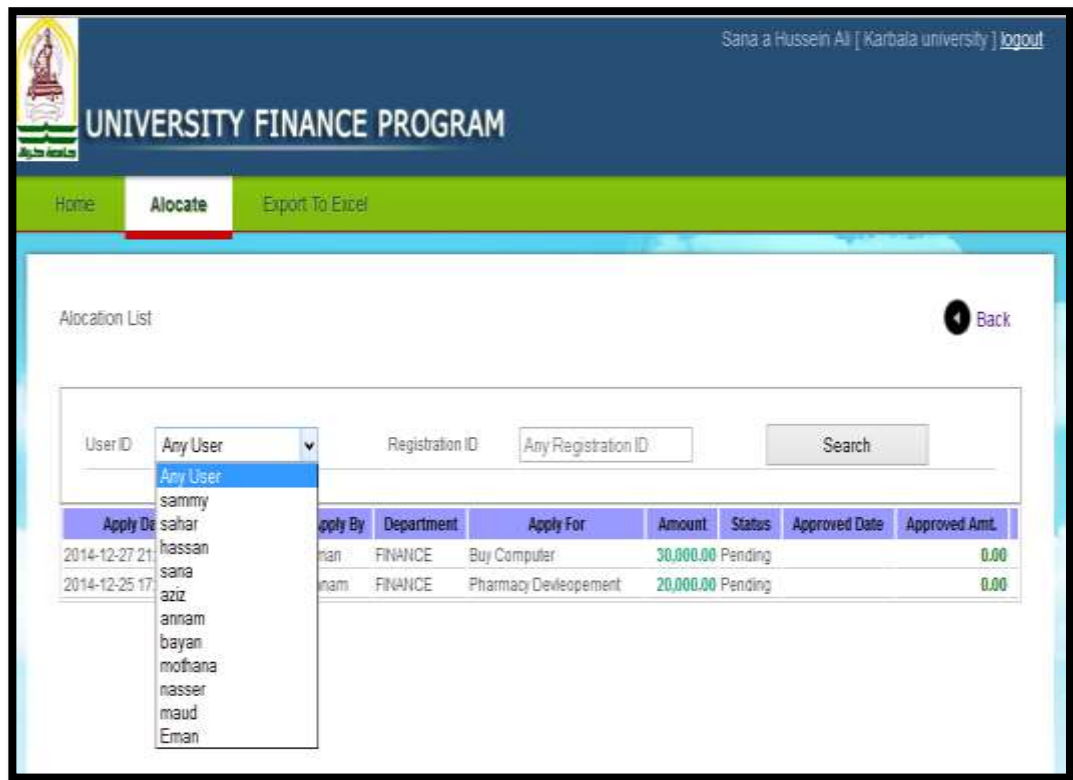
Figure 3.12: **Finance Department**

3.2.5 Observing and Evaluate the System

When the system has been built, the system will be monitored in terms of functionality, availability, user satisfaction. A set of questionnaire will be delivered to the users to evaluate the system.

3.3   Summary

This chapter discusses the methodology of this study.   The next chapter discusses development steps of the system and also describes the interface of system.

CHAPTER FOUR

SYSTEM DEVELOPMENT

4.1. Introduction

This is the chapter where the researcher will discuss about list of the requirements, use case diagram, and use case specification, sequence diagram, collaboration diagram, class diagram, system design in prototype mode.

4.2   List of Requirements

The list of requirements are specified in terms of Functional and Non-Functional requirements as described in the following sub-sections.

4.2.1   Functional Requirements

The functional and non-functional requirements are given in Table 4.1 where M denotes mandatory, D denotes desirable, O denotes optional.

Table 4.1: *Functional Requirement*

No.	Requirement ID	Requirement Description	Priority
1	**BCS_01**	**Log in**	
2	**BCS_01_1**	The Administrator can log-in into the system using his/her "user name" and "password"	**M**
3	**BCS_01_2**	The system shall detect the validate of "user name " and "password"	**D**
4	**BCS_01_3**	The system will guide if log in password is forgotten	**O**

5	**BCS_02**	**Apply budget**	
6	**BCS_02_1**	Registered user can apply budget	**M**
7	**BCS_02_2**	Registered user can view budget	**D**
8	**BCS_02_3**	Registered user can view approval or declined	**D**
9	**BCS_03**	**Approve/ decline budget**	
10	**BCS_03_1**	Ministry user can approve/ decline budget	**M**
11	**BCS_03_2**	Ministry user can approve/ decline list	**D**
13	**BCS_04**	**Allocate budget**	
14	**BCS_04_1**	Finance Department user can allocate full budget	**M**
15	**BCS_04_2**	Finance Department user can reserve some portion of budget	**D**
16	**BCS_04_3**	Finance Department user can view the full applicant list	**D**
17	**BCS_04_4**	Finance Department can view the approved budget applicant list	**D**
18	**BCS_05**	**Log out**	
19	**BCS_05_1**	The applicant, ministry staff, Finance Department can log-out from the system	**M**
20	**BCS_05_2**	The system will display a confirmation message about log out	**O**

4.2.2 Non-Functional Requirement

The nonfunctional requirement are given in table 4.2

Table 4.2: *Non-Functional Requirement*

No.	Requirement ID	Requirement Description	Priority
	BCS_06	**Reliability Issues**	
1.	**BCS _06-_1**	The system should receive updated information every 15 minute.	**M**
2.	**BCS_06_2**	If the system crash, it should behave perfectly normal when reloaded again	**M**
3.	**BCS _06_3**	For a single user, the system should crash not more than once per 5 hours.	**M**
	BCS _07	**Usability Issues**	
4.	**BCS _07_1**	Security of data stored in system only can be access by certain authorize staff or admin in BCS.	**M**
5.	**BCS _07_2**	Time of system response to staff or admin should not exceed 4 minute.	**M**

4.3   Use Case Diagram

Use case diagrams describe what a system does from the standpoint of an external observer. The emphasis is on what a system does rather than how. Use case diagrams are closely connected to scenarios. A scenario is an example of what happens when someone interacts with the system. A use case is a summary of scenarios for a single task or goal. An actor is who or what initiates the events involved in that task. Actors are simply meant as roles that people or objects play. Use case diagrams are helpful in three areas, such as

- **Determining features (requirements)**. New use cases often generate new requirements when the system is analysed and the design takes shape.
- **Communicating with clients**. Their notational simplicity makes use case diagrams which are considered as a good way for developers to communicate with clients.
- **Generating test cases**. The collection of scenarios for a use case may suggest a suite of test cases for those scenarios.

In this thesis, there are three main Actors which are the applicant, Ministry users and Finance Department user where applicant applies budget, ministry users approve/decline the budget and university Finance Department allocates the full budget or reserves some portion of the budget.

4.4   Use Case: Budgetary Control System (BCS)

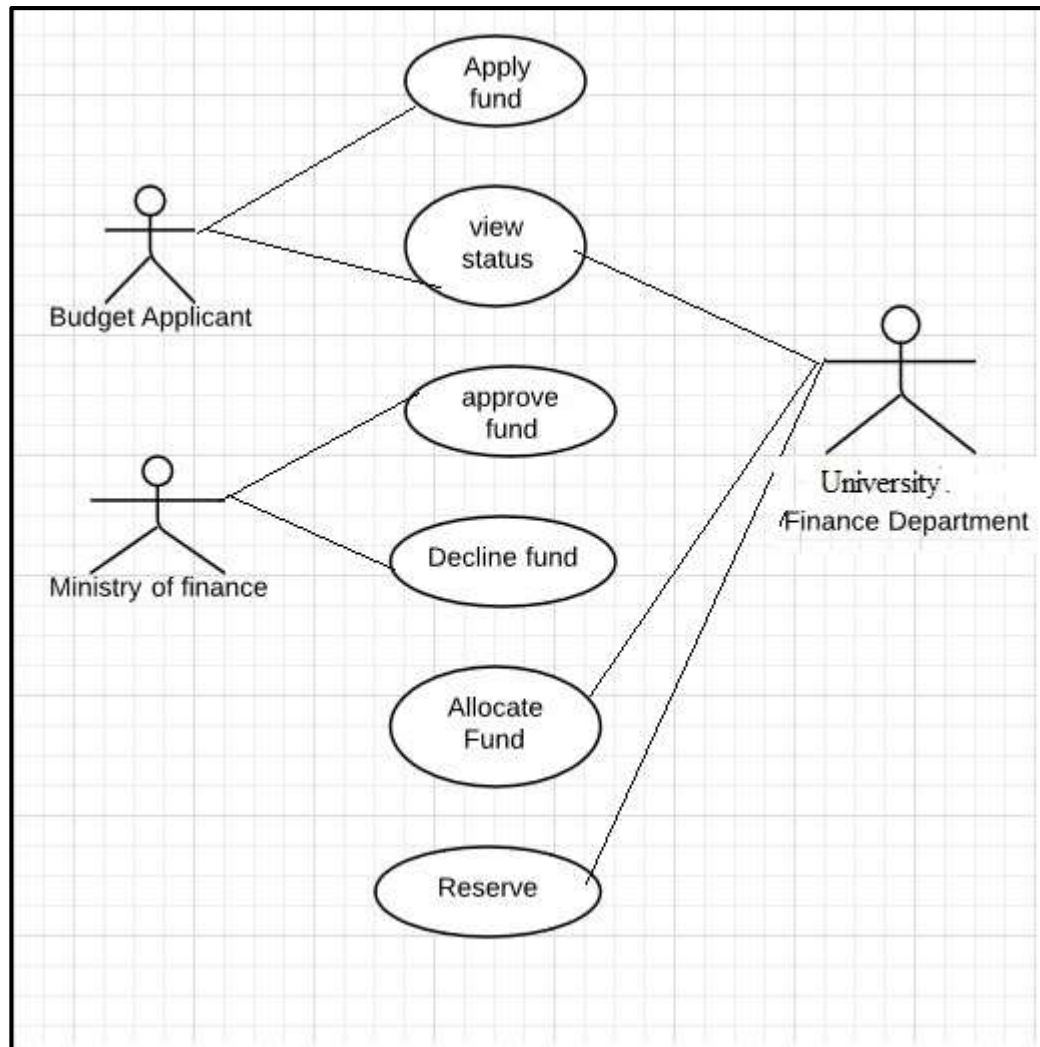The use case diagram is depicted below in Figure 4.1

Figure 4.1: **Use Case Diagram**

4.5   Use Case Specifications

The use case specification is described below

4.5.1 Use Case (LOGIN)

Figure 4.2 depicts the graphical description of the type of user for the system (log in feature)
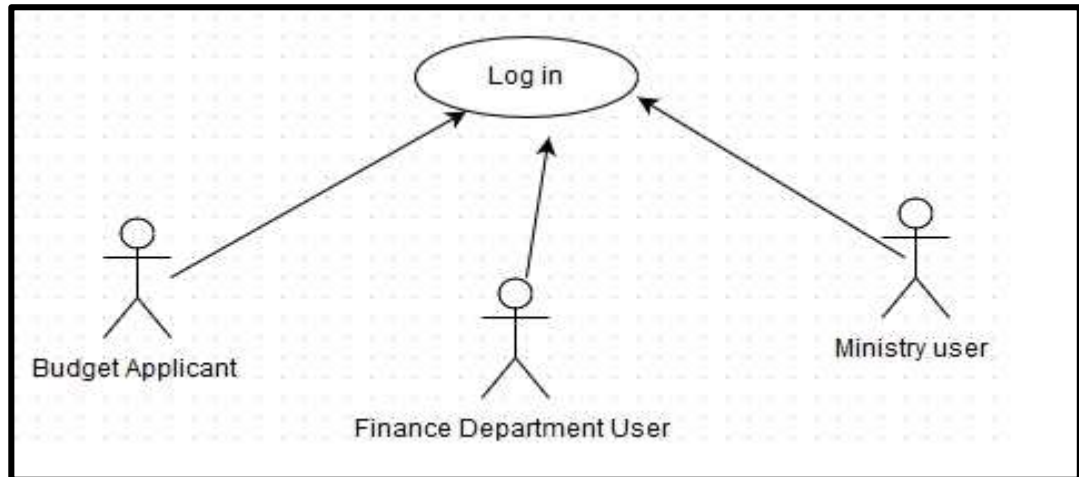
Figure 4.2: **Use Case Specification (Log In)**

4.5.2 Brief Description

This function guarantees that only authorized users can enter into the system according to the authorization. An authorized user is a user who has an account on the system. The user must type a valid username and password to enter or log in.

Logging into the system provides security and confidentiality to the system. It reduces the chance that someone can taper any individual's personal information, and prevents unauthorized users from modifying the confidential information.

4.5.3 Pre-Conditions

The user must be a member of the system (Authorized User).

4.5.4   Characteristic of Activation

The actors (applicant, ministry user, Finance Department user) click Log in button and enter login credentials.

4.6   Flow of Events

4.6.1 Basic Flow of BCS

The use case begins when the actors (applicant, ministry user, Finance Department user) enter his or her User Name and password. The actors (applicant, ministry user, Finance Department user) click login button.

[A-1: Reset]   BCS

The system shall validate the ID and Password by connecting to Data Base. And the System displays error message and asks for re-entering again ID and Password if the entry log in is invalid.

[E-1: Invalid Password/Username] BCS

The system will display home page for the actors (applicant, ministry user, Finance Department user) and determine which functions are available for him/her. This case ends when system displays the main menu page.

4.6.2   Alternative Flow of BCS

A-1: Reset: The system shall reset the user name and password and can change a user's data.

4.6.3 Exceptional Flow

E-1: Invalid Password/Username The system will display error message and the user has to re-enter the username and password, and there is a counter in the system. If the users enter wrong entry more than 3 times, the system will guide them to remind their Password.

4.6.4 Post-Conditions

The actors (applicant, ministry user, Finance Department user) can enter to the system.

4.6.5 Rule(s)

The users of system must have an account.

4.6.6 Constraint(s)

One needs to view menu page.

4.7 Use Case (Logout)

Figure 4.3 is the graphical description of the type of user for the system to be logged in.
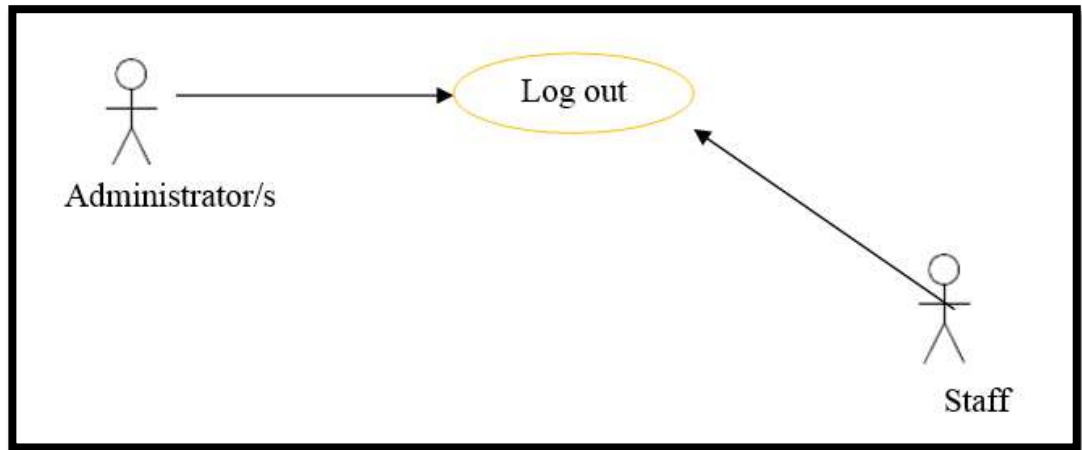
Figure 4.3: **Use Case Specification (Log Out)**

4.7.1 Brief Description

This use case begins when the actors (applicant, ministry user, Finance Department user) want to exit from the system. When the actors (applicant, ministry user, and Finance Department user) use this use case the system, it stops to provide the operations and function concerning the users.

4.7.2 Pre-Conditions

The user must be log in to the system.

4.7.3 Characteristic of Activation

Users need to click **logout** button.

4.8 Flow of Events

The flow of the event is described below.

54

4.8.1 Basic Flow BCS

The use case begins when any member of system (applicant, ministry user, Finance Department user) clicks on the logout button. The system is disconnected from the database. The system helps users to logout successfully, and redirect to the homepage.

4.8.2 Alternative Flow

It is not applicable.

4.8.3 Exceptional Flow

It is not applicable.

4.8.4 Post-Conditions

System will be ready for new users for doing operations.

4.8.5 Rule(S)

The users of system must have an account.

4.8.6 Constraint(S)

View menu page.

4.9 Class Diagram

Figure 4.4 depicts a start at a simple UML class diagram for the conceptual BCS. Classes are depicted as boxes with three sections; the top one indicates the name of the class, the middle one lists the attributes of the class, and the third one lists the methods.
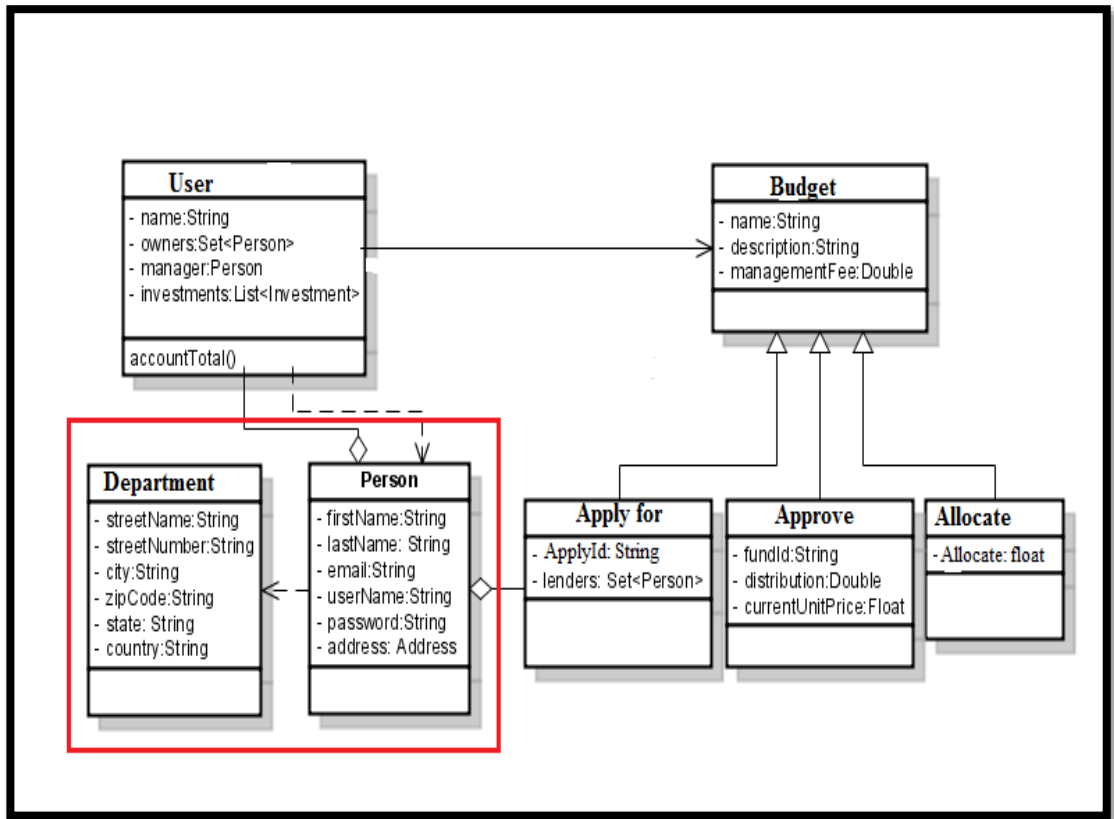
Figure 4.4: **Class Diagram**

4.10 Sequence Diagram

Add User

The following diagram is showing the sequences that can be initiated during adding user/creating user.

Figure 4.5: **Add User**
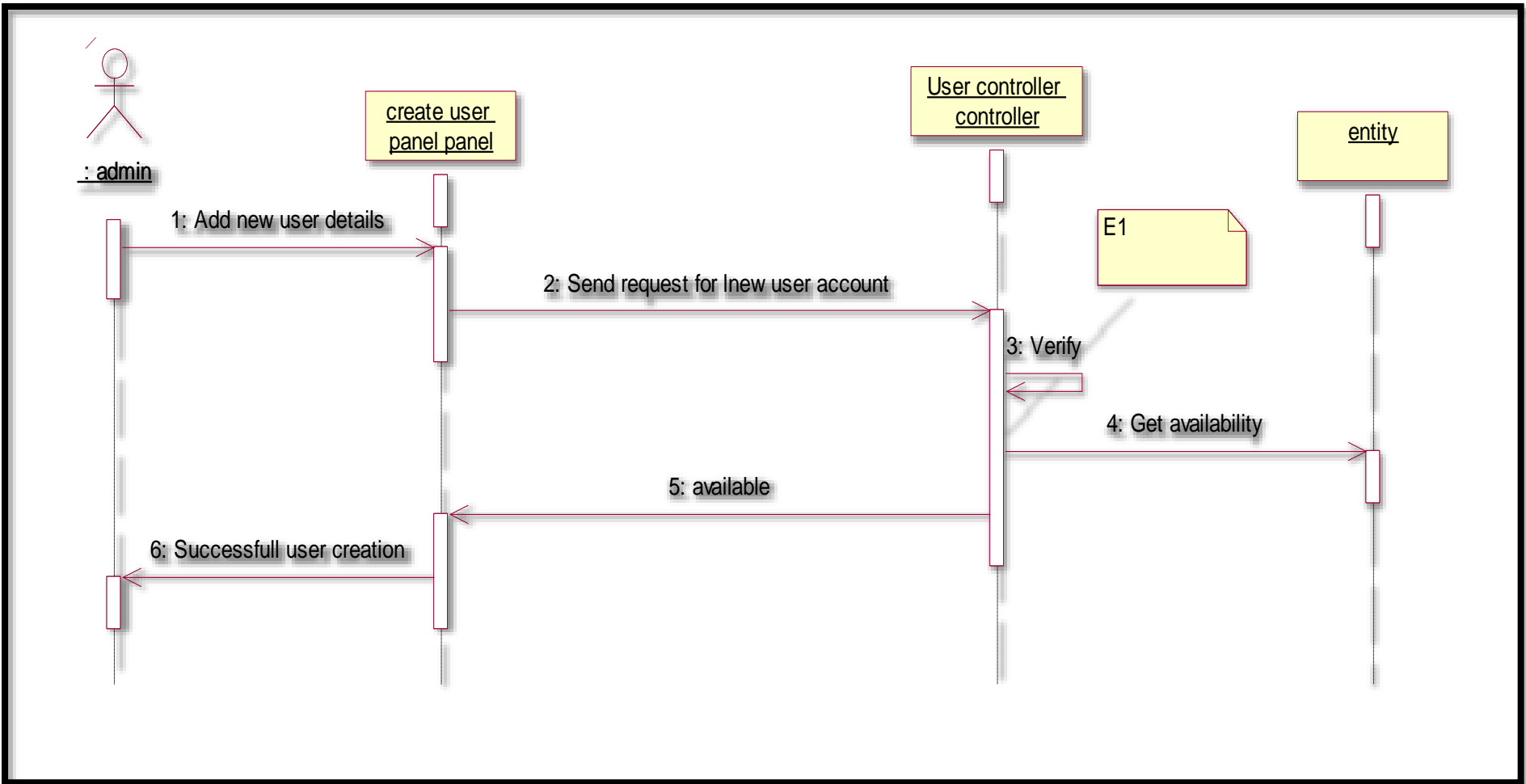
Delete User

The following diagram is showing the sequences that can be initiated during deleting user.
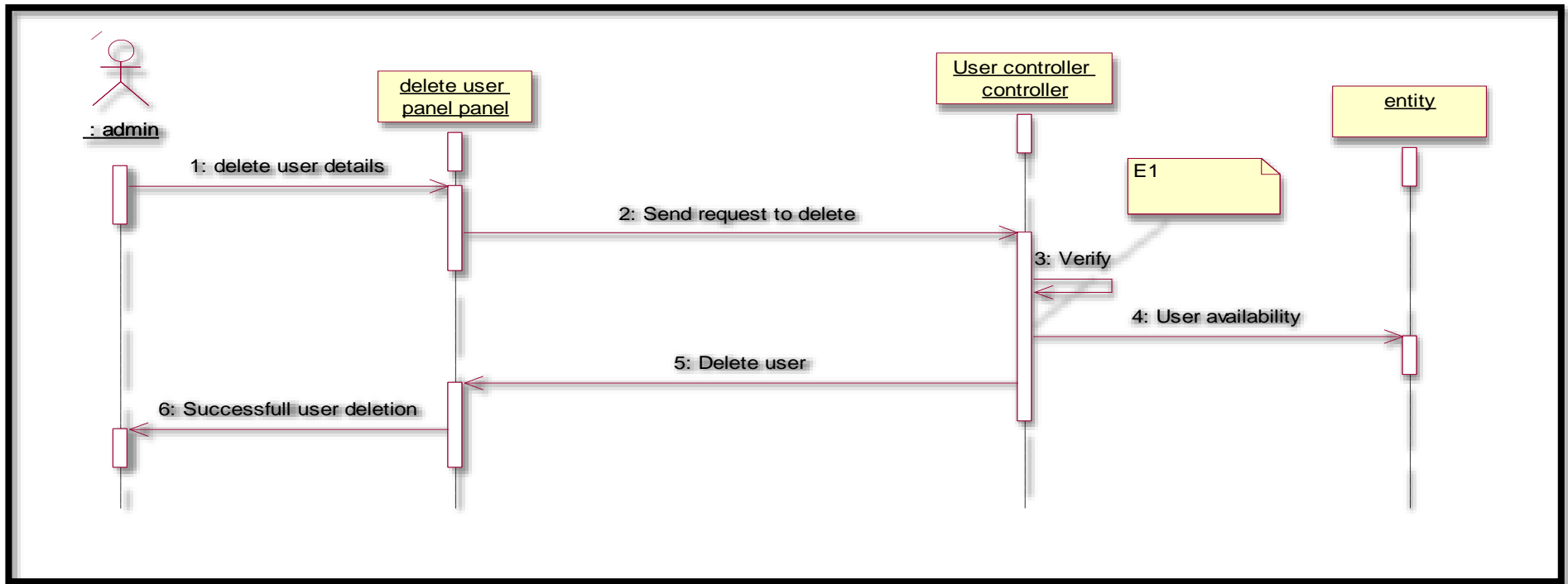
Figure 4.6: **Delete User**

Log In

The log in sequence diagram for BCS is given below in figure 4.7
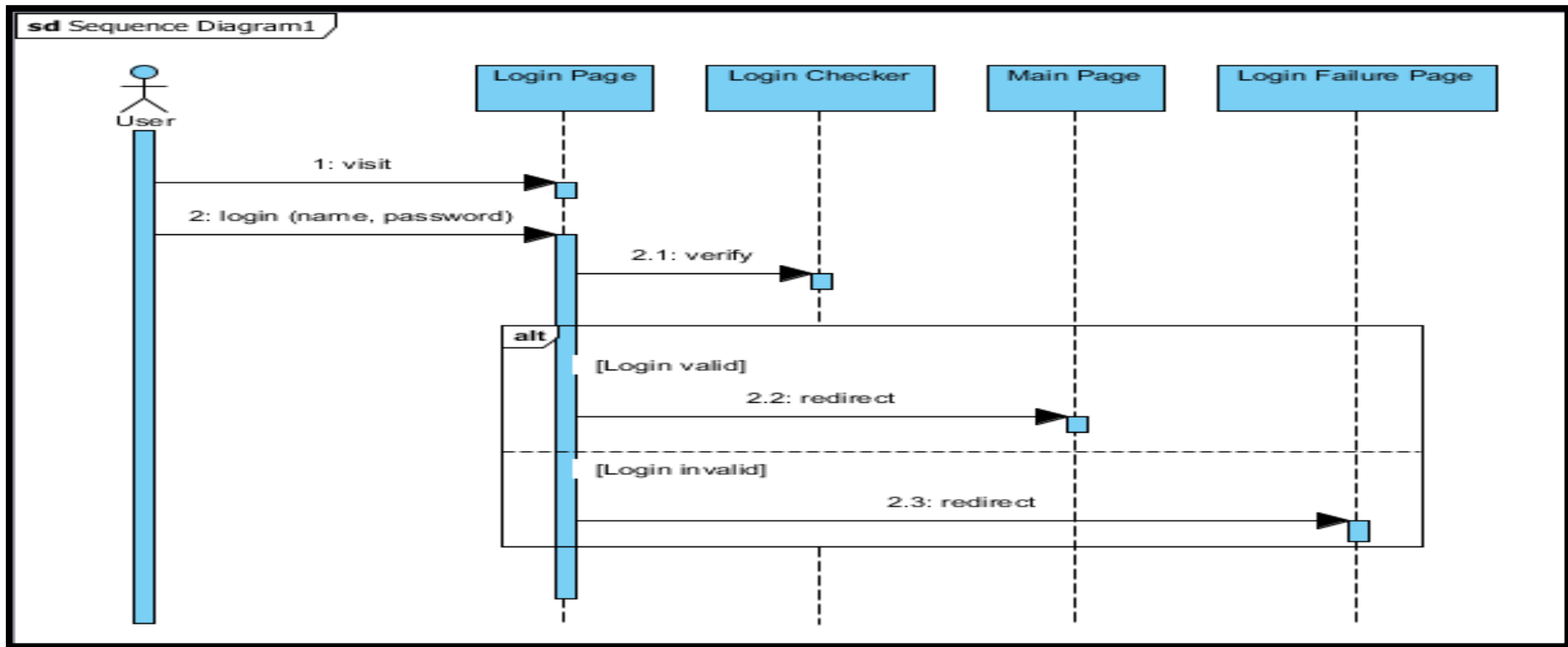
Figure 4.7: **Log In**

Budget Apply Process

The sequence of budget application process is given below
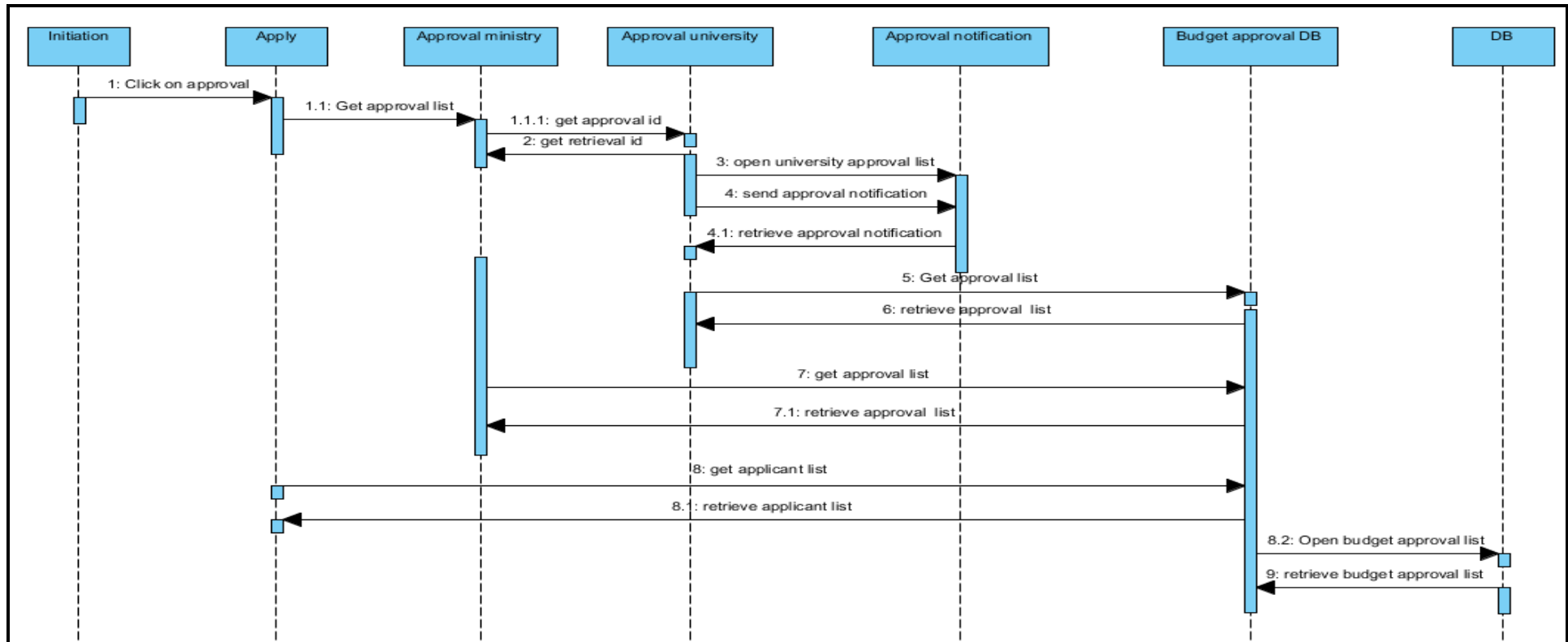
Figure 4.8: **Budget Apply Process**

4.11 System Interface

4.11.1 Home Page

From this page user can see the BCS menu. The menu comprises of three function namely: budget applicant, ministry user and university finance. In this interface applicant can click the budget applicant menu to key in his desired budget application. Ministry user will click on Ministry user to enable his/ her role in the system. At the same time users from Finance Department can also use the system according to their role.

Figure 4.9: **Home Page**

4.11.2 Log In For Registered User/ New User Registration

This is the place where users can log in. A new user also can register and apply budget in this place. A new user need to provide his/ her email id, password, and budget details. For the log in safety the system asks for "confirmation of password". If the user give any wrong input, the input validation function of the system will produce the error message.

Figure 4.10: **Login Page**

4.11.3 Apply For Budget

Before applying budget, users need to register, and user can fill-up the following fields provided in the web form, and users need to click for registration by pressing button. In this place the user need to enter the amount of budget and why he needs the budget, after he key in the log in information. Then the user can register and apply by clicking the menu "Register and Apply".

Figure 4.11: **Apply For Budget Page**

4.11.4 Ministry User

The Ministry user can see the budget applicant name, application date, to the post applied for, status of the budget approval and amount approved. The Ministry user then update the system and the system will display the approved amount or declined to the budget applicant and to the university Finance Department user.

Figure 4.12: **Approval Page For Ministry User**

4.11.5 Ministry User (Applicant View)

Ministry user can view the application status. The status includes applicant name, applicant id, and department, apply for, budget amount, status, budget application date with the approval status.

Figure 4.13: **Ministry User (Applicant View)**

4.11.6 Ministry User (Approve/ Decline)

The ministry user can approve or decline the budget from the system. Figure 4.14 describes the status of approve or declined amount of the budget

Figure 4.14: **Ministry user (Approve/ Decline)**

4.11.7 Finance Department user

The user of the Finance Department form KU will have the right to allocate the full amount of budget or reserve some portion of the budget. Finance Department

user can see the status of the budget application that includes applicant name, applicant id, and department, apply for, budget amount, status, budget application date with the approval status.

Figure 4.15: **Finance Department user**

4.11.8 Finance Department user (Allocate)

The Department of Finance user from KU can allocate the budget either fully or partially. After allocate the Finance Department user can see the status of the

budget application that includes applicant name, applicant id, and department, apply

for, budget amount, status, budget application date with the approval status.

Figure 4.16: **Finance Department user (Allocate)**

4.11.9 Finance Department (Status)

The Finance Department can view the status of the budget approval or

declined one. Finance Department user can see the status of the budget application

that includes applicant name, applicant id, and department, apply for, budget amount,

status, budget application date with the approval status.

Figure 4.17: **Finance Department (Status)**

4.11.10 Finance Department (View Applicant)

The Finance Department can see the entire applicant and can also search the specific applicant by the name. Finance Department user can see the status of the budget application that includes applicant name, applicant id, and department, apply for, budget amount, status, budget application date with the approval status.
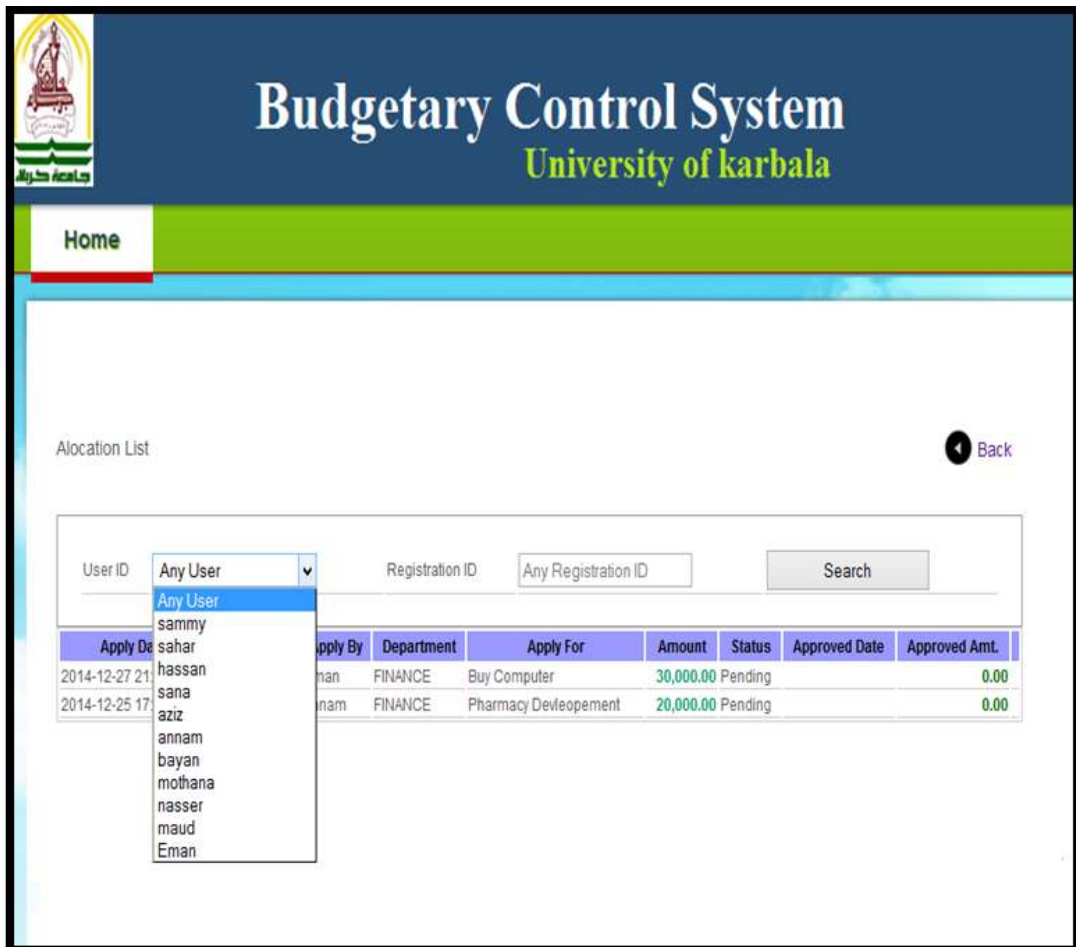
Figure 4.18: **Finance Department (View Applicant)**

4.11.11 Finance Department (Search Applicant)

The Finance Department users can search the specific applicant. Also Finance Department user can see the status of the budget application that includes applicant name, applicant id, and department, apply for, budget amount, status, budget application date with the approval status.
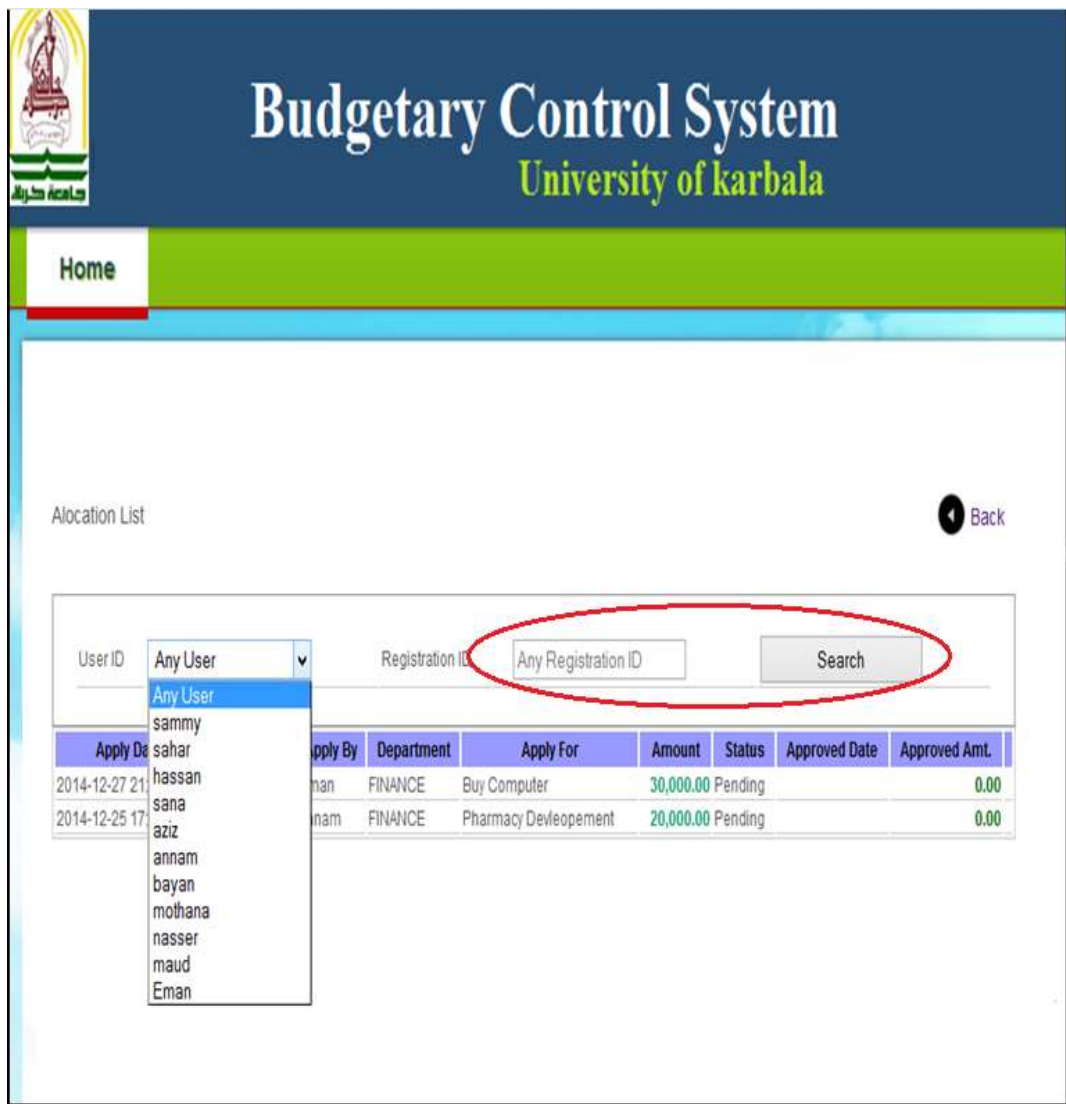
Figure 4.19: **Finance Department (Search Applicant)**

4.11.12 Finance Department (Budget Allocation)

The Finance Department can allocate the budget. Then the system will display the allocated amount.
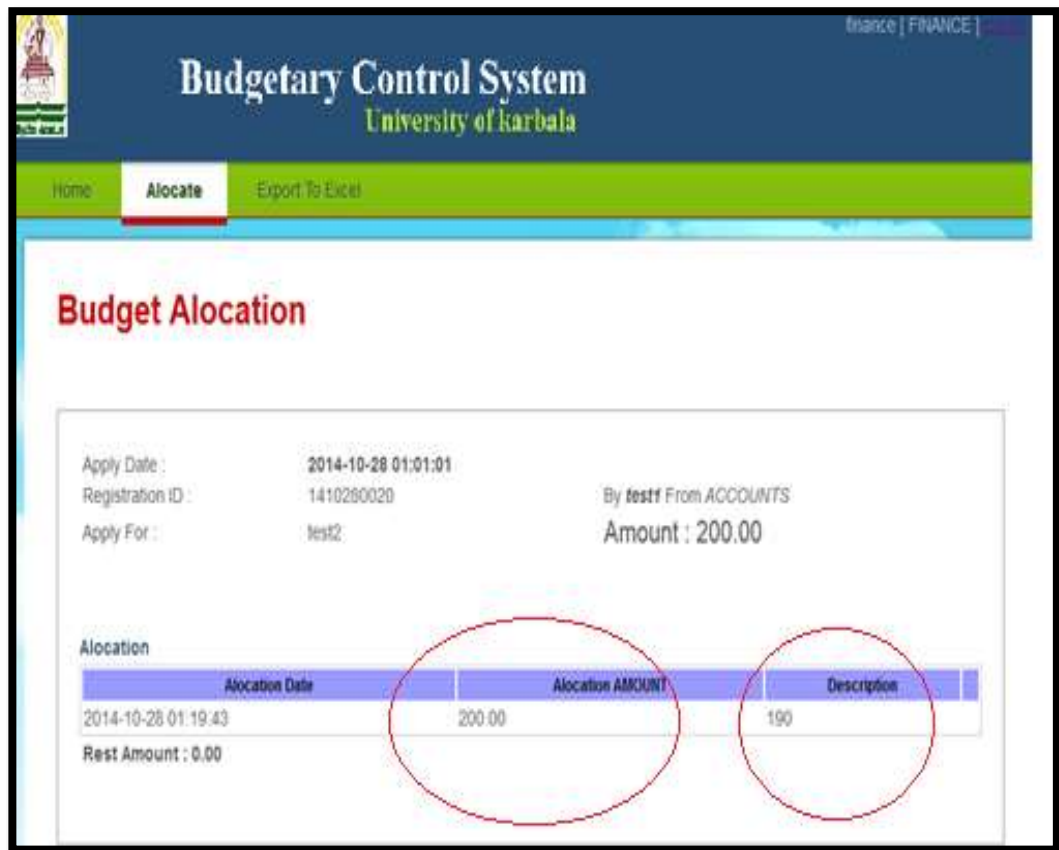
Figure 4.20: **Finance Department (Budget Allocation)**

4.11.13 Finance Department (Budget Applicant Details)

Budget applicant details can be viewed in the system. Finance Department user can see the status of the budget application that includes applicant name, applicant id, and department, apply for, budget amount, status, budget application date with the approval status.

Figure 4.21: **Finance Department (Budget Applicant Details)**

4.11.14 Finance Department (Budget Allocation Asked By Applicant)

The system is able to show the allocation amount of the budget. After allocate the Finance Department user can see the status of the budget application that includes applicant name, applicant id, and department, apply for, budget amount, status, budget application date with the approval status.
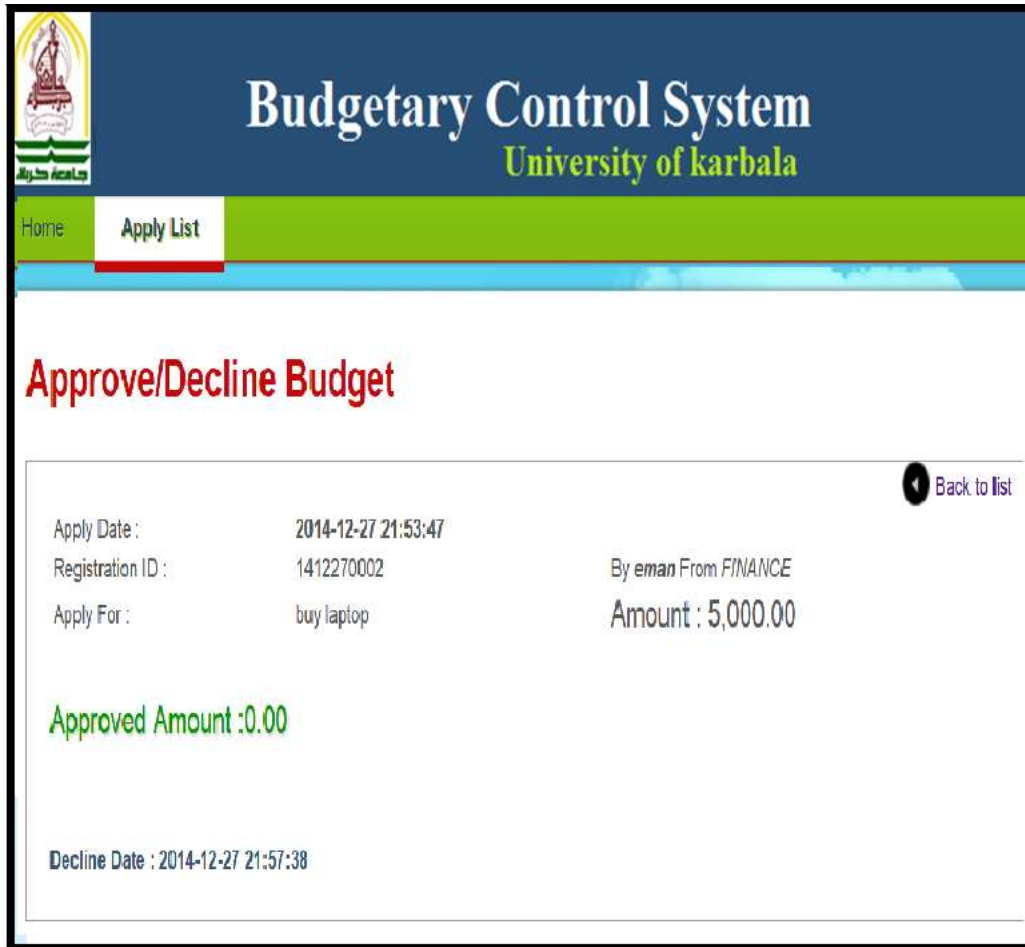
Figure 4.22: **Finance Department (Budget Allocation Approved By Ministry)**

4.11.15 Finance Department (Budget Allocation Approved By University)

Finance Department can view the amount of budget approved by the university. After approve by the university the budget applicant can see the status of his budget application that includes applicant name, applicant id, and department, apply for, budget amount, status, budget application date with the approval status.

Figure 4.23: **Finance Department (Budget Allocation Approved By University)**

CHAPTER FIVE

EVALUATION OF BCS PROTOTYPE

5.1 Introduction

The main aim of this chapter is to discuss the evaluation of the Web based Application for University Finance Program. A usability testing is one of the most fundamentals methods in usability evaluation because real test users are asked to use the product. The moderator of the test gives predetermined test one at a time to the test user who in turn performs the tasks with the user interface (Nielson, 1993). The test users are usually asked to think aloud while they are doing the test tasks. Interviews are also often used in order to gain more insight into the user's actions with the interface.

According to Nielson (2000), the evaluation uses usability testing based on the standard tests followed by an interview in a closed environment with video equipment. Testing with potential users can obtain an efficient feedback as possible in a short time frame and with the available resources. It is also irrelevant to ask people in a focus group to predict whether they would like something they have not tried, so the only way to get valid data is to let users experience the technology before opinions are sought (Nielson, 2000).

5.2 Questionnaires Development

For evaluation purposes, the evaluation questions have been constructed. The questionnaire is divided into 2 sections, namely the demographic background and the questions regarding BCS System. These items have been constructed based on some questions gathered from internet (Taylor & Todd, 1995a). Several questions have been prepared to evaluate the system usability (Taylor & Todd, 1995b). The Likert scale from 1 to 5 was used to measure the respondents' perception about the system. The questionnaire is depicted in Figure. 5.1.

To answer the questions about the system, 5 Likert scales are used such that the scales are represented as the following:

1= Strongly Disagree,   2= Disagree,   3= Not Sure,

4= Agree,   5= Strongly Agree.

SECTION A:

Demographic Background

Kindly tick (√) your answers to the given statements.

GENDER:

- Male
- Female

AGE:

- 18-25 years old   , 26-34 years old   , 35-44 years old
- 44-54 years old   , Above 55 years old.

MARITAL STATUS

- Married   , - Single, Married, Not Applicable

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Please tick the appropriate column. The numbers 1 to 5 represent the following scales:

1= Strongly Disagree.   2= Disagree.   3= Not Sure

4= Agree.   5= Strongly Agree

Table 5.1: *Questionnaire*

	Questions	1 (Strongly Disagree)	2 (Disagree)	3 (Not sure)	4 (Agree)	5 (strongly Agree)
1	The use of the financial system helps to increase the Finance Department's performance?					
2	The use of the financial system provides the users with the appropriate decision?					
3	Using BCS make it easier for me to accomplish the work?					
4	Financial system makes the budgetary control process easy?					
5	I find BCS is easy to use					
6	Learning to use BCS is easy for me					
7	I find it easy to use BCS what I want to do					
8	Finance Department encourages the development of complex and appropriate finance software					
9	Is the system user friendly?					

To test the system, several respondents have been identified. The respondents' details with job description are depicted in Table 5.2.

Table 5.2: *Respondents' profile*

No.	Name	Qualification	Department	Job
1.	Assoc. Prof. Sura Jawad Mohammed	Ph.D. in Management and Economy	Ministry of Finance	Administrator of the General Budget Division
2.	Dr. Heba Hadi Shaheed	Ph.D. Management and Economy	Ministry of Finance	Assist Administrator of the general budget division
3.	Prof Dr. Muslim Adahh Alginamy	Ph.D. in Law	Karbala University	Chancellor of Karbala University
4.	Sana'a Rajeab Kadom	Bachelor in COB	Karbala University	Administrator of Finance Department
5.	Wadah Aziz Jaffar	Bachelor in Computer Science	Karbala University, Finance Department.	Administrator of Financial Planning Division in Finance Department.
6.	Jenan Ali	Bachelor in COB	Karbala University. Pharmacy Faculty	Director of Finance Division
7.	Annam Hassan	Bachelor in COB	Karbala University. Faculty of Applied Medical Science	Director of Finance Division
8.	Mustafa Mohammed	Bachelor in COB	Karbala University. Faculty of Islamic Sciences and Religious Tourism	Director of Finance Division
9.	Nasser Salaam Ali	Bachelor in COB	Karbala University. Faculty of Law	Director of Finance Division
10.	Maud Mohsen Sameer	Bachelor in COB	Karbala University. Faculty of Engineering	Director of Finance Division

5.3 Results of the System Evaluation

Once the questionnaires have been collected and key-in in Microsoft Excel to be used in conjunction with SPSS version 21, the results are exhibited in Figure 5.2. The users' perception about the system is very positive and most of them have shown that they strongly agree about the system.

Figure 5.1 illustrates the users view for the system. Users have regard for most of all features of the system and most of them have shown that they strongly agree about the system.
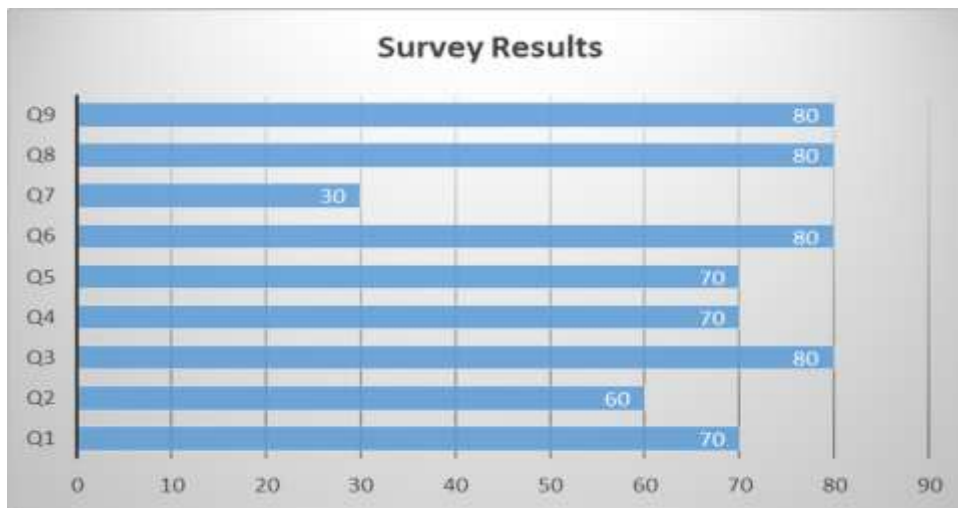
Figure 5.1: **Respondent answer (partial view)**

Out of 9 questions, 8 questions scored at least 60% which indicates respondents provide positive perceptions toward the use of BCS system. About 80% of the respondents from the Finance Department support the system.

Table 5.3 shows that maximum 9 persons (out of 10) have positive opinion about the system.

Table 5.3: *User Perceptions about the System prototype (Strongly Agree to Strongly Disagree)*

Strongly disagree	Disagree	Agree	Strongly agree	Not sure
3	3	8	7	4
8	8	3	4	7
1.155	1.155	.707	2.340	1.500
1.333	1.333	.500	5.476	2.250
2	3	1	2	1
4	5	3	8	4
2.00	3.00	1.00	6.00	1.00
2.00	3.00	2.00	8.00	2.00

Table 5.4 shows that overall satisfaction for the system is 85.7% while the response 'not sure' is 13.3%; thus, the system is proven to be very much essential.

Table 5.4: *User Perceptions (Frequency Distribution)*

Frequency	Percent	Cumulative Percent
1	9.1	14.3
1	9.1	28.6
1	9.1	42.9
3	27.3	85.7
1	9.1	100.0
7	63.6	
4	36.4	
9	100.0	

The user interface of Web Based Application for University Finance Program is very attractive and user friendly. It can be reported that almost all the users who interviewed were really enthusiastic about the system. Thus, the Web Based Application for University Finance Program is highly recommended.

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CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Introduction

The main aim of this chapter is to discuss the conclusion of this study and highlight the limitation and the recommendation.

6.2 Conclusion

Budget plays a greater role in the planning and control process of basically in all organisation. Organisations developed plans on how to go about its future operations. While control measures are used to correct any deviation from the plans. The budgetary process is an integral part of both planning and control. Budgeting is making plans for the future, implementing those plans and monitoring activities to see whether they conform to plans. To do this successfully, it requires maximum commitment by the top management, corporative and motivated middle management and staff, and well organized reporting system. The importance of budget to households, business organisation can never be over emphasized as it plays planning and control role for managers within business units and budgets are a central part of a design and operation of management accounting system.

The objective of this study was to develop a web based budgetary control prototype, which contains a requirement model of apply budget, approve and reserve budget amount Online. After the evaluation of the system, it is concluded that the objectives of the study have been achieved perfectly

In reality, budgeting is the most widely used accounting tool for planning and controlling the activities of organisations. Budgeting system helps managers to forecast. By looking into the future and planning managers are able to anticipate and correct potential problems before they arise.

This study is deeply concerned with the intent of Finance Department of KU Iraq to seize the advantages associated with budgeting process for applying budget process. A self-designed user requirement study has been conducted in KU Iraq to gather the requirement to develop the system based on the adaptive budgetary control framework that mitigates the current needs of budgetary control for applying, approve and allocate the budget. The evaluation of the proposed budgetary control system prototype indicated that the appropriate system of budgeting and budgetary control has been adapted. The evaluation also indicated that the system provides guidelines for the applicants to apply budget, ministry to approve budget, Finance Department to allocate the budget. Thus, the objective of this study was to develop a web based budgetary control, which contains a requirement model of apply budget, approve and reserve budget amount Online. After evaluation of the system it can be conclude that the objective of the system has been done satisfactorily. The system has unique features in applying for budget, approve and reserve budget amount Online. As it is running from the server, the system can be accessed at anytime and anywhere.

This study is limited to budgetary control system only and does not include the financial system as a whole system.

6.3 Recommendation

The prototype has been run on the server. For the future application, this study recommends that the prototype is made available to run in Apps based environment such as Windows, Android, iPhone app even though it can run smoothly from all smart phones, tabs and computer.

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