

**Budgeting and ERP Control Systems in Third Level
Educational Institutions: Some Evidence from the Republic of
Ireland and the United Kingdom.**

By

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I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of MSc in the Management and Application of Information Technology in Accounting is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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ABSTRACT

The role of this research was to investigate 'budgeting and ERP control systems in third level educational institutions'.

"A budget is not simply one facet of a plan, nor is it merely an expression of organisational policy: it is also a control mechanism" (Meredith and Mantel, 1995).

Following an extensive literature review on budgeting within Corporations and Third Level Educational Institutions a mail survey questionnaire on the subject of budgeting and ERP control systems was sent to a selection of universities and third level institutions in the Republic of Ireland and the United Kingdom.

The comparisons between budgeting within corporations and the third level educational sector are examined as well as the changing attitudes towards the 'traditional' budgeting methodologies. The emerging role ERP and information technology is having on budgeting processes is also investigated.

Responses from the mail questionnaire were analysed to determine the budgeting and control methods adapted within third level educational institutions in the Republic of Ireland and the United Kingdom and to investigate the role of ERP and information technology on budgeting within the sector. The results of the survey highlight the emerging attitudes and changing role information technology and ERP is having on third level institutions.

The research concludes that while some third level institutions have adapted ERP systems, many are still in the process of change. Despite the demand from heads of departments for 'on-line' access to 'real-time', 'accurate' budgetary information many third level institutions are still reporting 'historical financial information' to budget holders.

Further research is required in relation to third level institutions who are reporting 'on-line' budgetary information to budget holders in order to establish the extent of improvements in budgetary control as a result of implementing ERP.

CHAPTER 1: INTRODUCTION

1.1 Introduction

This research investigates the role of budgeting and ERP control systems within universities and third level educational institutions generally. The research examines the benefits and advantages of budgeting, planning and control systems within the changing culture of ‘accountability’ in third level institutions. The financial constraints universities and other institutions are facing, focus a level of attention on the administration and financial control functions not experienced previously in the long history of third level education.

The research also examines the ‘changing culture’, and the role adapted by academic heads of departments and individual budget holders within their institutions. The monitoring of departmental budgets by heads of departments and budget holders is also examined. The evolving changes in technology and the emergence of enterprise resource planning (ERP) systems are also investigated, together with the contribution and role these systems make to the overall financial management and control of the institution. In order to bring it into context, this research also investigates budgeting and control systems within commercial organisations, and examines the comparisons and similarities with the systems within third level educational institutions. The budgeting strategies and methodologies adapted within large corporations are also examined together with the changing attitudes currently emerging towards the ‘traditional’ budgeting process.

1.2 Higher Education

At the end of the 20th century, after years of rapid expansion, institutions of higher education worldwide are facing major financial constraints and important decisions about their futures. The number of students in higher education has more than doubled in the last 20 years. There are increases as high as eightfold in sub-Saharan Africa, despite considerable cuts to investment in social programmes, including education (Borrero Cabal, 1996).

Higher education is facing many difficulties in the modern society. Some even believe that these difficulties constitute a crisis (Scott 1984, Reeves 1988). “Ever since its medieval origins, higher education has had the function of supplying cadres for the professions. This function has taken on new dimensions in the wake of the exponential growth of higher education across the western world” (Barnett, 1997).

This rapid growth in student numbers coupled with major financial constraints leaves third level institutions facing major important decisions about their future. Many institutions are reviewing their overall strategic position and considering new challenges and initiatives in order to survive and compete in a globalised economic environment.

An example of such initiatives is included in a recent OECD Observer report ‘The learning business’ on trade in international education (Larsen & Vincent-Lanerin, 2003). The report had some interesting comments in relation to studying abroad. Education is fast becoming a worldwide service industry. International student mobility to OECD countries has doubled over the past 20 years.

Foreign students represent an important source of export revenue in some OECD countries. In 1999 export revenue in education services amounted to an estimated \$30bn. The commercial challenge is how to attract a large number of international students or corner a large share of the market. In some instances educational institutions are operating abroad by setting up distance education centres ‘offshore’ and using e-learning initiatives to attract students. In Australia for example ‘offshore’ enrolments increased to 37% between 1996 and 2001.

The extent to which higher education is subsidised varies across countries. It is largely publicly funded in the OECD area. Home students pay over 30% of the real cost of tertiary education in only three of the 22 OECD countries, for which data is available. The challenges therefore facing third level educational institutions include the ability to survive financial funding constraints at national government level, while at the same time seeking expansion through attracting international students.

The similarity with the commercial conglomerate of expanding ‘offshore’ may have consequences for legal, political and fiscal quality controls, as national governments may abandon their social responsibilities. The real issue for many institutions however, is the necessity to maintain quality, standards and the national culture of the institution during this globalised trade in international education. This ‘liberalisation’ of trade in international education whereby initiatives are being taken and institutions are joining together in partnerships to meet demands more effectively, is somewhat comparable to Newman’s vision of universities seeking ‘Liberal’ and ‘Philosophical Knowledge’ (Newman, 1893).

“Knowledge then is the indispensable condition of expression of mind, and the instrument of attaining to it, this cannot be denied, it is ever to be insisted on” (Newman, 1893). Newman’s vision for universities and their *raison d’être* of seeking ‘Liberal’ and ‘Philosophical Knowledge’ did not envisage ‘financial constraints’ or ‘accountability’. Financial constraints were not anticipated when Newman (1893), encouraged universities “to enlarge the range of studies and create a pure and clear atmosphere of thought”.

Regrettably, the corporate culture of modern society has propelled educational institutions into restraint, where they must evaluate programmes and courses on the basis of ‘added value’, ‘unit cost’ and ‘financial gain’, rather than the pursuit ‘*de omni scibili*’ ‘of everything knowledgeable’.

1.3 Budgeting Planning and Control

In the modern age of the globalised economy and production culture, every organisation must evaluate and plan their strategies in order to survive. The third level educational sector must also adhere to this strategy in order to ensure it progresses in an organised and coherent way. Budgeting has long been part of organisation’s practices and procedures and traditionally regarded as the foundation of business planning.

1.3.1 Budget Control

Budgeting is therefore essential and more so today, due to central government funding cut backs and increasing costs. Budgeting is a management tool used for controlling and monitoring the financial progress of an institution. Today when financial performance is undergoing microscopic scrutiny, careful attention to the **budget** is becoming more of a necessity than ever (Cohn, 2002). In third level institutions separate budgets are usually prepared for recurrent and capital expenditure. Many institutions have procedure manuals and procurement guidelines as essential features of good budgetary control. It is imperative that clear rules exist for ordering materials and services, and also purchasing practices need to be reviewed periodically.

1.3.2 Monitoring and Tracking Budgets

Generally, budgeting is done annually and monitored and tracked on a monthly basis. Variance analyses are prepared and explanations are given for divergence from the plan. Most organisations are still using spreadsheets to prepare and monitor the budgeting process. For many large institutions this process is becoming cumbersome and difficult to maintain. The process is taking an excessive amount of time and is often out of date before the completion of the task. Many third level institutions are currently using spreadsheets as this research has found, and is discussed in chapter six. Some organisations are beginning to invest in specialised budgeting software to prepare and monitor their budgets. Such specialised software includes for example, Cognos, Comshare, Hyperion and Adaytum.

1.4 Enterprise Resource Planning (ERP)

Enterprise and Resource Planning (ERP), a term coined by Gartner Research Group in 1992 (Johnson, 1999), evolved and developed from Material Requisition Planning systems in the manufacturing sector. Bringing these two divergent planning tools together is perhaps the realisation of the predictions of Porter (1985), and Earl (1990), that

information technology would change the way organisations and institutions would perform and conduct business practices and procedures.

Davenport (1998) described ERP as “comprising of a software package that promises the seamless integration of all the information flowing through the organisation - financial, accounting, human resources, supply chain and customer information”. ERP was further defined in 1999 as ‘a business management system that integrates all facets of business, including planning, manufacturing, revenue, and finance, so that they can become more coordinated by sharing information with each other’ (Laudon & Laudon, 1999).

ERP systems can include software for order entry, manufacturing, accounts payable, accounts receivable, general ledger, procurement, warehousing, transportation and human resources. ERP systems may interface with varying degrees of effort with an organisation’s own software. For many third level institutions however, ERP systems will not include a module for the student records or human resources management systems.

The use of the Internet to plan, prepare, document and deliver budgeting strategies and procedures to budget holders and end users within institutions has emerged from this explosion of technology. When we refer to the Internet in this context we include the internal Intranets that organisations have built on their own networks. An Intranet is an internal organisational and institutional network that is modelled on the World Wide Web technology. While the World Wide Web is open and not regulated, internal Intranets are self-contained within organisational structures, with firewalls and password procedures attached for security protection.

1.5 Impact of ERP on Planning and Control

ERP systems are having a significant impact on the way organisations are planning, controlling and monitoring their business. The system is increasingly the choice for large and complex organisations. Many organisations are finding that ERP systems are excellent for capturing and reporting complex data and transactions. When such

information is interfaced with web-enabled technology, financial reporting is integrated to provide on-line, real-time financial reporting to budget holders. This is a significant development in providing budget holders with accurate and up-to-date information.

An ERP 'White Paper' (2002) gave five major advantages of ERP:

1. On-line, real-time information throughout the functional areas of an organisation.
2. Data standardisation and accuracy across the enterprise.
3. 'Best practices' included in the applications.
4. The efficiencies they force organisations to undertake.
5. The analyses and reporting that can be used for long term planning.

However, many organisations are finding also that ERP systems are not robust or flexible enough to deliver the special budgeting, consolidation, or other financial features that management expect (Laudon & Laudon, 1999). When Erickson and Fujitsu invested in ERP systems they found that they were satisfied with the capturing and reporting of data and information, but that ERP was inadequate when it came to planning and budgeting.

Erickson for example purchased Hyperion Planning, a specialised budgeting package which allows departmental managers internet access to input numbers into the budgeting process. This process saved valuable time and effort previously undertaken on spreadsheets. The integration of two such systems may be a difficult task, but in many instances is resolved by using commercial middleware software to interface the systems.

1.6 Research Objectives

The principal aim of this dissertation is to examine and investigate ' budgeting and ERP control systems in third level educational institutions'. In order to achieve this objective some evidence was sought from third level institutions in the Republic of Ireland and the

United Kingdom. To enable this aim to be achieved the research is broken down over three main headings:

- ◆ Budgeting Concepts and ERP Control Systems Generally.
- ◆ Budgeting and Control within the Third Level Educational Sector.
- ◆ Reporting to Budget Holders in the Third Level Educational Sector.

1.7 Research Approach

An extensive literature review and mail survey was chosen as the most suitable form of research to obtain the main objectives. The literature review included an analysis of traditional budgeting techniques, together with comprehensive reviews of current thinking on budgeting and related information technologies. The mail survey allows for analysis of the third level educational sector and should provide sufficient information to form generalised conclusions.

1.8 Research Plan.

The research plan includes the following steps:

- ◆ Conducting a literature review on Budgeting, Planning and Control Systems.
- ◆ Conducting a literature review on Enterprise Resource Planning (ERP).
- ◆ Conducting a literature review on ERP and budgeting within the third level educational sector.
- ◆ Present a case study of a successful ERP (Financials) implementation in NUI Maynooth.
- ◆ Designing a mail questionnaire.
- ◆ Pilot running the questionnaire.
- ◆ Distributing the final questionnaire.
- ◆ Analyse responses to questionnaire.
- ◆ Present results of questionnaire.

- ◆ Draw conclusions based on literature review and results of the survey.

The following chapters present literature reviews, a case study, research strategy, survey results and conclusions, and recommendations.

Chapter Two presents the literature review of budgeting, planning and control systems. The chapter includes an extensive review of budgeting in general, and compares the distinctions between profit and non-profit organisations such as universities and third level institutions. Finally the chapter examines ERP implementation strategies.

Chapter Three presents a case study of a successful ERP (Financials) implementation in the National University of Ireland, Maynooth. The chapter describes the process of selecting the supplier, setting up the project management team and the implementation process itself.

Chapter Four presents the research strategy and framework undertaken in order to carry out the mail survey. The chapter includes the research method, design and questionnaire layout.

Chapter Five presents the results of the mail survey. The chapter includes % comparisons of results in the Republic of Ireland and the United Kingdom. The results are also displayed in 'chart format' as an aid to interpreting the findings.

Chapter Six presents the conclusions and recommendations. A detailed analysis is undertaken of the conclusions drawn from the survey and comparisons with other sectors are examined. Finally the chapter addresses the issue of further research needed to investigate the responses of budget holders to the new ERP web enabled on-line reporting formats.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter examines the history and evolution of budgeting, planning and control. It provides an extensive literature review and analysis of current thinking surrounding this important topic. The role technology and ERP systems provide in supporting budgeting techniques within corporations is discussed. Finally, budgeting within third level educational institutions is reviewed, together with ERP implementation strategies.

The origins of the annual budget can be traced back to the attempts by parliament to exercise control over the activities of the central government (Jones & Pendlebury, 1996). Budgeting currently however has developed into an indispensable management aid for directing, co-ordinating and controlling the activities of organisations and institutions.

The importance of budgeting cannot be overemphasised in relation to overall financial control and planning within an institution. Planning is the design of a desired future and of effective ways of bringing it about (Ackoff, 1981). A distinction is normally made between short-term planning (budgeting) and long-range planning (strategic). Short term planning or budgeting, must accept the environment of today, and the physical, human and financial resources currently available to the institution.

Sizer (1989) defines long-range planning as “a systematic and formalised process for purposely directing and controlling future operations towards desired objectives for periods extending beyond one year”. Questions such as “what is the budget for the project?” and “are we meeting our budget?” are asked regularly at non-profit organisations and institutions. A budget can be useful in setting standards of performance, providing a tool to measure results and in motivating governing bodies and staff members.

2.2 Third Level Educational Sector

The university like the parliament is a creation of the Middle Ages. The modern university looks back to more than seven hundred years of continuous history. They were “treated by Church and State as treasures, sources of pride, objects of general beneficence” (Wieruszowski, 1966).

Serious historians are unable to produce valid evidence for dates of origin except to state, “they grew as a natural expression of the spiritual, intellectual and social energies” of the age. Paris, Bologna and later Oxford were granted the honour of *Stadium Generale*, the universal recognition of the degree or teaching license, which they conferred. The origins of the university as a non-profit institution dates back to the Third Lateran Council (1179), which issued rules that, were aimed primarily at eliminating the profit motive in education (Wieruszowski, 1966). Universities are complex organisations with differing cultures, which have developed in some instances over centuries (Berry, 1994).

Our 21st century economies and societies are “increasingly ‘knowledge-based’, some would say even ‘knowledge-driven’, shifting away from older ‘industrial’ models. The current mandate for Education and Skills is ‘making lifelong learning a reality for all’, through monitoring and evaluating strategies, strengthening foundations, facilitating transitions, mobilising resources and using them effectively, improving the sharing of roles and responsibilities” (OECD, 2002).

2.2.1 Evolution of Third Level Education in the ROI and the UK

In the United Kingdom, Oxford and Cambridge monopolised higher education for nearly seven hundred years, until 1828 when University College, Gower Street in London was established. In 1829 Kings College was founded (Barnett, 1997). Oxford is the oldest English-speaking University in the world. There is no clear date of foundation, but teaching existed at Oxford in some form in 1096. It expanded rapidly in 1167 when King Henry II banned English students from attending the University of Paris.

In Ireland, The University of Dublin, Trinity College was established in 1592. Under the Queen's Colleges (Ireland) Act 1845, the present National University of Ireland, Cork (UCC), and National University of Ireland, Galway (UCG), were founded. Newman set out his ideas in a series of 'Discourses on the Scope and Nature of University Education', which began in Dublin in 1851, when The Catholic University of Ireland was founded. (Now, National University of Ireland, Dublin (UCD)).

Maynooth has particularly been associated with education from an early stage, when Strongbow as King of Leinster granted Maurice Fitzgerald a manor there in 1176, and the establishment of the College of St. Mary's in 1518. The National University of Ireland, Maynooth is Ireland's second oldest university institution and traces its origins directly to the foundation in 1795, of St. Patrick's College, Maynooth. The Pontifical University at Maynooth was founded in 1896. The two remaining universities, the University of Limerick (UL), and Dublin City University (DCU), were established in more recent times.

Newman's Vision for Education.

Newman was born in London in 1801. He was elected Fellow in Oxford in 1822. In 1852 he became Rector-elect of the new Catholic University in Ireland (Now, National University of Ireland, Dublin (UCD)) (Svaglic, 1960).

"I am asked what is the end of University Education, and of the Liberal or Philosophical Knowledge which I conceive it to impart: I answer, that what I have already said has been sufficient to show that it has a very tangible, real and sufficient end, though the end cannot be divided from that knowledge itself" (Newman, 1893).

Newman's vision of university education is interesting when compared to a recent OECD report which argues that "a historic shift is occurring in the second half of the 20th century: tertiary education is replacing secondary education as the focal point of access,

selection, and entry to rewarding careers for the majority of young people” (OECD, 1999a: 20) (Clancy, 2001).

The substantial rise in third level student enrolments worldwide is significant since the 1950s. See Table 2.0.

Percentage Increase in Higher Education Enrolments Each Decade

	1950-60	1960-70	1970-80	1980-90	1990-97
	%	%	%	%	%
Belgium	68	140	57	27	56
Denmark	57	169	40	35	47
France	54	195	34	44	43
Germany	98	90	143	47	34
Greece	57	192	41	61	124
Ireland	56	129	92	64	84
Italy	18	258	63	29	54
Netherlands	72	118	56	32	10
Portugal	58	107	84	106	240
Spain	38	157	210	75	63
UK	68	256	38	52	86

Source: College Entry in Focus: Patrick Clancy 2001

Table 2.0

Newman’s vision of university education as having “a very tangible and sufficient end” may not have envisaged such exponential growth and cadres for the professions in the relatively short time of one hundred years. Newman’s assertion that “the end cannot be divided from that knowledge itself” is evident in the (OECD, 1999) report indicating

‘tertiary education’ as contributing to ‘rewarding careers for the majority of young people’.

Increased Intake

It is interesting to note that both Spain and Portugal have increased in the ‘ranking table’, while both the Republic of Ireland and the United Kingdom have kept their ‘ranking’ at the same level. Spain in particular has had significant increases in enrolments since the 1950s. It is also interesting to note that Belgium who were similar to the United Kingdom in the ‘1950s % table’ have had the least increase in enrolments since then. The 1960s in particular was an era of exponential growth in students entering third level education throughout Europe and the rest of the world.

2.2.2 Dimensions of Third Level Education in the ROI and the UK

The recent white paper (2003), in the UK on ‘The Future of Higher Education’ has set a target for increasing participation in higher education from 6% in the 1960s towards 50% of 18-30 year olds by 2010. Table 2.1. shows the number of third level institutions and student numbers in the UK and Northern Ireland in 2001/02.

United Kingdom and Northern Ireland

Third Level Institutions and Student Numbers in the UK and Northern Ireland 2001/02

	No. Of Institutions	Student Numbers
England	132	1,831,795
Wales	13	120,755
Scotland	20	197,215
Northern Ireland	4	48,845
Totals	169	2,198,610

Source: Higher Education Statistics Agency

Table 2.1

Statistics published by the Higher Education Statistics Authority (HESA), in the UK for 2000/01, indicate an overall international student increase of 5.5% on the previous year. The actual number of overseas students in 2000/01 was 230,870. The largest number coming from Greece, China and Germany. The increase in the number of students coming from China increased by 98.6% to 12,095 in 2000/01. The Universities College and Admission Service (UCAS) in the UK, have indicated the number of overseas applicants who applied by 15th January 2003 for third level education courses was up by 1.8% from 335,312 in the previous year to 341,419.

Funding per student fell 36% between 1989 and 1997. In order to reverse this trend the recent white paper in the UK states that funding for higher education will increase by more than 6% ‘over and above inflation’ for the next three years.

Table 2.2 shows the funding in third level education in the UK for 1999/2000, and 2000/2001.

Third Level Funding in the United Kingdom.

	1999/2000	2000/2001	1999/2000	2000/2001
	£'000	£'000	%	%
Funding Council Grants	5,140,328	5,355,777	40.4%	39.7%
Tuition Fees & Grants	2,858,908	3,048,579	22.5%	22.6%
Research Grants/Contracts	1,969,912	2,207,228	15.5%	16.3%
Other Income	2,450,193	2,589,948	19.3%	19.2%
Endowment & Investment	292,399	292,387	2.3%	2.2%
Total Income	12,711,740	13,493,919		

Source: Higher Education Statistics Agency

Table 2.2

The recent white paper in the UK seems to make the assertions that the link between teaching and research is indirect, and therefore the allocation of research funding may be graded and separated from teaching funding.

Republic of Ireland

The total number of awards for degrees, diplomas and certificates in the Republic of Ireland, amounted to 40,582 students in 2001, increasing from 37,499 in 2000. (HEA, 2003).

Table 2.3 shows the number of third level institutions and student numbers in the Republic of Ireland for 2000/2001.

Third Level Institutions and Student Numbers in the Republic of Ireland 2000/2001.

	No of Institutions	Student Numbers
H.E.A. Institutions	10	69,254
Institutes of Technology	16	48,360
Other	3	1,417
Teacher Training	5	960
Total	34	119,991

Source: Department of Education and Science

Table 2.3

It is estimated that there are over 10,000 overseas students currently in the higher education sector in the Republic of Ireland. In the publicly funded institutions this represents approximately 7% of the total student population, and contributes €137(m) to the economy (HEA, 2003). Table 2.4 shows the analysis of funding third level institutions in 1999/00 and 2000/01.

Third Level Funding in the Republic of Ireland

	1999/2000	2000/2001
	€'000	€'000
Salaries	558,800	629,900
Grants and Services	243,300	292,900
Student Support	142,100	166,000
Capital Expenditure	188,000	173,600
Departmental Pay etc	3,900	4,800
Totals	1,136,100	1,267,200

Source: Department of Education and Science

Table 2.4

2.2.3 Governance Framework in Third Level Educational Institutions

A succession of corporate scandals globally and indeed both in Ireland and the UK has accelerated the introduction of governance framework in the third level educational sector. The result of such corporate scandals is a greater public awareness of poor governance. Muller (1981) defined governance as “concerned with the intrinsic nature, purpose, integrity and identity of an institution with a primary focus on the entity’s relevance, continuity and fiduciary aspects. Governance involves monitoring and overseeing strategic direction, socio-economic and cultural context, externalities and constituencies of the institution.” Transparency and accountability are essential elements in any governance framework. Governing authorities must ensure the solvency and assets of the institution are safeguarded.

The ‘Financial Governance of Irish Universities - Balancing Autonomy and Accountability’, published by the Higher Education Authority (HEA) and the Conference

of Heads of Irish Universities (CHIU) in 2001, agreed jointly to commission a study which would:

- 1 Identify and recommend a set of principles to which the operation of the internal audit function and structures and other financial controls and procedures in the university should adhere.
- 2 Recommend arrangements for regular external verification that the controls and procedures in place in individual universities are consistent with these principles are operating satisfactorily and advise on the frequency of such verification.

Internal Control and Governance

Effective internal controls are essential in monitoring and controlling budgets with regard to reducing the risk of errors and irregularities in information technology systems. In the university sector in the Republic of Ireland, the Head of the Institution is effectively the ‘Accounting Officer’ responsible for all aspects of financial management and control. Internal control may be defined as ‘the whole system of controls both financial and otherwise, established by management, in order to safeguard the assets of the organisation, and secure as far as possible the accuracy and reliability of its records.’

Vital components of internal control are ‘internal check’ and ‘segregation of duties’.

No one individual should be in a position to complete a vital programming or upgrading task without the knowledge or assistance of another staff member. It is also vital that individual staff members do not perform or complete vital and sensitive tasks from beginning to completion on a continuous basis.

Accountability and Public Awareness

“Why should we place our knowledge infrastructure in institutions which are separated from their surroundings by financial, organisational and cultural walls?” (National

Advisory Council for Education, ARO, 1994). It appears that the 'cultural state', the *raison d'être*, and the pursuit '*de omni scibili*' 'of everything knowledgeable' within universities is displaced and dictated by market forces and financial accountability.

The university sector is subject to various legislative and governance guidelines, in order to provide adequate accountability to government, interested third parties, and the general public. A number of committees have reported in recent years, on governance and best practice including for example, the Cadbury Report in 1991, the Greenbury Report in 1995, the Hampel Report in 1998, and the Turnbull Report in 1999. The Turnbull report focused on five key areas:

- ◆ The importance of internal controls and risk management.
- ◆ The maintenance of a sound system of internal control.
- ◆ Reviewing the effectiveness of internal control.
- ◆ The board's statement on internal control, and
- ◆ The role of internal audit.

The members of the governing bodies are also required to observe the principles of public accountability drawn up by the Nolan Committee in 1995 as follows:

- ◆ Ensuring the solvency of the institution and safeguarding its assets.
- ◆ Approving the financial integrity.
- ◆ Approving annual operating plans and budgets, which should reflect the institution's strategic plan.
- ◆ Ensuring that funds provided by the Funding Council are used in accordance with the terms and conditions specified.
- ◆ Ensuring the existence and integrity of financial control systems.
- ◆ Receiving and approving annual accounts - financial statements.

The Universities Act, 1997

In the Republic of Ireland, the ‘Universities Act 1997’ did not provide any new major conceptual framework for the governance of Irish universities. However a number of specific issues were addressed which included for example section 14.1(b) which states that “ a university in performing its functions shall be entitled to regulate its affairs in accordance with this independent ethos and traditions of academic freedom and in so doing, shall have regard to:

- i. The promotion and preservation of equality of opportunity in access.
- ii. The effective and efficient use of resources, and
- iii. Its obligation as to public accountability.”

The act sets out accountability, which in fact is much wider, than financial accountability. It includes for example, strategic development, quality assurance and equality policy. The act also gives guidance of ‘best practice’ and recommends for example that a person competent in financial matters, who need not be a member of the governing authority, chair the audit committee. In this regard for example it would be a significant departure from the ‘best practice model’ if the ‘chief executive officer’ was to hold the chair or be a member of the university’s audit committee.

The Universities Act 1997 also addresses the issue of budget deficits. Section 37(7) states “where ...a university incurs expenditure in excess of its budget which is not met from the income of the university other than the money allocated to it by An tUdaras, that excess shall be a first charge on the budget for the next succeeding financial year.”

Comptroller and Auditor General (Amendment) Act, 1993

Most Irish universities have external auditors who perform auditing and accounting duties, and report to their governing bodies. The Comptroller and Auditor General

however, is the statutory auditor of the universities within the Republic of Ireland, whose responsibility is to report to the Minister, and the House of the Oireachtas.

Section 11(3) (a) of the above act states “ the Minister of the Government to whom a copy of a report of the Comptroller and Auditor General and a copy of the accounts to which the report relates are submitted under subsection (1) shall, as soon as may be, cause a copy of the report and a copy of the accounts so submitted to be laid before each House of the Oireachtas”. The ‘chief executive officer’ of the university is the ‘accounting officer’ for purposes of the act and may from time to time be called upon to attend the ‘Public Accounts Committee’ of the Oireachtas.

Other acts, which directly affect the University sector in Ireland, include for example the Prompt Payment of Accounts Act, 1997, and the Freedom of Information Act, 1997. Under the Freedom of Information Act, for example, universities were recently requested to supply information in relation to expenses incurred under such budgetary headings as travel, public transport and couriers.

2.2.4 Implications for Planning and Control Systems in Third Level Education

The elaborate and labyrinthine methods of campus decision-making processes make planning within universities more intricate and complex. Shattock (1997) states that “many universities ...cannot balance opportunities with long term planning, and cannot take decisions quickly but only after a convoluted and circumlocutory process has been gone through”. However, many authors argue that organisations and institutions must plan and review their budgetary and control mechanism in order to ensure their corporate governance and responsibilities are adhered to and complied with. The rapid expansion and growth experienced in third level education makes this more critical and imperative.

The method used to ensure that such planning and financial control is implemented may vary within institutions. A number of proposals have been forthcoming to help universities and institutions adapt to a more forward-looking culture including for

example the implementation of “more technically advanced record systems” (Davis, 1996). Institutions therefore must be prepared to adapt new accounting and control systems, in order to keep pace with the impetus and changes in information technology.

Perkins (1996) assertion that the “university has become one of the great institutions of the modern world” also suggests the “necessity for state, regional and national planning in the university’s growing involvement with society”. It is evident therefore that the third level educational sector is coming under increasing scrutiny and external examination and must therefore establish sound systems of internal control in order to monitor the effectiveness of their business processes. The pressures and reporting requirements are a potent force for change in institutional governance and decision-making, summarised as the need for universities to become more entrepreneurial in style and operation (Shattock, 1996, Clark, 1998).

“Higher education institutions are not commercial enterprises in the business of generating financial returns for shareholders. Their focus and priority is delivering high quality teaching and research” (Sizer, 1995). However, it is argued that increasingly in today’s global economy, universities and higher educational institutions are being required to operate like businesses. There is abundant evidence within current literature that universities must manage their long-term financial viability and attract non-government funding and external finance in order to maintain their infrastructure and asset base.

Universities are increasingly finding it necessary to finance capital investment by borrowing or other ways such as ‘Private Finance Initiatives’, and fundraising activities. In many instances they need to compete with each other within the market place in attempting to attract corporate and external financial aid.

“Due to government cut-backs in education, raising funds from the private sector is going to become a fact of life for all universities. The only way forward is to develop corporate

relations with graduates, and identifying companies, which can have a symbiotic relationship with the university.” (Independent, March 2003).

2.3 Planning, Control and Budgetary Strategy within Corporations

“Planning can be defined as making decisions now with the objective of influencing the future” (Hamilton, 1997). Recent research has indicated that an exceptional planning effort can yield much higher cost savings over reasonable planning. Poor planning efforts can cause budget overruns.

According to Glautier and Underdown (1994) “planning and budgeting alone does not necessarily ensure the realisation of plans. It is also necessary to have control”. Budgetary control is structured towards the long-range plan. Rapidly changing costs and cutbacks distort all the assumptions that may have shaped the budget at the commencement of the budget period.

In the Conference Board (2002) survey, when asked what factors are causing their planning processes to lack validity, CFO’s cited the following six main problem areas. (See Table 2.5).

Factors in Planning Process

1) Lack of a well-defined strategy	57%
2) Lack of a link between strategy and operational plan	53%
3) Lack of individual accountability for results	45%
4) Lack of meaningful performance measures	34%
5) Lack of pay for performance	21%
6) Lack of appropriate data	21%

Source: The Conference Board (2002)

Table 2.5

“Strategic decisions tend to be unstructured and dependent, operational decisions tend to be structured and independent” (Cooke and Slack, 1991). It is imperative that the organisation has an externally focused business modelling strategy. Looking at internally generated issues exclusively will result in a lack of understanding and awareness of externally generated factors and market influences.

It is interesting to compare the comments of Cooke and Slack (1991), with the Conference Board (2002) survey. That survey indicated that the lack of a link between strategy and operational planning was a significant problem area for CFOs. The comments of Cook and Slack (1991) appear to concur with these findings. By linking long-term strategy with current operational planning, companies are more likely to be successful.

Strategic planning focuses on what *must* be achieved rather than what *can* be achieved in the overall context of the business modelling strategy. The tactical planning process ensures that the overall business strategic plan is communicated across the business units within the organisation. The financial translations of the tactical plans are incorporated under the operational planning section to ensure seamless integrated business objectives are achieved (Harborne, 1999).

2.3.1 The Budgeting Imperative - Why Budget?

“A budget is not simply one facet of a plan, nor is it merely an expression of organisational policy; it is also a control mechanism” (Meredith and Mantel, 1995). According to Jones & Pendlebury (1996) successful budgeting makes the strategic mission and main goals of the organisation possible. Budgets are an ongoing process, which should be revised throughout the year. One of the primary reasons for preparing budgets is to provide a means for ensuring that the behaviour of an organisation is consistent with meeting its ultimate objectives (Jones & Pendlebury, 1996).

Management should analyse results and monitor actual performance in comparison to the original budget. A well-prepared budget can help management determine where an organisation has been and prepare for its future development. “The ability to budget effectively is a vital element of being a successful organisation.” (Alpern Rosenthal, 2001). Finance office personnel within institutions are frequently asked questions in relation to budgets. According to Alpern Rosenthal (2001) budgeting plays a critical role in strategic planning and many factors should be considered when outlining future financial goals and budgetary policy, such as:

- ◆ Information Technology needs and requirements.
- ◆ Capital Budgeting and Improvements.
- ◆ Overhead requirements.
- ◆ Capital campaign revenue.
- ◆ Borrowing funds.

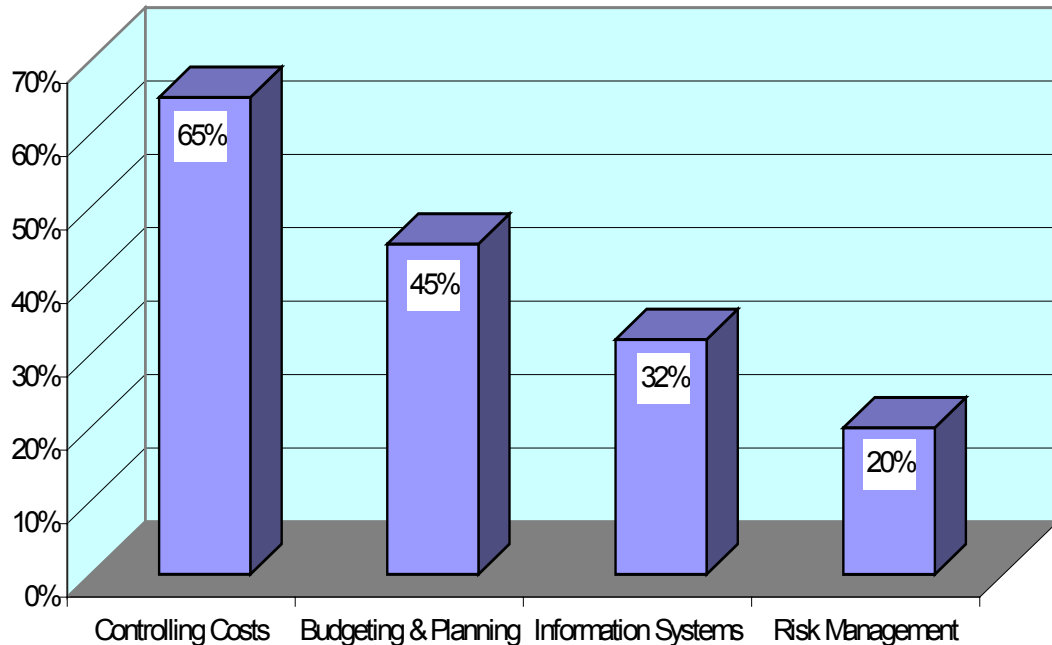
Jehle (1999) states that many organisations still use budgeting to control costs, however the old rules no longer apply. As today’s pace of change continues to accelerate a budget can no longer be viewed as a plan that doesn’t change for twelve months.

The various activities within an organisation should be coordinated by the preparation of plans of action for future periods. These detailed plans are usually referred to as budgets (Drury 2000).

According to Sizer (1979) “costs must be controlled if objectives are to be realised year after year. Budgetary planning and control employs the concepts of responsibility accounting, and is one of the most useful management tools for planning, coordinating, and controlling the activities of a business”

The importance of budgeting is also highlighted in the recent Deloitte and Touche Survey (2003), of CFOs, as shown in figure 2.0.

Challenges Facing CFOs



Source: Deloitte & Touche. March 2003

Figure 2.0

The survey indicated that the emphasis has changed from recruitment and retaining of staff in 2000, to cost control, budgeting and planning, and information systems in 2003. Over 65% of companies identified controlling costs as their biggest challenge, while 45% of respondents stated that budgeting and planning continue to present significant challenges. Many organisations continue to review and refine their budgeting processes to support rolling forecasts. 32% indicated that information systems are still a key challenge, despite upgrading to ERP systems. It seems that in many organisations there remains a shortfall between desired and actual performance of information systems. These organisations are now seeking to optimise the value being derived from their information systems. However only 20% of CFOs regard risk management as important. These somewhat low percentages in relation to risk are surprising given the Turnbull

guidelines mentioned later, particularly in relation to CEOs responsibilities regarding risk management.

2.3.2 The Nature and Framework of Budgeting

“The evolution of modern budgeting may be traced back even before the advent of money” (Webber and Wildavaky, 1986). Budgeting structures and procedures have evolved over time, so not only governments but also organisations and institutions large and small must plan and prepare for the future. “The roots of contemporary budgeting practices can be traced to the development of the English Constitution and the establishment of the supremacy of parliament over the monarchy in 1689” (California Department of Finance, 2003).

According to Drury (2000) the budget is not something that originates ‘from nothing’ each year, it is developed within the context of ongoing business, and is ruled by previous decisions that have been taken within the long-term planning process. The individual budgets must be in harmony with each other and consolidated into the ‘master budget’. The master budget may be summarised under the following headings:

- ◆ Income and Expenditure Budget.
- ◆ Balance Sheet Budget.
- ◆ Cash Flow Budget.

Research indicates that the ‘bottom up’ process of building up the master budget seems to vary within organisations. The conventional approach of ‘incremental budgeting’ takes into account the existing operations and activities as the starting point for preparation of the next annual budget. The disadvantage of this approach is that the cost of non-unit level activities becomes fixed and past inefficiencies and waste inherent in the current system are perpetuated.

Activity Based Budgeting.

According to Drury (2000) in order to manage costs more effectively organisations that have implemented ‘activity based costing’ (ABC), have adopted ‘activity based budgeting’ (ABB). Cost objects such as products, services, or customers are the starting point. Their budgeted output determines the necessary activities, which are then used to estimate the resources that are required for the budget period. Activity based budgeting involves the following stages:

- ◆ Estimate the revenue volume.
- ◆ Estimate the demand for activities.
- ◆ Determine the resources required to perform activities.
- ◆ Estimate the quantity that must be supplied to meet demand.
- ◆ Take action to adjust the capacity of resources to match supply.

Activity based budgeting provides a framework for understanding the amount of resources that are required to achieve the budgeted level of activity.

Zero-Based Budgeting.

Zero-based budgeting emerged in the late 1960s as an attempt to overcome the limitations of ‘incremental budgets’. The concept of zero-based budgeting requires that all activities be justified before decisions are taken to allocate resources to each activity. It works from the premise that projected expenditure for existing programmes should start from base zero, with each year’s budgets being compiled as if the programmes were being launched for the first time. Zero-based budgeting involves the following stages:

- ◆ A description of each activity in a decision package.
- ◆ The evaluation and ranking of decision packages.
- ◆ Allocation of resources based on order of priority.

Research has indicated that many organisations tend to approximate the principles of ZBB rather than applying the full-scale approach (Drury, 2000).

2.3.3 Benefits of Budgeting and Financial Control.

“A budget is a financial projection for the future and therefore is a valuable managerial planning aid” (Moscove et al, 2001). It is imperative that organisations develop both short and long term budget projections. The short-range budget should disclose detailed financial plans for the coming 12-month period. Strategic budgeting ranges from five to ten years into the future.

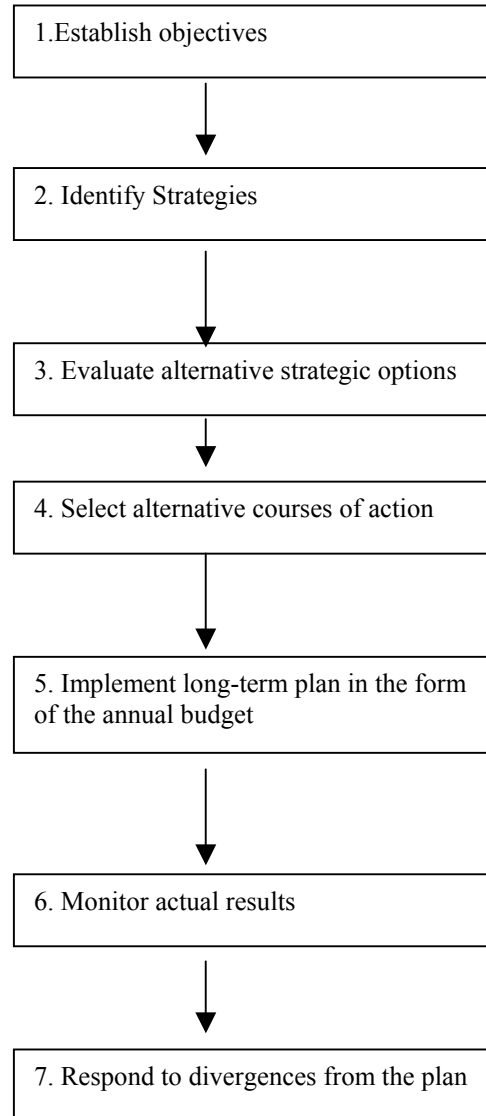
According to Drury (2000) budgets serve a number of useful purposes, such as:

- ◆ Planning annual operations.
- ◆ Coordinating the activities of the various parts of the organisation and ensuring that the parts are in harmony with each other.
- ◆ Communicating plans to the various responsibility centre managers.
- ◆ Motivating managers to strive to achieve the organisational goals.
- ◆ Controlling activities.
- ◆ Evaluating the performance of managers.

Drury (2000) also states that suitable administration procedures should be introduced to ensure that the budget process works effectively. The budget process should not stop when the budgets have been agreed and accepted. Periodically, the actual results should be compared with the original budget. The budget plans should be adjusted if there are changes in the actual conditions from those originally expected.

Figure 2.1 indicates Drury’s (2000) short and long term planning strategy.

The Role of Short and Long Term Planning



Source: Management and Cost Accounting (2000).

Figure 2.1

A good budgeting system is also a useful managerial control mechanism. As budgets indicate future financial expectations, management is concerned about the causes of

significant and material variances between actual and budget during the year. By using timely performance reports comparing actual results with budgets, management can investigate the reasons for material variances. Corrective action may be taken if timely reports are produced, and budget holders with favourable variances rewarded (Banham, 2000).

According to Banham (2000) research has shown that many *Fortune1000* companies are admitting that they are guilty of inadequate planning and budgeting, and are changing from bottom up to top down strategies while at the same time rewarding budget holders for performance. Many of these large corporations are investing sums of up to \$40M in consulting fees and software development in order to improve their budgeting process.

2.3.4 Disadvantages and Risks of Traditional Budgeting Methods

Banham (2000) also states that “an Institution cannot grow effectively without a well-conceived strategy and a supporting budget, yet many organisations invest an inordinate amount of time developing such plans with very little return”.

Some consultants indicate that the traditional budgetary process is an exercise in futility. According to MacGregor Serven (2002), “the customary system of trying to accurately predict what will happen in 12-months and budgeting accordingly is an exercise in futility, where you end up with goals and objectives based on a whim and a prayer.” These views are concurred with in a recent survey conducted by Answer Think Consulting Company when they state that “trying to figure out how much fax paper you need next November and what that will cost is like forecasting the weather”. MacGregor Serven (2002) also indicates that up to 75% of corporate plans are never executed.

Jensen (2001) made some interesting comments in relation to the processes adopted by management and staff in relation to corporate budgeting. He maintains that corporate budgeting is time consuming and protracted. The amount of time spent in preparing and presenting budgets does not result in adequate returns to the business. Managers inflate

estimates, and some are penalised for telling the truth. Colleagues are set against colleagues resulting in bad planning that runs counter to the best interests of the organisation. He relates one particular example where managers shipped unfinished products outside their jurisdiction in order to inflate sales, only to subsequently realise that the transport and cost of finishing the products resulted in the company reducing its overall profit. However as soon as managers begin to manipulate critical information to achieve targets it undermines and discredits the whole budget process. This in turn can damage the integrity of the organisation as a whole. Sometimes clear cases of outright mismanagement may occur as was reported in such high profile cases as Informix, Sabratek, Lernout & Hauspie, and more recently Enron (Jensen, 2001).

Jensen (2001) also states that when companies react in this way taking ‘big baths’ by maximising bad news, the cumulative effect is to exaggerate the economic weakness and extend the recession. The way forward is to adjust the pay for performance method and replace it with ‘a linear compensation plan,’ where rewards are independent of budget targets. The bonus a manager receives will be the same irrespective of the budget goal set. In other words, managers will be rewarded for what they actually do and not for what they say they can do. The incentive to cheat the system and inflate or deflate revenue will no longer be necessary (Jensen, 2001).

At the same time only 58% of US companies link bonuses to measurable performance (Axcom, 2002). According to Axcom (2002) that’s a mistake, “if you want employees to develop a sense of planning and budgeting ownership, you must reward their efforts”. Long established research suggests that there is a great deal of mistrust of the entire budgetary process at the supervisory level (Argyris, 1953). There is a tendency for traditional budgets to provide the following responses:

◆ **Reactions to pressure**

The evaluation of a head of department’s performance in terms of his or her departmental budget is one of the few elements of performance appraisal, which is based on concrete

standards. There is little room for manipulation or escape if actual results turn out to be materially different from the expected budget. If budget pressure becomes too great on budget holders, it may lead to mistrust, to hostility and eventually to poorer performance levels as reaction sets in against budgetary control.

Organisations must distinguish between controllable and non-controllable costs, as marginal spending may be a cause of tension among heads of departments. It is vital that budget holders attain their goals with the minimum cost. Establishing standards of performance is a demanding task, which requires effective communication and an understanding of the psychology of human motivation.

◆ **Overemphasis on the short run**

Too much emphasis may be given to short term budgetary objectives at the expense of long-term strategy.

◆ **Poor-quality decision making by top management**

In a commercial environment very often top management evaluate the performance of managers solely on the basis of the profit performance of their respective divisions. Serious errors of judgement may result from this particularly in relation to the introduction of a new product.

◆ **Poor Communication**

High quality information flow and communication is essential for the efficient management of an organisation. Progressive tightening of the managerial reins may well result, in progressive deterioration of the information flow (Glautier and Underdown, 1994). Accounting controls in themselves are not sufficient and will not achieve success unless there is a high degree of motivation and goal congruence within the organisation.

In 1952 Donald Roy conducted a survey in a factory, which was published in the American journal of sociology, whereby he found that if piecework targets were discontinued the productivity would increase by 33% to 150%. Based on this survey and drawing conclusions from his own research Jensen (2001), concludes that the cost of budget based bonuses far outweigh the benefits in most if not all situations.

According to Harborne (1999) organisations usually have processes in place for developing a multi-year strategic plan. These consist of an annual budget and a monthly or quarterly forecast in the actual year budgeted for. He argues that there are two fundamental characteristics missing, namely, a fully integrated process and a complete set of process components. These findings are consistent with Aguilar (2003) when he states that at most companies the business strategy is no sooner developed than it begins to lose impetus. There's no mechanism or plan to cascade and instil the overall strategy down through the organisation, and to ensure it is actually implemented. The result of this is that departments, business units and individuals set their own priorities as best they can, whether or not these are in agreement or alignment with the overall strategic objectives of the organisation (Harborne, 1999).

Traditional Budgeting under Review

Recent research has indicated that 80% of companies are dissatisfied with their planning and budgeting strategies and processes. According to Bourne et al (2002) the main criticism that emerged from that survey stated that budgets:

- ◆ Are time-consuming and costly to perform.
- ◆ They are a barrier to flexibility and change within an organization.
- ◆ Add little value to the organisation given the amount of time given by line management and senior executives.
- ◆ They focus on cost rather than value creation.
- ◆ Budget preparation does not reflect new network structures currently being adopted by organisations.

- ◆ Encourages “gaming” between staff in relation to target setting.
- ◆ Budgets are updated infrequently.
- ◆ Are often based on guesswork, rather than sound performance evaluation.
- ◆ Reinforces departmental barriers, rather than encouraging knowledge sharing.
- ◆ The budget process can make staff feel undervalued.

Redesigning the Budget Process

According to MacGregor Serven (2000) redesigning the corporate budget process is a perilous task. The budget process touches almost everyone in the organisation especially top management. A recent CFO Magazine survey disclosed that two-thirds of management respondents thought politics more than strategy drove their companies’ budget process. There is almost always natural tension between senior management and operating managers. Senior management generally wants higher revenue and lower costs; while at the same time business unit managers want more realistic expectations.

When redesigning the budget process it is important to include all relevant personnel. People affected by a management process that they had no hand in crafting tend to avoid giving it wholehearted support. Turning to an elaborate software solution in order to solve budgeting strategy can often be an expensive error. It’s vital and essential to identify the strengths and weaknesses of the current system before redesigning a new process (MacGregor Serven, 2000).

2.3.5 Planning and Control - Future Directions

According to Bourne et al (2002) many companies no longer use the term ‘budgets’, and there is a growing trend towards producing rolling forecasts (including for example Electrolux and Credit Lyonnais). It seems that many of the larger corporations are looking towards the future rather than analysing past performance, and some companies are now working without budgets altogether such as Svenska Handelsbanken.

Leading organisations are more concerned with managing future results rather than explaining past performance. They do this in many instances by forecasting and explaining variances before the actual expenditure and variance occurs, managing using the forecast rather than the actual results. Business units within organisations report their actual performance and variances and use this information to predict the year-end result. The focus is therefore on taking action that really drives performance, and in most instances the action required is non-financial (Bourne et al, 2002).

Most organisations forecast on a monthly or quarterly basis in the actual period to which their operational plan relates. Harborne (1999) argues that the traditional annual budget and forecasting process is ill equipped to exploit the constant and rapid change of business today. The chief executive officer of General Electric, arguably one of the world's best-run companies, has called the budget process the "bane of corporate America", highlighting its weaknesses and questioning its very existence (Harborne, 1999).

Rolling Forecast Planning Concept

According to Harborne (1999) due to the current trend of questioning the structure and ritual of the traditional budgeting process some companies have begun to consider adopting the rolling forecast planning concept. This concept introduces a continuous planning cycle and future-focused mind-set. The process is built on the premise of forecasting once a quarter for a set time scale that stretches out beyond the financial year-end for six quarters. As each quarter passes and the rolling forecast is performed, another quarter is tagged onto the end. This gives the organisation a constant view of the future. (Harborne, 1999).

Wright (2001) states, "senior management in every organisation who faces the challenges of tomorrow, need accurate and up-to-date financial and statistical information". Due to the changing economic environment, finance and budgeting systems will be forced to become more dynamic and forward looking rather than historically looking backwards.

According to Wright (2001) the chart of accounts should become a coordinating set of information rather than storage for historical information. The forecasting process should include ‘optimistic or best estimate’, ‘pessimistic or worst estimate’ and ‘a target or expected estimate’. These combine to “create a dynamic flow process that allows for ongoing analysis and coordination of information”.

Beyond Budgeting

The two main criticisms of the traditional budgeting process are that it takes too long to produce and the information is backward-looking. According to Fisher (2002) two new approaches have emerged and attempts to address some of the problems such as:

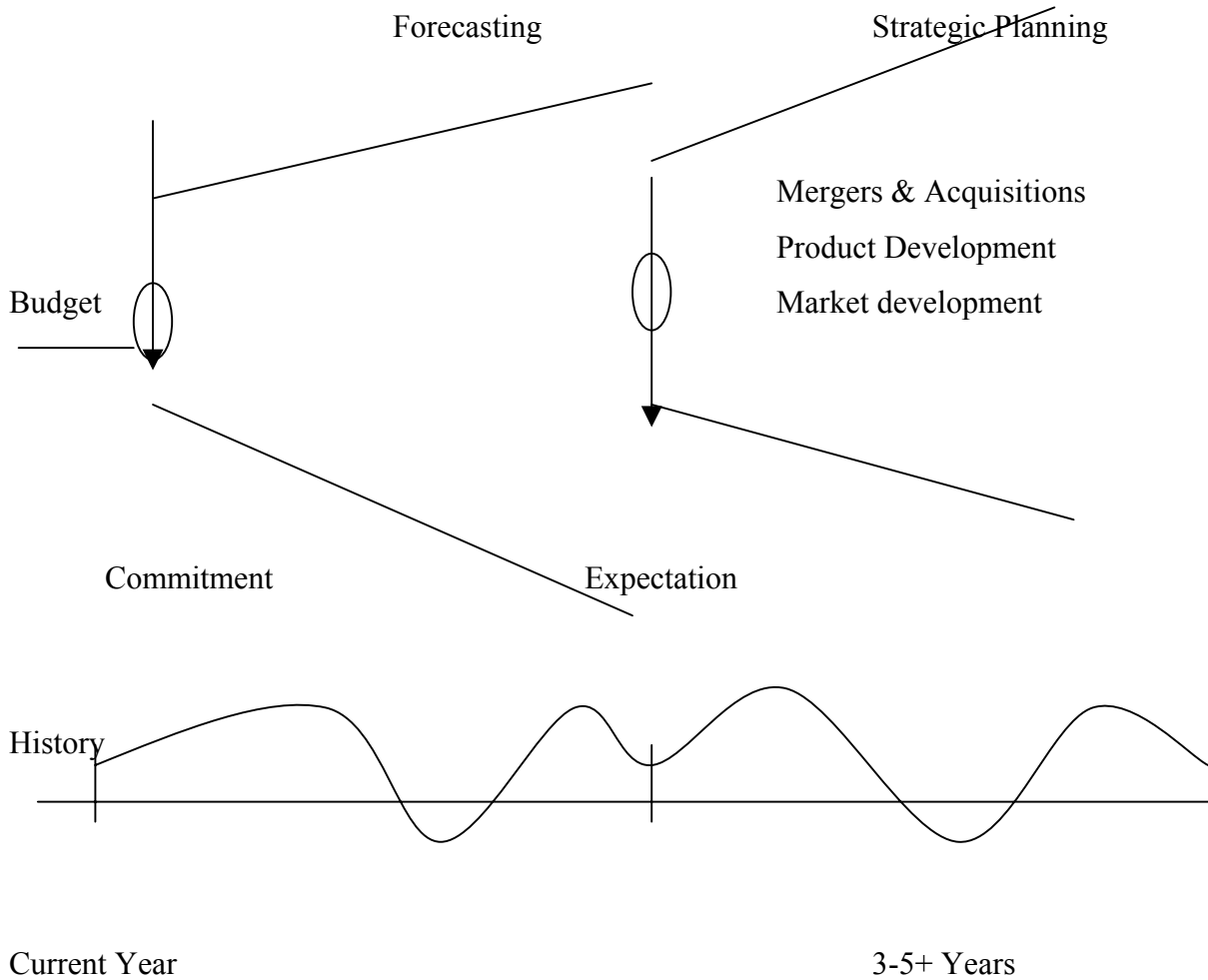
1. ‘Better Budgeting’
2. ‘Beyond Budgeting’

‘Better budgeting’ has produced improved benefits but tends to focus on the budgeting process in isolation and ignores the links between other management processes. ‘Beyond budgeting’ however is “leading the finance function towards an entirely new approach to budgeting because the key performance-monitoring tool is *forecasting*” (Fisher 2002).

The approach encourages management to identify the performance measures that are really important to their particular organisation to set attainable and accurate forecasts for each measure. Missing a forecast – even if that means the organisation exceeds the forecast – is seen as a failure, because it means that the managers who prepared it didn’t fully understand its importance and its operation. Many consultants state that the traditional budgeting process is no longer of any use to modern organisations. A new planning tool entitled ‘Predictive Planning’ launched in 2002 promises ‘an innovative system that predicts resources requirements for the future, not the past (Fisher 2002).

Figure 2.2 indicates Wright’s (2001) Internet-based planning, forecasting, and budgeting table ranging from three to five years.

Planning, Forecasting and Budgeting Model



Source: Wright & Associates (2001)

Figure 2.2

According to Harborne (1999) research has shown that major corporations such as Warner-Lambert and Kmart have repositioned the role of finance, which has integrated all business functions together, and thereby creating a greater business impact. A recent survey of large corporations by PricewaterhouseCoopers indicates that 74% of Chief finance officers consider such decision support as the top development priority going forward. Every worthwhile planning initiative requires performance measurement and the process of feeding the business intelligence back into the process. However Harborne (1999) made some interesting comments in relation to a rewarding system. He argues that

the component should ensure that the performance of individuals, business units, and divisions should be linked in some congruent manner to a rewarding system. This may appear somewhat more liberal than the views of Jensen (2001) who argued that rewarding people purely for their accomplishments and not their ability to achieve budget targets was more effective.

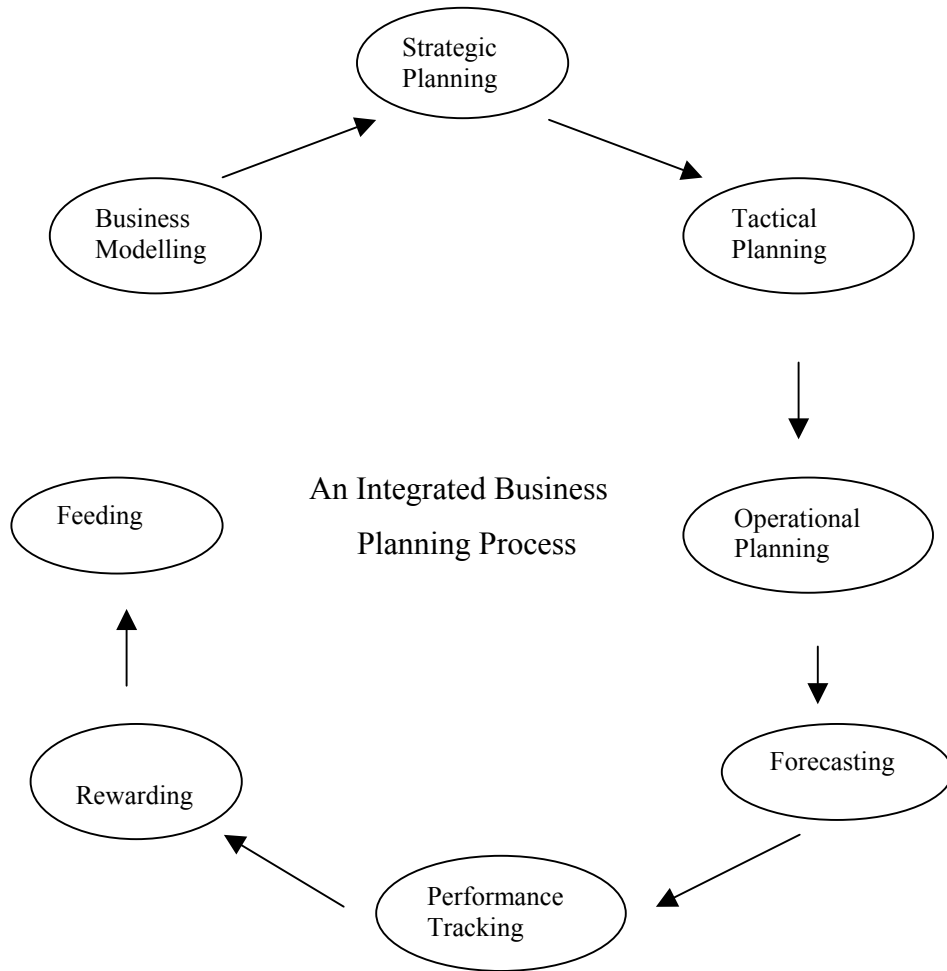
However Harborne (1999) did acknowledge this concept by quoting from General Electric in relation to achieving budget targets as follows “performance is measured against the world as it turned out to be; how well a business anticipated change rather than against some plan or internal numbers negotiated a year earlier”. If we take this scenario, a business unit that may exceed plan but under perform versus the market won’t be rewarded, where as the business unit that may not meet its plan but outperforms the market will be rewarded. The overall performance of the organisation in relation to the market place is a vital measuring tool in the concept of rewarding individuals for achieving targets.

According to Harborne (1999) a fully integrated process or ‘power planning’ would include for example the following processes:

- ◆ Business Modelling.
- ◆ Strategic Planning.
- ◆ Tactical Planning.
- ◆ Operational Planning.
- ◆ Performance Tracking.
- ◆ Rewarding.
- ◆ Feeding.

Figure 2.3 shows Harborne’s (1999) integrated business planning process within an organisation.

An Integrated Business Planning Process



Source: Strategic Finance (1999).

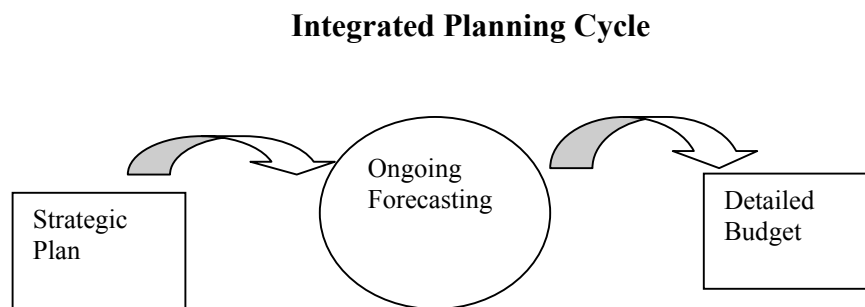
Figure 2.3

Bourne et al (2002) indicate that leading companies are now producing faster, more accurate and cheaper forecasts by using explicit forecasting models. These models are separate from the financial management systems and are more flexible and adapt to changing circumstances with little manual intervention.

Montgomery (2002) espoused the concept of ‘effective rolling forecasts’. He maintains that the rapid change in the economy requires that continuous forecasting is an essential part of the planning process. Many organisations carry out a ‘re-budgeting’ process

during the year, which takes an inordinate amount of time and effort with little return or strategic benefit.

Rolling forecasts on the other hand provide vision and direction. Montgomery (2002) advocates a ‘top-down’ approach to projections that are separate but integrated to the operational budget. It seems that many ‘static’ annual budget processes fail to provide a comprehensive and clear vision of the organisation’s impending direction. Ongoing forecasts flow from the strategic plan and integrate with the operational budget. The continuous rolling forecast drives the target-based detailed operational budget. Figure 2.4 indicates Montgomery’s (2002) integrated planning cycle.



Source: Strategic Finance (2002)

Figure 2.4

Montgomery (2002) states that in order to be more effective a rolling forecast should:

- ◆ Have a clear strategic financial planning mind-set.
- ◆ Be performed as a more summarised level of detail.
- ◆ Be modelled with operating metrics and parameters instead of general updates of previous forecast figures.
- ◆ Closely integrate with the operating budget

The objective is to ensure that management focuses on the strategic aspects of the business and where the organisation is going. It is important to focus on the 'forest' not the 'trees' (Montgomery, 2002). A key concern is to integrate the strategic forecast with the annual operating budget. It seems many organisations have no direct linkage between the two, and in most situations the exercise takes tedious bottom-up revisions before the final process is complete.

The findings of Montgomery (2002) are consistent with (Cooke and Slack, 1991), and The Conference Board Survey (2002), referred to earlier. That survey indicated that 53% of CFOs indicated that the lack of a link between strategy and operational plans was a major factor of concern in their planning processes. These findings indicate that line managers should have a clear understanding of senior management's strategic objectives, and be in a position to adjust their targets accordingly in a flexible and visible manner. It is vital that exceptional reporting be used to allow managers to have effective feedback on their targets and projections, by carefully integrating the forecast with the detailed budget process.

Re-Engineering Processes.

Recent research has indicated that some large corporations are re-engineering their processes while others have decided that the expense involved was too much and have given up in frustration. Planning and budgeting re-engineering requires patience, intensive ongoing communication with employees, investment in new data gathering software tools and especially the willingness and commitment of management and staff to change.

MacGreror Serven (2000) indicates that reengineering will build in momentum over the next 10 years, and that many of the *Fortune1000* companies are currently starting on such a course. Some consultants indicate that successful re-engineering may bring the following benefits:

- ◆ Improved decision-making capabilities.
- ◆ Double initial return on investment within a few years.
- ◆ Reduced planning cycles.
- ◆ More motivated and collaborative workforce.
- ◆ Sharper competitive edge.

There is an ancient statement, which states, “where goals and objectives are absent, there is an absence of progress and success”. According to Wright (2001) in most organisations, the accounting function coordinates four main types of reporting:

- ◆ Generally Accepted Accounting Principles (GAAP).
- ◆ Management Accounting – Budgeting.
- ◆ Cash Accounting.
- ◆ Tax planning.

The main focus is on GAAP, with the closing of the month-end taking an average of five days and another five days for reporting and reconciliations. He argues that the process in today’s business environment is out of date, and even dangerous, as the information reaches management too late to support proactive decision-making. In order to meet today’s changing environment many organisations are resorting to cost cutting strategies in relation to processes and procurement.

The critical area of finance and the coordination of planning, forecasting and budgeting are essential when organisations are monitoring and examining their cost base. Finance and budgeting are often looked upon as necessary functions for historical focus only and are often overlooked as a source of competitive advantage. Wright (2001) also states that planning, forecasting and budgeting are three separate and distinct processes. Planning develops internal expectations and is led by senior management. Forecasting is the best estimate given by operating management in relation to the planning process. Budgeting on the other hand is making a commitment to what the organisation is capable of achieving.

When budgeting and finance is recognised as a value adding process the objectives and strategies of the organisation will benefit. Finance and accounting reporting needs to move away from historical after-the-facts issues to providing more dynamic information in relation to revenue, staffing and procurement flows. This shifting of emphasis will make a marked contribution to the organisation's success. Finance and budgeting should focus on giving management the information to allow them to concentrate on critical areas within the overall planning strategies, so that minor improvements based on future analysis will have a significant impact on the organisation (Wright, 2001).

2.4 Planning and Control - The Changing IT Environment

Recent research indicates that many entrepreneurs value the role of information technology in supplying real time, accurate and reliable information to managers and budget holders. Wherever possible, budgeting reports should contain useful information, be concise and efficient, and most important, they should be action oriented.

“We’ve spent hundreds of millions of dollars on computers and satellites to spread all the little details around the company as fast as possible. But they were worth the cost. It’s only because of information technology that our store managers have a really clear sense of how they’re doing” (Sam Walton, (1992), founder of Wal-Mart).

Information technology systems are often guilty of generating too many reports. These systems frequently include more data in reports than relevant information which management can use effectively. The term information overload in relation to budgets may better be described as data overload, as relevant information is always useful. Many informed authors maintain that budgeting and accounting information systems must ensure that data collection processes are:

- ◆ Accurate
- ◆ On Time
- ◆ Relevant

- ◆ Reliable
- ◆ Cost Effective

Kopcke (2002) highlighted the changing financial accountability facing organisations and the technology available to deal with it. A recent survey by Cap Gemini / Ernst & Young found that 63% of organisations surveyed indicated that their financial systems are inadequate for the new reporting requirements. New reporting requirements are now on the horizon as the Securities and Exchange Commission has passed new disclosure rules. Financial statements must now be filed earlier and strict penalties are now in place for issuing fraudulent financial statements. The latest Deloitte & Touche CFO survey referred to earlier, indicated that information systems are still a key and important challenge for many organisations.

2.4.1 Planning and Control - ERP Applications

In recent years many organisations have implemented Enterprise Resource Planning (ERP) systems for general ledger, order processing and procurement. According to Piturro (1999) “the choice of ERP software can be a make-or-break decision for a company”. Having invested in these systems organisations are now seeking opportunities to take advantage of the vast amount of data and information accumulated within these systems in order to support more effective management processes. From these large databases of information additional processes such as planning, budgeting and financial consolidation and reporting analysis is possible.

Despite the high cost to purchase and implement an enterprise resource planning (ERP) system, many organisations find that the savings it brings, makes it a good financial investment. ERP is the backbone of e-business. Installing ERP systems is one of the most important and expensive endeavours an organisation will ever undertake. It is also one of the most risky if not undertaken properly, as FoxMeyer Drugs Inc. recently discovered when an ERP implementation went badly wrong. Recent research indicates that an

estimated 70% or more of internal software projects fail to come within budget or meet their overall intended objectives.

Once implemented successfully however, research consultants indicate that accounting software packages can handle 80% of clients processing needs. The remaining 20% can be either customised or managed with other accounting software such as spreadsheet and report writer programmes. Technology itself is not the only issue when implementing an ERP system. Decades of knowledge and information must be moved to a new platform and budget holders must not be placed at a disadvantage for the sake of new technology. They must receive appropriate and relevant financial information from the new system.

According to Banham (2000) Fujitsu (a \$1b plus revenue corporation) recently decided that its planning and budgeting exercises were a waste of time. It seems the company “were long on process and short on valuable information to run the business”. The budgeting preparation took two months to complete via a circuitous routine of bottom up processes that they were overtaken by events. On the advice of accounting firm KPMG the company installed an enterprise resource planning (ERP) software system, which transformed the budgeting process. The system chosen was Oracle and they also attached Hyperion Pillar to provide a front end planning and budgeting system. This has transformed the planning process and enabled the company to make strategic assumptions and determine the impact on profit and loss. Fujitsu now uses a monthly, rolling forecast whereby actual results are uploaded to give the ability to measure real performance, and overall planning objectives (Banham, 2000).

When Thomas Wilson CFO of Allstate Insurance recently asked his executives how much cash the company’s agents, were generating, he received different estimates from each, the variance between the highest and lowest amounted to \$1 billion. Allstate subsequently invested an estimated \$60 million on a ‘SAP ERP’ system. Allstate estimate that \$100 million has been saved in processing costs over an 18 month period (Banham, 2000).

Moscove et al. (2002) indicated features commonly found in ERP Systems as follows:

- ◆ Cash-based versus accrual accounting.
- ◆ Ability to handle multiple companies.
- ◆ Sample chart of accounts.
- ◆ Recurring journal entries.
- ◆ Variance analysis (Budget to Actual).
- ◆ User-defined financial statements.
- ◆ Product and service data.
- ◆ Cheque printing.
- ◆ Graphic reports.
- ◆ Ratios.
- ◆ Audit trails.
- ◆ Budgeting capability.
- ◆ Internet Connectivity.

Legacy Systems and New ERP Configurations

In order to gain maximum benefit and efficiency from ERP systems many organisations reengineer or redesign their business processes. Time saving in budget preparation and analysis of other accounting processes are some of the significant benefits to be gained from ERP systems. According to Banham (2000) “planning and budgeting reengineering requires patience, intensive ongoing communication and the willingness of the organisation to evolve”. The improved decision-making capabilities created by successful reengineering justify the high cost involved (Banham, 2000).

In an ERP environment budget information is transmitted to budget holders by means of message–routing the data on the network. Each budget holder has a ‘domain address’ or a ‘universal resource locator’ (URL). It is essential however to decide how to make integrated application architecture a viable, productive part of the business set up. Failure to manage this integration may result in ‘information overflow’ and risk being swallowed

by a tidal wave of excess and irrelevant data. George Sorter (1969) envisioned an events-based accounting system, whereby accountants began to record database activities simply because they happen, and not because a particular information system requires it.

Kalakota et al (2000) defines the elements of a typical legacy system as follows:

- ◆ Proprietary.
- ◆ Developed in the 60s or 70s.
- ◆ Mainframe based.
- ◆ Developed in Cobol, Assembler.
- ◆ Not real time.
- ◆ Missing documentation.
- ◆ No integration.
- ◆ Lacking customer focus.
- ◆ Slows down change and often impossible to change.

Design of ERP Systems

In 1997 Oxford Health Plans Inc., a \$4 billion health maintenance organisation announced that ‘a computer problem’ in the accounting and billing system caused the company to understate medical costs and overestimate revenue. The company’s stock fell by more than 80%. A more detailed analysis indicated that the internal controls of the company were virtually non-existent. This example indicates that careful design of application architecture is essential for business survival.

According to Kopcke (2002) most companies don’t have a single, standard general ledger system. The consolidation system must be able to collect data from multiple sources across an organisation and create a common view, or chart of accounts, for corporate reporting. Once the data is collected, the financial consolidation process can commence. This process must comply with a plethora of accounting rules defined by the Financial Accounting Standards Board (FASB), the International Accounting Standards Board

(IASB), and other local bodies. The rules include for example currency translation, elimination of inter-company transactions, accruals, minority interests and goodwill accounting. Kopcke (2002) also states that reporting is further complicated by the necessity to deliver different information to multiple audiences in various formats, such as for example:

- ◆ Summary Balance Sheets, Income and Expenditure Statements and Cash Flow for external audiences.
- ◆ Results by business segment, for external use.
- ◆ Results by product or brand, for internal and external use.
- ◆ Divisional profit and loss statements for internal use.
- ◆ Actual v Budget variance reports for internal use.
- ◆ Trend reports and rolling forecasts for internal use.

During a recent Web cast on this topic Hyperion conducted a survey, which indicated that more than half of the companies surveyed are still using spreadsheets and multiple general ledger systems for budgeting, consolidations and reporting. In addition management in many organisations are dissatisfied with the timeliness and quality of financial results they receive on a regular basis. The few organisations that have achieved the 'virtual close' have done so by necessary management and cultural changes including, reduction in the number of legal entities to consolidate and elimination of interim closes (Kopcke, 2002).

According to Kopcke (2002) other changes included for example:

- ◆ Adopting a single fully integrated ERP financial application system.
- ◆ Developing a completely automated consolidated system.
- ◆ Using an automated inter-company accounting system.
- ◆ Leveraging a Web portal for delivery of standard reports to budget holders.
- ◆ Linking the Web portal to an online application provider (OLAP), database that allows users to conduct as hoc queries and analyses.

Hoffer et al (2002), state that ERP software solutions consist of a series of integrated modules. Each module supports an individual, traditional business function, such as accounting, distribution, manufacturing, and human resources. The difference between the modules and traditional approaches is that the modules are integrated to focus on business processes rather than on business functional areas.

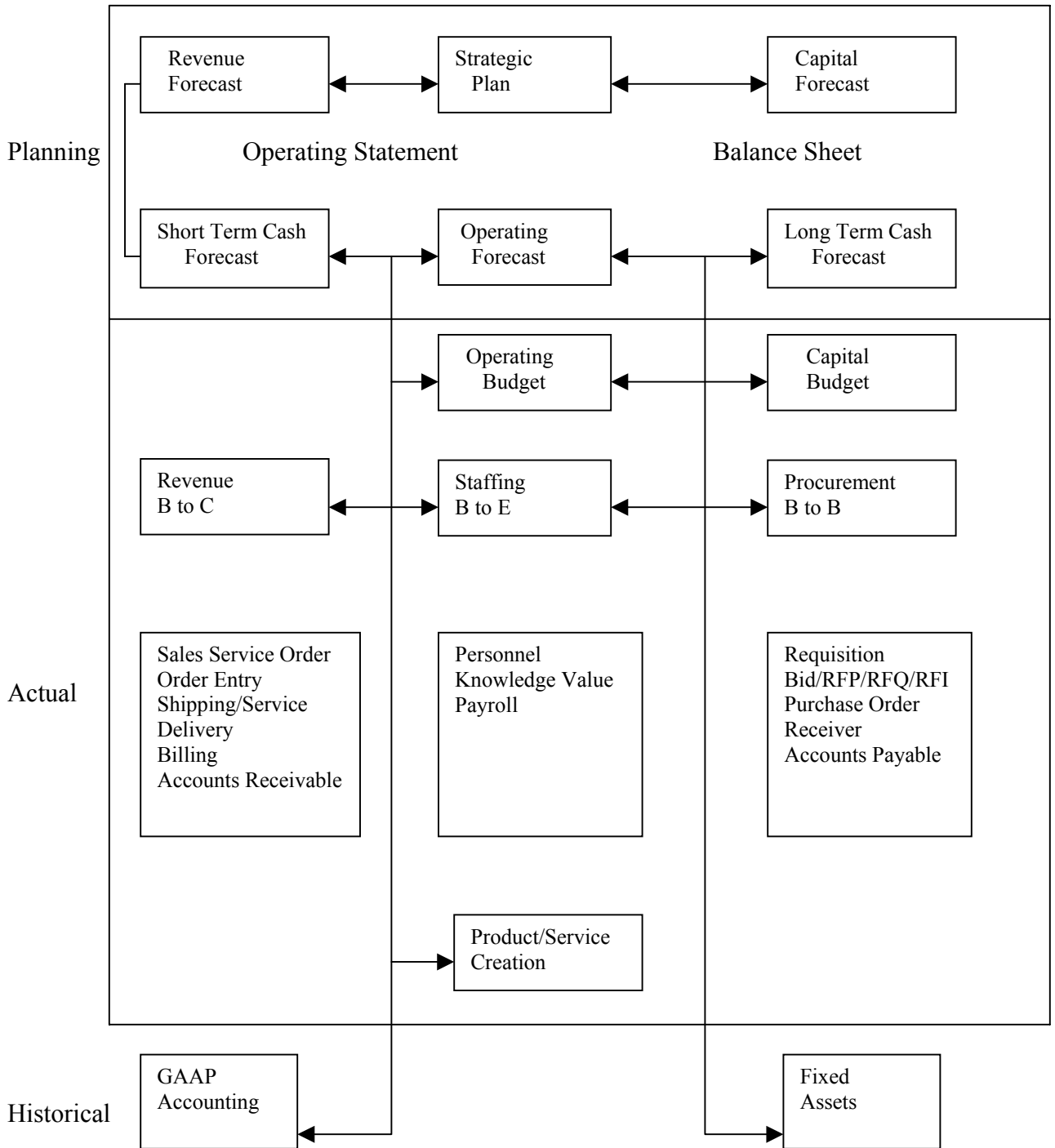
According to Hoffer et al (2002) the traditional approach would use different systems in different functional areas of the business, such as a billing system in accounting and an inventory system in the warehouse. An ERP system however will support the entire order entry process, from receiving an order to adjusting inventory to shipping to billing to after-the sale-service.

Using ERP solutions therefore an organisation can integrate all parts of a business process in a unified information system. All aspects of a single transaction occur seamlessly within a single information system, rather than in a series of disjointed, separate systems focused on business functional areas.

The benefits of ERP solutions include a single repository of data for all aspects of a business process and the flexibility of modules. A single repository ensures more consistent and accurate data, as well as less maintenance. Additional modules can be added as required and integrate into the existing system (Hoffer et al 2002).

Figure 2.5 shows Wright's (2001) enterprise resource planning (ERP) model, incorporating strategic and operating planning processes.

Enterprise Resource Planning Model (ERP)



Source: Wright & Associates (2001).

Figure 2.5

Security of IT Systems

A survey by the Computer Security Institute in 2002 reported that 90% of those surveyed detected security breaches in the last twelve months, and 80% suffered financial losses due to computer security breaches. According to recent US Chamber of Commerce statistics “30% of US companies that go out of business are wrecked by employee theft”.

Lemos (2003) writing on computer security reported that on-line intruders broke into a server containing 57,000 patrons of a Georgia Institute of Technology. The incident is the third known Internet break-in at a US university within the last several months. At the University of Texas at Austin, a student stole 55,000 Social Security numbers from a key administrative database. Research in the US suggests that the average company spends between \$62,000 and \$620,000 a year on computer downtime.

During 1999 in the UK, Nigel Turnbull on behalf of the Institute of Chartered Accountants of England and Wales, and the London Stock Exchange, issued a report, which included a number of guidelines. These guidelines have been adopted by a number of other stock exchanges including Dublin’s. One of the main aspects to the guidelines is that the chief executive officer of a company is responsible for business risk. One assumes the same criteria applies to a university or other third level institutions.

The Irish HoneyNet Project established in April 2002, is aimed at attracting, tracking and studying hackers, reveals an almost constant threat to computer systems. The project is conducted and monitored by Espion, Deloitte & Touche and Data Electronics. The ‘hackers’ are from all over the world, including Asia, Africa, Europe, and North America. It seems the US has consistently been the largest single source of attack on the site. There were 597 Internet attacks on the site in January 2003 alone. It seems Web servers, FTP (File Transfer Servers), and open mail relays were all fair game for the attackers. (D’Arcy, 2003).

2.4.2 E-Commerce and Planning

Effective e-commerce creates competitively superior value for an institution's stakeholders, customers, suppliers, partners, employees and students. Using the Internet and its technology capabilities to change the way business is conducted will bring added value to an organisation. Many organisations in times of economic slowdown tend to cut off funding for non-critical programmes. The disadvantage of such an approach according to Cohan (2002) is that meaningful and beneficial projects may be stopped or not commenced. Cohan (2002) maintains that there are at least four specific types of e-commerce initiatives that deliver high payoffs:

1) Electronic Procurement

Organisations using the Internet for purchasing materials and services have achieved significant cost reductions, while at the same time streamlining overheads and enhancing purchaser satisfaction. A recent survey of 40 *Fortune 1000* companies found that electronic procurement cut 5% to 10% from the costs of maintenance, repair and operating items, such as office supplies etc. The companies benefited by centralising purchasing and negotiating tougher deals with fewer suppliers. This had the effect of reducing by 51% the share of employees who did not purchase from preferred suppliers. It also streamlined approval and ordering, while integrating vendor payments with accounting and general ledger.

2) Employee Payments

Organisations using the Internet to process travel and entertainment expenses cut costs and enhanced employee satisfaction. IBM has saved \$1bn through a series of Web-enabled initiatives that streamline employee salary payments and travel and entertainment expenses.

3) Online Customer self-service.

Firms using the internet to maintain a comprehensive and easy-to-navigate database of technical problems and solutions have saved millions in technical service costs, while at the same time have helped customers to solve individual problems more effectively.

4) Online Ordering.

Finally, Cohan (2002) states that by using the Internet to enable customers to place orders, particularly for complex technical products, organisations have made considerable savings by reducing the rate of erroneous customer orders.

According to Ford (2002) organisations should progress cautiously in relation to Internet purchasing. A recent Forrester Research report indicated that the challenge is to harness the Web in ways that are additive and not distracting or costly to implement and maintain. Ford (2002) raises a number of issues in relation to e-commerce and procurement generally:

◆ Integration

He maintains that most organisations have dedicated significant resources to implementing and maintaining ERP system. However when those organisations move to implement on-line purchasing, problems may arise because the e-purchasing software is not always compatible with the existing ERP system. Problems may arise when organisations invest in the most popular of the current wave of e-commerce software, only to find that they stop short of providing key integration functions and may require additional investment to complete the automation and integration tasks.

◆ Cost

Many organisations and CFOs are nervous about allocating additional resources to their e-purchasing initiatives if they are unsure of their return on investment. Organisations who have already invested heavily in ERP are anxious to protect and benefit from those investments. They are concerned about further expenditures that may only exacerbate their integration problems. Ford (2002) maintains that the confusing pricing structures of e-commerce software suppliers make it difficult to ascertain the true return on investment. The issues of licenses and support need to be recognised when making decisions.

◆ Supplier Enablement

One of the oversights in the e-commerce revolution has been the inability to provide any real value for suppliers. Lack of customised data transmissions and varied catalogue systems have caused suppliers to be reticent. It is important to include the suppliers in the process and have rapid payments, automated purchase orders, and the ability to accept data in their preferred format.

◆ Payments

Finally, Ford (2002) maintains it is important to ensure that the payment structure to suppliers is compatible with the existing ERP system. Eliminating paper-based payments streamlines the entire process for both buyers and sellers.

E-Procurement.

Before implementing on-line purchasing and integrating it with existing ERP systems it is imperative to assess the added value and return on investment. Issues that need to be addressed include for example the customisation of data transmission for smaller and medium sized suppliers, together with the internal take up by departments.

Implementation of a complex and expensive e-procurement module for the sake of a small number of larger departments may need to be viewed in the context of overall return on investment.

However, Williams (2002) argues the case as to why e-procurement makes sense. Since the collapse of the dot-com bubble in 2001, many Internet firms appear to have taken something of a toll on e-procurement efforts. IT projects are now turning to cost saving initiatives, such as labour, maintenance and support, together with emphasis on expense reporting and budgeting.

A recent Forrester Research report has indicated that purchasing over the Internet was down in the first quarter of 2002, compared to 2001. The internet research firm the Aberdeen Group, have also found that fewer than 10 % of corporations are using expense management automation, despite the fact that studies have shown it can save up to 80% of the cost of setting up an expense voucher.

Williams (2002) indicates that there are many products and services available for organisations to use and develop. Because of the cost conscious environment we now operate in, many vendors have developed Web-based solutions and services, which offer organisations an alternative to licensing and installing, customised software packages internally. The Aberdeen Group indicate that non-production costs such as, office supplies, computer equipment, maintenance, repair, and operating expenses account for 30% to 60% of an organisation's expenses. However they argue that these purchases are poorly controlled and costly to process. They argue that by implementing on-line purchasing, organisations can:

- ◆ Quickly produce substantial savings.
- ◆ Enhance service to their internal customers and suppliers.
- ◆ Refocus their finance and purchasing department resources to more value-added strategic issues.

Organisations spend an average of more than \$100 processing a single purchase order manually, but only \$33 when operating through an e-procurement system. According to the Aberdeen Group, e-procurement can cut requisition-processing time from 10 days to 2.5 days. Expense management automation has also moved to the Web, making it easier for employees to submit travel and entertainment expenses. Research by the Aberdeen Group indicates that organisations can reduce the amount of time employees spend on filing expenses by as much as 60%, and speed up the reimbursement time by 90%. New expense reporting tools give managers better control over employee expenses and integration into the financial systems. It is submitted therefore that e-procurement if implemented efficiently can have significant benefits for the budgeting process.

According to Williams (2002) organisations that have slowed their implementation of on-line programmes need to reconsider their decision. He argues that with IT budgets currently focussing on lowering costs and expenses, organisations need to direct some of this momentum to procurement.

2.4.3 WEB Enabled Technology and Financial Control

The shift in focus from revenue generating and market share to one of cost savings and cash flow has created a critical need for technical solutions to enable decision-makers to make informed decisions based on real-time access to raw data throughout the organisation. A financial portal product is designed to find real-time answers to financial questions and meet the increasing new demands of GAAP, budgeting, consolidations, forecasting, planning and reporting functions. Business is at a stage where immediacy is essential and the key to success. Web based financial portals are essential tools for management to access real-time information.

Wolfendale (2003) raised some pertinent issues in relation to real-time reporting from a centralised or shared service environment. He argues that today's CFOs need access to all financial key performance indicators in a timely and informative manner that makes it instantly recognisable. Many organisations are opting to leverage their already-

established shared services with innovative finance portal technology. Finance portals allow users to gain a comprehensive, real-time representation of corporate financial and budgetary performance.

The Meta Group, a research and consulting firm focussing on information technology, recently stated that a portal product “must provide contextually relevant information to an individual in a customisable manner (for administrator and user) that respects the security and privacy of the individual content.” A good portal provides an efficient, centralised, personalised and cost-effective way to access and profit from structured and unstructured data both within and outside the enterprise.

Deloitte and Touche recently maintained that traditional business offerings do little in the way of “delivering the relevant information to the right decision-maker at the right time”. As more and more information and raw data become available it will become increasingly difficult to make informed business decisions based on accurate and real-time data. However a financial portal can be designed to do just that (Wolfendale, 2003).

According to Wolfendale (2003) finance portals deliver real-time access to critical business data and provide financial teams with the analysis needed to apply relevancy and accuracy to large corporate data. Financial portals are designed with a intuitive self-service browser interface that allows the user to gather information from disparate data sources ranging from different Web addresses, back office applications, folders, documents, and even e-mails. Financial portals provide a single point of access to integrated information from a variety of sources that ensures more accurate and better-informed decision-making. They provide a means to customise, extract and present data in a user-friendly interface.

The distribution of budget information on web enabled software to end users, ensures the capture of data integration which may be analysed into comprehensive solutions, turning data into business intelligence on-line for rapid and instant decision making. No one ERP vendor can respond to every institutions needs, and therefore institutions must purchase

multiple applications that are not necessarily designed to work together. Institutions must therefore integrate various business solutions and interface the applications (Wolfendale, 2003).

Recent research indicates that many organisations are reviewing and updating internal controls for all financial processes and ensuring that a strong audit trail is in place. Many organisations are also realising that spreadsheets are too easily manipulated and do not provide this strong audit trail necessary for budgetary control. Firms are moving towards standardising the chart of accounts across the organisation, which speeds up the consolidation and budgetary process. According to Kopcke (2002) organisations are taking advantage of some of the new features these products offer, such as:

- 1) Shift to a centralised repository, as opposed to spreadsheets and distributed applications.
- 2) Implementation of multidimensional financial consolidation and reporting systems that connect directly with existing ERP systems.
- 3) Web based reporting to 'budget holders' throughout the reporting period.
- 4) Self-service finance - Web-based internal reporting of financial results, as opposed to paper-based reports. This includes the use of personalised financial portals that provide a single point of entry to pertinent internal and external information and systems.
- 5) Integrated business performance management systems that support collaborative decision-making.

In the near future, financial reporting systems will begin supporting electronic delivery of financial results to external agencies and regulatory bodies via an emerging standard, XBRL (eXtensible Business Reporting Language). This standard will provide more timely and useful information, and make it easier to prepare and deliver financial results to various external audiences.

Research into the diffusion of Web based technologies within organisations is still in its early stages (Barnes and Hunt, 2001). As a result of research carried out on two organisations Jarvenpaa and Ives (1996) put forward a number of propositions:

- ◆ The introduction of Web technologies is likely to occur with only peripheral involvement of the information technology function.
- ◆ The introduction of Web technologies is likely to occur with minimal, if any, involvement by top management.
- ◆ The introduction of Web technology is likely to be accomplished by an ad-hoc group that has no formal organisational responsibilities.
- ◆ A performance crisis can be used to stimulate the introduction of Web technologies to an institution.

These propositions were used and tested as part of a research project in an Australian university IT division into the diffusion of Web technologies (Romm and Wong, 1998). This study found that the Web technology project was strongly led by the information technology unit, with a high degree of involvement by top management. They also found that the introduction of Web technology was not triggered by a performance crisis. These findings are in stark contrast to those indicated by the Jarvenpaa and Ives (1996) American study above.

Divergence of Views

The differences in the findings of the two research projects are explained by two main factors (Romm and Wong, 1998). Firstly, the American study examined two private computing companies, whilst the Australian study examined a public university. Therefore the industry sector was given as the main reason for the difference. The second reason was national culture. The Australian attitudes are more likely to be risk-averse and more inclined to value participative decision-making.

According to Wright (2001) Internet planning, forecasting and budgeting is attracting a great deal of interest and is becoming part of the strategy of forward-looking organisations. The current trend is towards having one repository, so that all the data is contained in a central database. The strategy is therefore to consolidate all the data and make it available to those who have the need and authority to use it. The new technology tools allow more integration and participation by business unit managers, so that planning functions can now include a combination of top-down and bottom-up strategies.

Driving the current trend is the arrival of Internet-enabled processes whereby data can be input, viewed, managed, consolidated and output in any number of combinations or ways. These new planning tools allow all relevant personnel to access shared files internally and at remote locations, interacting and updating live data and information. Managers at distant remote locations can have a rolling forecast of their branch budgeting and financial activities consolidated interactively into the overall organisation's planning strategy. This Internet process is driven by the fact that client-server systems require software installations on every desktop (Wright, 2001).

When an application resides on a central server, one upgrade services everyone. Issues may arise if some users have different versions of the same application, resulting in distribution problems. This requirement can cause problems for some organisations, as upgrades and maintenance are time-consuming and sometimes ineffective and expensive to process. Another advantage of the Internet-based option is that data input and output are simplified when information resides in a single central repository. It is estimated that 80% of the time required in putting together an annual budget is spent in collecting and assembling core data. According to Wright (2001) within the past several years budgeting software developers such as Comshare, Cognos, QSP etc, have created technology that allows organisations to access a central database through the Internet.

This eliminates distribution problems and also provides the ability to access and work the data twenty-four hours a day, providing real-time interactive analysis. These software providers can also provide interfacing with other data warehousing systems. Jehle (1999)

evaluated the current advantages of Web enabled budgeting and states that budgets need to be flexible and be capable of being refreshed as the business changes. In today's rapidly changing business environment it is necessary to adjust corporate plans and budgets to reflect competitive landscape changes. It is essential to plan and then re-plan quickly and incisively. When circumstances evolve during the year, such as an unexpected event or a rapidly changing public opinion on product preferences, then the original budget becomes useless (Jehle, 1999).

2.4.4 Data Warehousing and Budgetary Control

A data warehouse is a subject-oriented, integrated, time-variant, non-volatile collection of data used in support of management decision making (Inmon and Hackathorn, 1994).

Many organisations are finding it difficult to manage a deluge of information overflow, from both internal and external systems. Organisations and managers gather and process far more information than they can possibly use for decision-making (Feldman and March, 1981). However the concept of data warehousing is one way to manage information overload and coordinating budgetary control.

Many organisations will find themselves lagging behind if they do not implement a flexible and comprehensive data warehouse. According to Furlow (2001) the benefits of data warehousing include the following:

- ◆ Simplicity

Data warehousing simplifies the decision making process because it provides a single view or image of the data. This information is pulled together from disparate and potentially incompatible locations throughout the institution. Having all the necessary data in one location reduces the response time for the retrieval of vital budgetary and other decision-making information.

- ◆ Easy and Quick Access

Easy and quick access to data leads to increased productivity and efficiency gains. It is important that data warehouses let users retrieve necessary data on their own, which enables the IT staff to focus on more strategic objectives and projects.

- ◆ Increased Performance of Operational Systems

Since queries generated within data warehouses by users do not interfere with normal operations, managers and users can access historical data for decision-making purposes without slowing down the production systems.

- ◆ Flexible and Scalable

Data warehouses are flexible and scalable since they give institutions a computing infrastructure that can support change in both the computer systems and the business structure. Data warehouses collect data but they also manage the flow of data, which allows management to make decentralised decisions, as the appropriate information is available to them.

- ◆ Improved Management of Information

Finally, Furlow (2001) indicates that an institution can better manage and use its knowledge, which in turn makes it more competitive and responsive to market demands and changes.

The disadvantages of data warehouses include for example the complexities and time involved in building the structures and framework for its effective use. There must be a clear defined objective and project team set up. In order to compete, organisations need information on all aspects of their performance. Information must therefore be available, accessible and relevant to a multitude of users throughout the organisation. The latest Deloitte & Touche (2003) CFO survey, indicated that CFO's are seeking to implement business intelligence initiatives that:

- ◆ Define the financial and non-financial information required to manage all aspects of business performance.
- ◆ Focus on analysing and interpreting information rather than gathering data.
- ◆ Integrate financial planning, budgeting and reporting.
- ◆ Implement techniques such as activity based costing and balance scorecard.
- ◆ Utilise web-based tools to minimise end user support and maintenance cost.

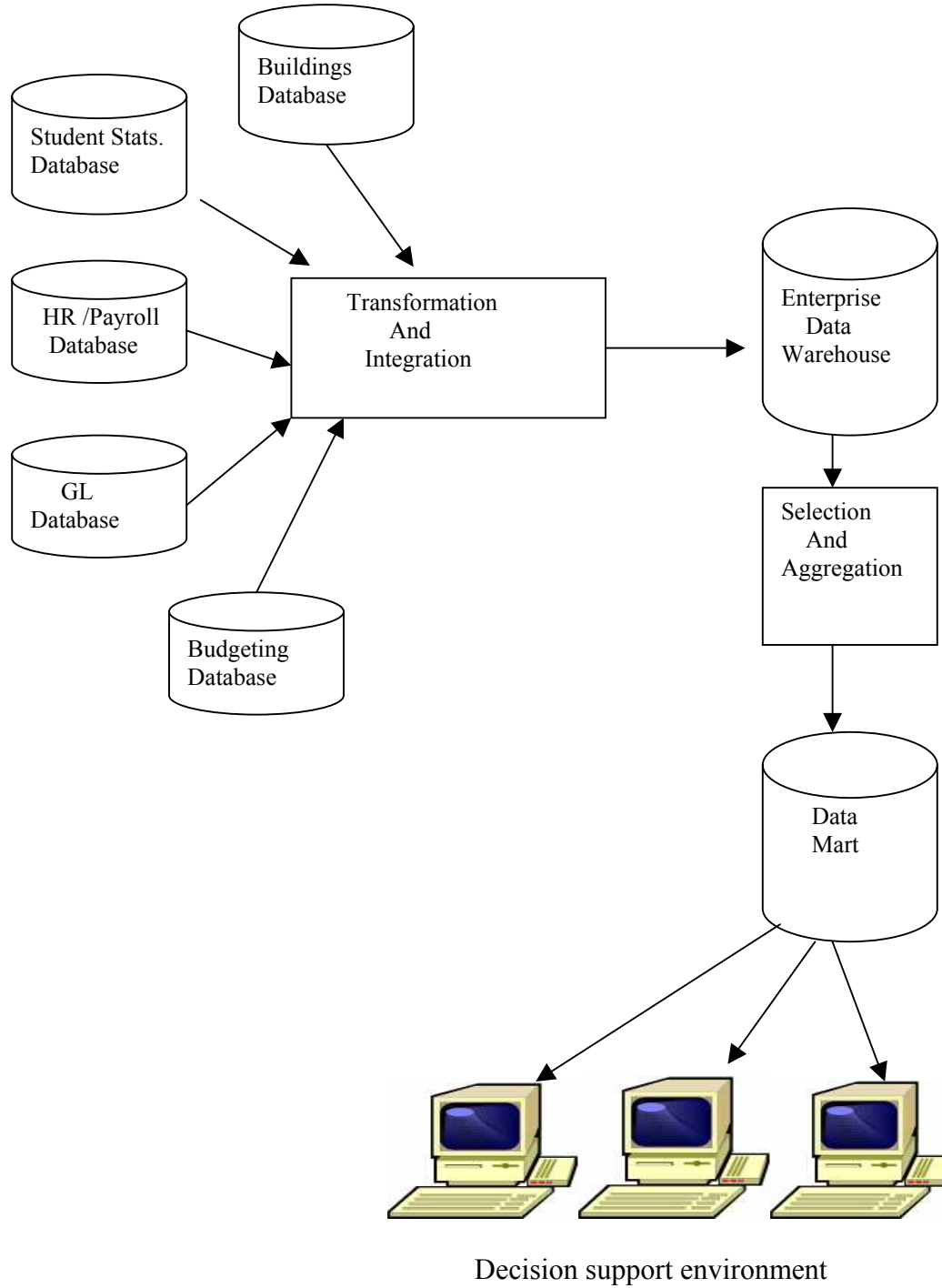
Better financial performance comes from competitive strategies and not from internal financial management. The Bourne (2002), survey indicated that many organisations are investing in IT databases, which are widely accessible, cost effective and reduce duplication of effort. Many organisations are now moving away from internal analysis and focusing on external strategies and competitive opposition. Target setting is based on external benchmarking rather than achieving internal goals.

At Baylor University in Texas administrators were faced with creating a central repository that would let them store, access, and analyse data from any department, college, or other entity at the university. Like most universities and third level institutions Baylor had data sources scattered everywhere on campus and on various systems. It needed a way to bring all this data together in one central location. The control of financial costs and staff time spent on this project was important to them when deciding on warehouse implementation.

During the summer of 1999 Baylor began creating a university wide warehouse and decision support system, using an iterative approach, by minimising the risk of failure. The objective was to provide administrators with a system that would allow them to answer questions and make better decisions. It was also important that university decision makers have the ability to create ad-hoc queries, generate reports, and perform analysis without having to contact the IT department for assistance. At the first phase in Baylor they were in a position to track enrolment, recruitment, retention, together with all related student activities at the university.

Figure 2.6 shows a data warehouse architecture model, modified to a university environment taking account of student statistics and databases.

Data Warehouse Architecture



Source: Modern Systems Analysis & Design(2002)(Modified to University Environment)

Figure 2.6

The advantages of processing all the financial and other data through one centralised data warehouse have been apparent for some time. This avoids duplication of services, creates a standard global chart of accounts and helps implement accepted processes. Besides it also offers the benefit of centrally controlled procurement, centralised reporting and increased flexibility for training and knowledge sharing. Wolfendale (2003) claims that all of these benefits contribute to lower costs through a reduction in hardware, software and IT resources. Senior management can also gain real-time access to information that allows them the ability to ‘drill-down’ and see as much detail as required. Wolfendale (2003) maintains that having real-time access to accurate data across the organisation is no longer optional – it has become a regular business practice and it’s one where Web-based portal technology can be of significant assistance.

2.5 Planning, Control and Budgeting within Third Level Education

In the United Kingdom the Jarratt Report (1985), on the efficiency of universities noted that budget responsibility within the higher education sector was not always clearly defined, and that financial information for budget centres was often inadequate (Jones & Pendlebury, 1996). Management accounting however within universities has developed significantly since then (Berry, 1994).

Within the strategy of overall planning, control and budgeting, the Chartered Institute of Management Accountants (1994) defined cost accounting as “the establishment of budgets, standard costs and actual costs of operations, processes, activities or products, and the analysis of variances, profitability or social use of funds.” Running an extra course at a university, or admitting an extra student on a course are examples of activity level changes that will have an effect on costs and budgetary control. The additional cost however will typically be the marginal cost. It is difficult to exercise budgetary control without knowledge of the relationship between level of activity and costs incurred (Jones & Pendlebury, 1996). There should therefore be some attempt to distinguish between the marginal costs and the fixed costs of a service. The unit cost exercise adopted by the universities in Ireland has been part of the ‘Funding Mechanism’ since the early 1990s.

Departmental budgets for third level institutions may be categorised under the following main headings:

- ◆ Recurrent Non Pay Budget.
- ◆ Capital Equipment Budgets.
- ◆ Capital Projects Budgets.
- ◆ Occasional Hourly Pay Budgets.
- ◆ Research Funding Budgets.
- ◆ Targeted Funding Budgets.
- ◆ Scholarships Budgets.

According to Glautier and Underdown (1994) the budget process involves the following:

- ◆ Defining areas of responsibility.
- ◆ Measuring performance.
- ◆ Comparing results to targets set.

Performance Evaluation

The objectives of performance evaluation may be defined as follows:

- ◆ To assess how effectively budget holders have performed.
- ◆ To identify where corrective action should be taken.
- ◆ To ensure that budget holders are motivated towards institutional goals.
- ◆ To enable comparison to be made between different departments.

The use of standard costs and flexible budgets plays an important role in the control of activities and the evaluation of performance. However, undue attention to cost control tends to diminish the importance of other goals. It is evident that some organisational and departmental goals may conflict, such as for example the need to minimise costs and at the same time to maintain product quality.

In contrast, third level institutions, where the cost drivers are students, staff and space allocation, must ensure that excessive cost control and budget cutbacks do not unduly influence the *raison d'être* of the university i.e. academic standards and research initiatives. The impact of stringent cost controls may adversely affect staff morale, loyalty, trust and ultimately motivation.

2.5.1 Corporate Culture within Third Level Institutions

The university is becoming a transnational bureaucratic corporation, where the focus is upon the administrator rather than the professor as the central figure of the university, and figures the university's tasks in terms of 'accountability' in which the university must pursue 'excellence' in all aspects of its functioning (Readings, 1998). It is becoming increasingly clear that the corporate culture now prevalent in many universities requires that academic Heads of departments should become much more managerial than before. In a recent research report academic Heads of departments identified the necessity to generate income as an important factor. Feller (1990) points out that the relationship between government, universities and commercial firms "do not represent an inherently 'natural' state of affairs. Rather, these roles represent an historic equilibrium that has evolved from an error strewn search by each participating institution for a means to accomplish its (changing) specific objectives."

During the 1980s however a major change took place with the intensified commercialisation of many university activities, particularly in relation to research and development operations. However virtually all the international universities separate teaching and research in their financial management of the university. The Irish University sector appears to be significantly different in this regard.

Academic heads of departments are under pressure from government and funding agencies. Allen (1995) suggested the need for institutions to plan strategically for the collection, storage, manipulation and dissemination of their information resources. (A strong data warehouse of information). In contrast there appeared to be insufficient

consideration of what managers in universities actually require, too often technology-rather than information-led strategies were given priority.

Newman's nineteenth-century ideal of the university as a civilising force, has given way to the idea that universities are 'environment-serving' (Allen, 1988). The state's insistence on greater financial accountability has led to an increase in the power and authority of central administrations in universities. Many universities now appear to have a senior management team with responsibility for both strategic and tactical planning, thereby reducing the role of and authority of academic committees. At the same time with the recent trend towards devolution of resource management responsibilities to departmental level, academic departments are in fact becoming more 'business unit' orientated and being told that their future well being will depend primarily on their entrepreneurial abilities (Prichard, 2000).

The planning and control aspect of budgeting may be overemphasised within the institution with the result that opportunities for the exercise of personal initiatives by heads of departments may be excluded. Hopwood (1974) stated that budget information may be used in three different ways for the purposes of assessing managerial performance as follows:

1. Budget-constrained evaluation - The manager's performance is evaluated on the basis of ability to continually meet budget targets on the short-term basis.
2. Profit-conscious evaluation – the manager's performance is evaluated on the basis of ability to increase the general effectiveness of the operations of the unit in relation to the long-term objectives of the organisation. In this case budget information will be used with a degree of flexibility.
3. Non-accounting evaluation – The budget information plays a relatively small part in the evaluation of the manager's performance.

Glautier and Underdown's (1994) summary of the effects of these different styles of managerial evaluation on managerial behaviour is listed in figure 2.7.

Evaluation on Managerial Behaviour

	Budget- Constrained	Profit- Conscious	Non- Accounting
Involvement with costs	High	High	Low
Job-related tension	High	Medium	Medium
Manipulation of accounting Reports	Extensive	Little	Little
Relations with Supervisor	Poor	Good	Good
Relations with Colleagues	Poor	Good	Good

Source Glautier and Underdown (1994).

Figure 2.7

Jensen (2001) argues that the budgeting process is so deeply embedded in corporate culture, which encourages deceit and distortion of facts, but it doesn't have to be that way. Only by severing the links between budgets and bonuses and rewarding people purely for their accomplishments and not their ability to achieve targets will we take away the incentive to cheat and even damage irrevocably the organisation itself.

He argues that when a manager realises that the targets will not be met, then very often the incentive is to move earnings from the present to the future year as a means of achieving bonuses in the following year. The incentive is therefore to cheat the system.

When budget allocations are distributed to budget holders within an institution it is unlikely that each service will receive sufficient funds to undertake every desired programme (Jones & Pendlebury, 1996). Requests for funds are often kept to what might be thought to be acceptable amounts. At this stage a whole range of strategies for ensuring a reasonable budgetary allocation comes into play. These are well described by Wildavsky (1974), in “The Politics of the Budgetary Process”. Pfeffer and Salancik (1974) observed that university budget allocations could be understood in terms of the relative power of departments, such power deriving from research reputations and ability to generate external funds.

According to Jones & Pendlebury (1996), when amounts allocated and authorised are not needed, then under spending ought to occur, which may result in cuts in future allocations, on the grounds that previous allocations were too high. Spending up to the exact limit may result in expenditure that is not entirely necessary, while overspending might result in accusations of bad management.

There is a strong link and connection here with the motivational aspect of budgeting. Only if budget holders see the budget allocation as reasonable in the first instance will they be motivated to achieve it. Only if they perceive the politics and strategies of budgetary allocations to be fair and the assessment of budget achievements as consistent will they avoid dysfunctional behaviour (Jones & Pendlebury, 1996).

Responsibilities of the academic heads of departments

Becher and Kogan (1992) in trying to combine the ideas of collegiality and bureaucracy within universities attempted to show the influences on the four basic structures within universities, namely, the individual, the department, the institution, and the State. The output of academic departments is seen as producing graduate students and applied research, thus defining the managerialism and changing role of heads of departments.

Some heads of academic departments regarded their role as that of manager rather than of academic leader in their field. The reason for that was due to the pressure from the staff, university and external auditors. Heads of departments felt aggrieved that the largest part of the academic budget - staff costs - remained under the central authority of the university. It was felt by some heads of departments that their discretionary budget was so small it was inappropriate to consider this as an important function of the office (Becher and Kogan, 1992).

Managing departmental resources was considered one of the top priorities when goals were ranked. Research, teaching staff and the generation of income were all given high priority as well as managing departmental resources. Resource management is an important issue for heads of departments and is a key issue when managing the departmental budget. Some universities indicated that the achieving of a successful department was dependent upon such matters as research and funding as well as strong resource management, staff development policies and academic and student recruitment (Becher and Kogan, (1992).

In defining the responsibilities of the heads of academic departments, Middlehurst (1994) characterised the following functions:

- ◆ Governing the department.
- ◆ Managing teaching.
- ◆ Managing personnel.
- ◆ Promoting departmental development.
- ◆ Working with students and student issues.
- ◆ Representing the department to the institution.
- ◆ Serving as a link to external groups.
- ◆ Managing the budget and resources.

2.5.2 Short Range Planning

Jones & Pendlebury (1996) indicated the following reasons for a public sector institution or university, to prepare a revenue budget:

1. Determining income and expenditure.
2. Assisting in policy making and planning.
3. Authorising future expenditure.
4. Providing the basis for controlling income and expenditure.
5. Setting a standard for evaluating performance.
6. Motivating managers and employees.
7. Co-ordinating the activities of multi-purpose organisations.

“A prediction is information based upon previous figures projected into the future. A forecast is based upon conjectural information, i.e. subjective judgements as to the effect of various factors” (Clifton et al, 2000).

According to Jones & Pendlebury (1996) the use of the revised current year estimates of income and expenditure as the starting point for determining the budget for the next year is frequently claimed to be one of the most fundamental weaknesses of the budgetary process. It is argued that such an approach fails to consider whether a particular item is still required or whether the amount currently incurred is reasonable. Once an item appears in the budget its inclusion in future budgets is taken for granted and only inflationary or incremental changes in the item are considered. This ‘incremental’ approach is in contrast to the zero based budgeting format where every item is justified as if every programme were starting anew (Jones & Pendlebury, 1996).

2.5.3 Information Technology Systems

Unfortunately many third level institutions due to lack of resources or a willingness to change, have not adapted to the rapid progress in information technology. The Joint

Information Systems Committee, the body responsible for university computing in the UK, has stated that ‘information has become the very lifeblood of higher education institutions. Information should be considered as part of the very infrastructure of universities’.

Interestingly, better performance in profit-making enterprises does not seem to be associated with either the use of sophisticated accounting systems (Klammer, 1973, and Magee, 1976) or formal planning procedures (Grinyer and Norburn, 1975), but with multiple informal information channels (Berry, 1994).

External reporting must comply with generally accepted accounting principles, while internal reporting may be designed to suit the requirements of budget holders and management. Current discussion between the universities in the Republic of Ireland, the HEA and the Comptroller and Auditor General substantiate this view. In 2002/03 universities will report to the House of the Oireachtas, under strict GAAP compliance and consolidation procedures, while at the same time producing a ‘funding statement’ for internal management and unit cost purposes.

Earl and Hopwood (1980) have suggested that information systems “developed in isolation from their organisational context will only at best yield marginal gain”. More specifically, in the context of universities Jones (1986) argued that “effective accounting control systems for universities are likely to differ from commercial enterprises and may also be different for each university because of the variety of management styles, philosophies and structures to be found in universities” (Berry, 1994).

In relation to financial control in universities, Jones (1986) stated that the cause of efficiency may be better served by asking staff to exercise constraint over controllable departmental expenses such as telephones, stationery and travel etc. There may then be less need for formal mechanism such as budget setting to carry “appropriate tasks and pressures into budget centres” (as advocated by Jarratt, 1985) (Berry, 1994). There is a considerable challenge therefore facing administrators who design and implement

accounting control systems within their institutions. An organisational or responsive approach may be much more consistent with changes in educational demand and with the predominant culture of universities or departments within universities (Berry, 1994).

Miller (1995) described the way in which management information can become centralised in the hands of a small group of senior managers. This was used to manage the budget reductions that Aston University suffered in 1981. Sizer (1987) has shown that this style of information management was not altogether a success. Sizer found that bottom-up responses to management requests for feedback did not lead to fundamental changes. Solutions to problems are often technology-driven rather than information-led. The 'MAC' (Management and Administrative Computing) initiative by the UFC in the UK is a case in point. The project was intended to supply universities with software for a range of information management functions such as finance, student and human resources, together with research and physical resources. The initiative seemed to concentrate and focus on the technology issues rather than the decision-making processes underlying them.

The concept of using Critical Success Factors analysis in determining the information needs of a university or third level institution may be beneficial. By concentrating and developing factors that were vital, Rockart (1982) contended that an organisation that used a CSF approach could give some direction to the development of any computer based information system.

Sabherwal and Kirs (1994) carried out a study of 244 large academic institutions and demonstrated that a CSF approach to higher education information needs is also beneficial. They contended that by aligning critical success factors to IT capabilities it could improve the overall performance and effectiveness of the academic institution.

2.5.4 Management Style

“A university cannot be run without consensus and cooperation. It may have a terribly efficient management structure, have a financial control system of impeccable accuracy and be able to cost and account for every item of expenditure, but if in the process of gaining this managerial world the soul of the institution is lost, where is the profit?” (Warwick, 1985).

The active participation by managers in the budgetary process enhances and improves the efficiency of the planning process. Glautier and Underdown (1994), identified three potential levels of cost performance:

1. The Budgeted Level.
2. The Aspiration Level.
3. The Actual Level.

The aspiration level may be defined as that level of future performance, which a budget holder explicitly undertakes knowing past performance levels. The aspiration level is the real inner goal acceptable to the budget holder. The objective is to bring the aspiration level into harmony with the budgeted level. In this regard therefore budget holders should be motivated and not pressurised into achieving their budgetary goals. It is important to recognise aspiration levels at the planning stage and the timely communication of results are important in improving performance. Unrealistic aspiration levels should be discussed and compromises achieved so staff motivation is maintained. It is not sufficient to rely on the budget process alone to maintain adequate management control. The behavioural implications should be taken into account as excessive pressure by management leads to mistrust, hostility and actions, which may have detrimental implications on the long-term prospects of an institution (Glautier and Underdown, 1994).

Hornigren and Foster (2002) defined managerial style as “ a set of behaviours exhibited by key managers in an organisation”. This highlights the manner in which management

relates to budget holders, and in this sense two distinct and contrasting managerial styles emerge such as those that tend towards authoritative, as against participative. Management style may have an influence on the institution's culture, where employees share a set of beliefs and values. Glautier and Underdown (1994) suggested that 'management by objectives' offer an alternative to the conventional budgetary theory, in that it allows employees to develop as individuals and to exercise responsibility through self-assessment and control.

Contingency Theory

There is a contingency theory that states no single institutional design is the best in all situations. Contingency theory defines four factors in the design of institutional structure as follows:

1. Forces in the Manager – Objectives will vary depending on the personalities of managers.
2. Forces in the Environment – the most effective institutions are those that adjust to environmental requirements.
3. Forces in the Task – Technology has an important impact on the design of organisational structures.
4. Forces in Employees – Institutions having more skilled than unskilled personnel will be faced with a greater desire for democratic structures.

Ward and Griffiths (1999) state that 'management by objectives' allocates responsibilities to individuals for achieving each of the objectives. They also state that business objectives and strategies are the product of a number of considerations as follows:

- ◆ What the institution *might do*, based on the environment within which it operates.
- ◆ What the institution *wants to do*, based on the values and wishes of senior management.
- ◆ What the institution *must do*, if it is to survive in its environment.

- ◆ What the institution *can do*, based on its resources and capabilities.

The values and wishes of senior management above may be compared with the comments by Glautier and Underdown (1994) in relation to the ‘culture’ of an institution, whereby budget holders respond positively and are motivated by a ‘participative’ as opposed to an ‘authoritative’ approach by management.

Failure to report quickly to budget holders on their performance will seriously weaken the budgetary control system (Jones & Pendlebury, 1996). In 1996 the British Library Research and Development Department commissioned a research survey, which was conducted by the Department of Information Studies, at the University of Sheffield. The survey found that academic heads of departments believed that financial and other management information, provided by university administrators was:

- ◆ Not Timely - information was provided too late.
- ◆ Frequently inadequate.
- ◆ Inaccurate – information was not accurate.
- ◆ Difficult to access.
- ◆ Too intricate and cumbersome to use.

Academic heads of departments felt they were poorly served by the management information system. This made it difficult for them to monitor and control their budgets and manage their departments in an efficient and effective manner.

In the same survey administrative staff found it difficult to identify and focus on the information needs of academic heads of departments, because their own primary concern was to meet the information needs of their university’s senior management team and outside bodies. It was also found that administrative staff had neither the time nor the resources to devote to what were considered to be essentially ‘second-order information needs’. Administrative staff also felt that academic heads of departments had no real

interest in their budgets, and lacked the financial skills necessary to control and monitor their budgetary processes.

Research undertaken for local authorities indicated that the budgetary control statements provided by the finance department frequently suffer from very obvious defects. They lack timeliness and the budgetary process is dominated by the finance departments statements aimed primarily at disclosing the budgetary compliance position rather than controlling the economy, efficiency and effectiveness of operations (Jones & Pendlebury, 1996).

The Audit Commission (1989) also identified the following problem areas:

1. The responsibility for financial control often fails to match management responsibility.
2. The existence of restrictive, complicated and confusing financial procedures.
3. Financial information is often poorly presented and out of date.
4. Financial expertise is too remote.

Birdsall (1995) posed the question “is there a common understanding among campus administrators about the role of politics in the budgeting process within *universities*?” During the course of his research twenty deans, budget directors, and other administrators were interviewed at four research universities. The role of politics in the budgeting process was also highlighted in the handbook on budgeting developed jointly by the American Association of University Professors and the national Association of College and University Business Officers. The handbook draws attention to the fact that “the role of ‘politics’ cannot be over-looked or underestimated in weighing budget outcomes”. The authors refer to for example, deans who may have friendships with trustees or legislators, as well as long-time administrators who gain a collection of political debts that make them powerful and influential figures in the allocation of funds.

In the British Library Research (1996) survey, surprisingly perhaps, academic heads of departments did not expect to receive any management information support from their library. Management and financial information was however another matter. Heads of departments felt they were poorly served in this regard, with information that was usually provided too late, was often inaccurate and too intricate or cumbersome to use. Since academic heads of departments were a disparate group with individual concerns, it was difficult for administrators to focus upon their needs. There was also a culture of dissonance between administrators and academic heads of departments, since neither group sufficiently appreciated the pressures under which the other worked.

An “excursion in the world of unreason” is how Cornford (1908) described the political sphere. The budgeting process within universities and third level institutions may be ‘excursions in the world of unreason’ but they can also be a long drawn out process, demanding large resources of time and energy. Organisations are a coalition of people and groups that have diverse interest and goals, and as such it can be argued that decisions are made in an environment of bargaining, negotiating and jockeying for position. Consistent with this view is Wildavsky’s (2000) definition of budgets as “attempts to allocate financial resources through political processes”.

2.6 ERP Implementation Strategies

A very large number of system implementations fail to deliver the desired results, due mainly to the lack of proper planning and organisational skills on the part of management. Not all aspects of the implementation process can be easily controlled or planned (Alter and Ginzberg, 1978). However, it is estimated that one half of private sector projects are underestimated in terms of budget and time required to deliver and complete the system in the original plan. Many projects are delivered with missing functionality. Government or state-funded projects incur the same level of failure rates and sometimes worse than the private sector (Laudon, 1989, Helms and Weiss, 1986).

Change a Necessity and a Challenge.

Change in organisations can be a combination of innovation and improvement, where innovation is stepwise and improvement continuous (Imai, 1986). Introducing a new or improved information system into an organisation or institution is a change process (Hoffer, et al, 2002). System analysts are vital to the change process and must possess various skills of change management techniques in order to persuade and lead staff in accepting and making a smooth transition from the old to new processes. Change in the way information is defined, accessed, and used to manage the resources of the organisation often lead to new distributions of authority and power (Lucas, 1975).

According to Piturro (1999) “it is easy to underestimate the cost of implementing an ERP system by 40% to 75%, when executives select this system they are participating in a make-or-break decision”. Professional journals and academic articles are littered with examples of high failure rates in relation to the implementation of ERP systems. In many instances whole organisations have collapsed and company failures are not rare as a result of mismanagement and underestimating the cost of implementing ERP.

Project Management

A project can be defined as “ something that has a beginning and an end” (Turner, 1993). Successful project management and implementation of large projects requires careful planning and interpersonal management skills in order to ensure that the final product is delivered on time and within budget. Laudon and Laudon (1999) state there are a number of essential factors that have been developed in order to ensure projects are managed efficiently such as:

- ◆ Increasing User Involvement.
- ◆ Overcoming User Resistance.
- ◆ Managing technical Complexity.
- ◆ Formal Planning and Control Tools.

- ◆ Controlling Risk Factors.

There are many motivations for carefully planning the identification and selection of projects (Atkinson, 1990, Ross and Feeny, 2000). Organisations or institutions have not systematically planned how to allocate resources when determining information systems. The need for new or improved information systems comes from a variety of sources, including for example:

- ◆ The need to fix an existing broken system.
- ◆ Old legacy system is out of date.
- ◆ The need to improve the performance of the existing system.
- ◆ Competitive pressures.
- ◆ Changing or new government regulations.
- ◆ Creative ideas by individual managers.
- ◆ Requirements generated from top-down organisational initiatives.

In the third level educational sector for example such questions are often asked, “what procedure is required to solve *this particular problem* as it exists to-day”? The difficulty with this approach is that the required organisational procedures are likely to change over time as the cultural climate and economic environment changes. A university may decide to change its method of registering students, only to find that the existing information system must again be modified to adapt. Such ‘short sighted’ ad hoc planning creates uncertainty and hinders staff motivation. The question that should be asked is “what information requirements will satisfy the decision-making needs or business processes of the enterprise to-day and well into the future?” (Hoffer et al, 2002).

The information system should be structured towards supporting the strategic plan of the institution. Management very often are ‘carried along’ by the force of changing technologies without applying themselves to the decision-making process and overall mission of the organisation. In this regard therefore the requirements generated by

management should be the driving force for change. Before embarking on a new system (Stern and Stern 1996) advises on four basic steps:

- ◆ Collect data about the existing system.
- ◆ Describe and analyse the elements of the existing system.
- ◆ Determine current costs.
- ◆ Determine whether a new system is necessary and feasible.

Piturro (1999) indicated that when it works well, ERP can speed up business processes, reduce costs, improve quality and customer satisfaction and measure results continuously. When it doesn't work well, it can be a very costly and expensive way to create havoc within an organisation.

One of the first steps in selecting a new information system is to prepare a request for proposal (RFP) document. This is required in order to obtain specific technical information from software vendors and to ask for information about the vendors themselves. According to Stern and Stern (1996) the two main parts of a successful RFP are:

1. The description of the organisation's needs.
2. A request for information about the vendors themselves.

Table 2.6 indicates the top 10 vendors of ERP to midsize companies in 1998.

Top 10 Vendors of ERP to Midsize Companies 1998 License Revenue \$m

	\$(m)
SAP	348
JDEdwards	248
BAAN	165
JBA International	160
Oracle	110
PeopleSoft	100
SSA	100
Epicor	90
Intentia International	80
Great Plains	60

Source: AMR Research, Boston (1999).

Table 2.6

Project Team

The Hunter Group (2000) offers the following advice in relation to project management and planning:

- ◆ Set realistic goals for the project's scope, financing and duration. They suggest breaking down the project to realistic levels such as, planning, acquisition, implementation, operation and improvement. In order to budget adequately for the project 25% to 50% should be added to the three finalists.
- ◆ Try to eliminate distinctions between insiders and outsiders by creating a project-focused team of company people and consultants. Give them the authority to implement their decisions quickly.

- ◆ The internal team should consist of staff that are dedicated to the project full-time.
- ◆ Dedicate a physical space where the team can work together, away from everyday operations and distractions.
- ◆ Commit to two-way knowledge transfer. Consultants should inform clients about application specifics and business best practice. The client should familiarise the consultant with the firms business needs, especially as they change.
- ◆ Facilitate software upgrades and maintenance by minimising customisation.
- ◆ Seek out acceptable ways to change business processes.

View of ERP Implementation from the United States

When asked to say “what planned initiatives he had for 2003”, Gordon Haaland, President of Gettysburg College said, “employee burnout and organisation stagnation are all too often the legacy of an intense ERP implementation. This requires an enormous day-to-day management and maintenance effort once these robust applications go live. Our goal is to move beyond these barriers and maximise the systems strategic potential. Our plan hinges on three principles: continued investment in our employees, ongoing investment in the ERP system, and the creation of a collaborative work environment” (Goral, 2003).

Disaster Recovery Procedures

It is essential that budget holders and end users be continuously and seamlessly updated on their budget details. Any break or disruption in that service could have serious consequences for the institution. In the event of a disruption heads of departments would not be in a position to review their up to date spending and could make commitments that they otherwise would not have made.

Third level institutions must therefore make provision for any security breaches or disruption of services on the IT system. Research has indicated that many large organisations have suffered greatly as a result of security breaches in IT, resulting in loss of confidence and in some instances eventual close down. Many manufacturing organisations are placing IT systems on the top of their agenda, even ahead of the manufacturing process itself. Their thinking is that if the IT system is at risk the whole organisation is at risk. It is only a matter of time before third level institutions follow the same route.

Excluding staff and student population the most important asset any third level institution has is its Information Technology System. If a building goes on fire it can be replaced. If there is a breach of security and the IT system ‘goes down’ for a long period of time, then this may have consequences for the retrieval of vital information data.

In a recent survey of US firms the following are the reasons given for business disruptions: (See Table 2.7).

Business Disruptions

◆ Power outages	70%
◆ Computer hardware problems	50%
◆ Telecommunications Failures	45%
◆ Lightning Storms	33%
◆ Floods	15%
◆ Fire	12%
◆ Earthquakes	9%
◆ Violence/Terrorism	7%

Source: Financial Executive (2001).

Table 2.7

Disaster recovery plans should also be in place and resilience/redundancy procedures employed to mitigate against risk. Flat network structures should be replaced by switched routed applications using the Demilitarised Zone Model ('DMZ') with firewall software installed to ensure greater internal security. On-line information systems are directly accessible by many budget holders and end users in third level institutions, making it vitally important for security and risk management programmes to be in place, as part of medium and long term strategic plans.

Recent statistics indicate that only 20% of organisations (reliant on information systems) experiencing a security breach or disaster survive over one month after the event. Experience has shown however that a higher proportion of problems are caused by accidental error on the part of IT users as opposed to deliberate abuse.

In Ireland for instance, depending on whether or not the act of transplanting a virus, is intentional (and would come under the tort of trespass) or unintentional (and come under the tort of nuisance) it seems certain that a right of action by the institution would exist, in the event of such an act.

Research consultants regularly state that for budget holders 'availability' of data sets and information is just as essential as security issues. Management of data itself is a major task within the IT department. Management of back-up procedures is an additional requirement and essential feature of IT management. The IT department should ensure that 'network vulnerability assessments' are carried out on the network at regular intervals.

CHAPTER 3: A CASE STUDY OF NUI MAYNOOTH

3.1 Introduction

Following the foundation of The National University of Ireland, Maynooth became a Recognised College of that federal structure in 1910. In 1966 St. Patrick's College opened its doors to lay students and its population grew rapidly over the next three decades. In 1997 the Faculties of Arts, Science, Celtic Studies and Philosophy were united in a newly established constituent university of The National University of Ireland. The current student population of the university is 5,500 together with an additional 2,000 adult and mature students in the 'Adult and Continuing Education' entity of the institution.

Prior to the 1970's the finance office duties were essentially undertaken by a small number of officers. The introduction of an N.C. R. accounting machine in the early 1970s heralded the university into the age of technology, and within a few years the hand-entered ledgers, so meticulously maintained were gone forever. In the early years the payroll was run on a PDP11, and in the early 1980s we developed an in-house finance system, which was written in COBOL and run on a Digital VMS operating system. The reporting tool used was Datatrieve, and the hardware was mostly Digital VAX 750s and a Micro Vax 3100. The chart of accounts was redesigned, and the budget reports to departments were sent out in hard copy via the internal mail.

3.2 Quality Review Exercise

The Quality Promotions Unit within NUI Maynooth, was established in 1995, with responsibility for carrying out Quality Assessments at departmental level. In 1997 the finance office was selected as one of the departments for review during that year. The review consisted of a self-examination and self-appraisal exercise. A rare opportunity was given to the finance office staff to assess their contribution and measure their performance within the emerging structures of a new and modern university.

Many of the younger members may have considered it a daunting and demanding task, but soon embraced the opportunity to evaluate their contribution and assess their performance. This exercise was a forerunner to establishing the new ERP financial management information technology systems that emerged two years later. We set about the task by compiling comprehensive questionnaires and sent them to the following ‘stakeholders’:

- ◆ Heads of Departments.
- ◆ Research Budget Holders.
- ◆ Current Students.
- ◆ Past Students.
- ◆ External Suppliers.
- ◆ Current Staff Members.

Detailed analyses of the findings were analysed and stratified into groupings. A long and comprehensive report was produced, and external assessors interviewed all staff members of the finance office, before the Quality Promotions Unit produced an assessment and findings.

3.3 Views of Budget Holders, Students and other Stakeholders

It is a humbling experience to receive and acknowledge the views and findings of stakeholders in relation to ones own department’s past performance. As part of a team operating within the finance division every staff member accepted that their own individual performance in some way contributed to both the favourable and negative responses of stakeholders. We were all prepared to accept the favourable responses, however we knew that the negative reactions of some stakeholders to certain issues needed to be addressed. Responses such as “never had a difficulty with the finance office in my dealings with them over twenty years” were encouraging and appreciated. However when it came to the reactions in relation to budget reporting we accepted change was inevitable.

Such negative responses included for example a dislike of the budget printouts produced from the old legacy system. Inability to understand and read the budget reports, together with such comments as “why cannot we have daily on-line access to our budget reports”, made us aware of our responsibilities to budget holders. We realised that they had taken the time and made the effort to respond and we also understood that budget holders wanted to control and monitor their budgets.

During the following year 1998, the funding agency The Higher Education Authority (HEA) advised that universities review their information technology systems and that ‘targeted funding’, specifically designated funds for that task, would be made available. Coincidentally, at that time, as already indicated the legacy system was coming under intense pressure due to increasing demands from heads of departments and the rapidly increasing number of undergraduate, postgraduate and mature students.

Budget holders were demanding more up-to-date financial information and on-line data. A small team of dedicated technical staff supported the existing system and it was becoming increasingly obvious that change was necessary. We realised that change would not only involve new ways of doing business but also that the relatively low cost of producing and maintaining the existing information technology legacy systems was an issue of the past. We established our mission statement, to commit ourselves to providing high quality delivery of service and to continue evaluating budget holder’s requirements.

Having carried out an initial survey of the new application systems in the market place, it soon became apparent to us that the purchase, maintenance and continued buy-in of support for a new ERP information technology system was going to be an expensive long-term investment. During times of change the appreciation levels of such valued contributions made by existing IT technical staff in maintaining old legacy systems is increased significantly.

3.4 Decision to Change

Throughout twenty-five years in the university sector, one is inevitably associated with various change processes. When Professor John Sizer visited NUI Maynooth in 1995, he enlightened conference participants with the prospect of rapidly changing circumstances within the third level education sector in the United Kingdom. He set the thought process in motion. However we were not to realise the extent of such change until we evaluated the IT revolution, and in particular the impact of the Internet and Web enabled technology.

3.4.1 Selection Process

An initial investigation of the market place during 1998 soon indicated to us that there was no ‘fully-integrated’ ERP system to cater for universities or third level institutions in the Republic of Ireland. The market is too small for vendors to supply fully integrated Human Resources/Payroll, Student Records and Financial Systems. This case study therefore refers to the implementation of the financial systems only, NUI Maynooth also implemented new ‘stand alone’ student records and HR/payroll systems during the late 1990s.

In NUI Maynooth, we contracted Deloitte and Touche to act as our consultants for the selection process, and we structured the RFP proposal document under the following main headings:

- ◆ Introduction

- ◆ Suppliers Company Information.
 - ◆ Profile of the company.
 - ◆ Structure of organisation.
 - ◆ Existing technology information.
 - ◆ Business requirements for accounting software package.

- ◆ Existing personnel.
- ◆ Instructions for submitting tenders
 - ◆ Method used for assessing responses.
 - ◆ Contact names.
 - ◆ Place and date for submitting tender.
 - ◆ Format of tender.
 - ◆ Restrictions and rules for submission of RFP document.
- ◆ Required tender response content
 - ◆ Information on supplier's organisation.
 - ◆ Software functionality.
 - ◆ Hardware requirements for software to run on.
 - ◆ Integration with existing systems.
 - ◆ IT standards conformance.
 - ◆ Implementation plan.
 - ◆ Maintenance proposals.
 - ◆ Cost of software.
 - ◆ Details of similar sites where supplier supplied the software.
 - ◆ Ability to arrange site visits.
 - ◆ At least three years of suppliers fully audited accounts including current year forecasts.

The RFP document was available in software format and designed so that the software suppliers were in a position to respond to a 'question and answer' scenario. We designed the RFP document in order to ensure the software package could deliver on our requirements. We separated our requirements over the following main headings:

- ◆ Mandatory
- ◆ Desirable
- ◆ Important

When all the submissions were received we weighted the selection criteria over the following headings:

- ◆ Whole life cost of the product.
- ◆ Stability of the vendor.
- ◆ Maturity of the product
 - ◆ Product used in similar institutions or circumstances.
 - ◆ Product is at least two years old.
- ◆ Implementation time frame.
- ◆ Support for application vision and principles.
- ◆ Customer service record.
- ◆ Availability of technical support
 - ◆ Support during office hours.
 - ◆ Guaranteed response time.
 - ◆ Help desk back-up.
- ◆ Package functionality
 - ◆ The fit on mandatory requirements mentioned earlier.
 - ◆ Year 2000 compliant.
 - ◆ Euro compliant.
- ◆ Tool-set functionality and support
 - ◆ Report writer functionality and ease of use.
 - ◆ Drill down, around and across.
 - ◆ Web enabled.
- ◆ Ability to customise.
- ◆ Availability of conversion tools.

We were anxious to ensure that back up support was available to work along side our existing IT internal technical staff. We were also conscious of the fact that research indicated that over a five-year period support costs of ERP were estimated at 76% of total cost of ownership.

It was important for us to be in a position to evaluate the responses from suppliers in a structured and effective manner and therefore it was necessary for suppliers to indicate to us the functionality of their software package under the following main headings:

- ◆ Functionality can be met by standard software.
- ◆ Functionality can be met by using a standard report generator.
- ◆ Functionality requires customisation by the user.
- ◆ Functionality requires bespoke modification to the software package.
- ◆ Enhancements to be provided in future releases.
- ◆ Functionality cannot be met.

The steering committee allocated % ratings to each of the above headings, together with other issues such as cost of purchase, for each supplier in order to arrive at a conclusive and structured decision on the choice of software supplier. We were surprised at the volume of replies received from vendors and the number of suppliers willing to take on the task, given that 'Y2K fever' was rampant within the market place. We were also pleased that many of the 'top 10 ERP' vendors responded to our tender request. We narrowed the vendors down to three, by eliminating the others on two strict requirements namely, cost and functionality. We were confined to a strict budget and secondly functionality had to be met without much additional cost required to customise the product.

The remaining three vendors all came within our budget, so the final decision was going to be made on functionality and on the experience of the vendors' implementation teams. We interviewed all three remaining vendors, received their presentations and made site visits to existing customers. The selection committee agreed there was little separating the three vendors. It would have been expedient to pick and choose the positive elements from each vendor and select the 'perfect system'. In the end a decision needed to be made and the selection committee placed JDEdwards before the Finance Committee and the Governing Authority for approval. We were pleased that one of the top ERP suppliers

was going to be part of our long-term financial strategy planning process, and looked forward to commencing the project.

We set up a full time project team in the spring of 1999 and commenced training and familiarisation with the JDE Oneworld software. Software Resources Limited, an Irish company who is dedicated to supplying and implementing JDE software, conducted the training. They also supplied dedicated implementation staff to work alongside our project team. The two teams worked closely together and we set a ‘go live’ date for 1st October 1999, which was the commencement of our next financial accounting year.

3.4.2 Conference Room Pilot (CRP)

We set up a ‘conference room pilot’ (CRP), project whereby we tested data, input suppliers names and invoices, and reconciled controls. By early summer we had completed the redesign of the ‘chart of accounts’, and were now in a position to test the trial balance, income and expenditure account and balance sheet. We had sufficient information in CRP to draw initial conclusions. We were satisfied so far but we needed more information on value-added tax and withholding tax, which were particular to Irish legislation.

Meanwhile we were designing the reports for budget holders. We were conscious of their concerns from the quality review exercise conducted two years earlier. We were also aware that the research budget holders required summary analysis to comply with EU formats and procedures. By mid summer the technical staff on the project were resolving the tax issues, and had also produced a comprehensive procedures manual for our finance office staff. Any ‘blue sky’ thoughts of scanning invoices, e-procurement, EDI, etc. were quickly dispelled by late summer, as our ‘target date’ was looming faster. We had two main objectives at this stage, produce reports for budget holders and monitor the trial balance.

Reconciling control accounts were essential to this process. We informed all heads of departments and budget holders of the changes and sent out samples of the redesigned budget reports. We also supplied them with the new coding structures and procedures. The new research reports for example, included information under the following main headings:

- ◆ Current Period
- ◆ Year to Date
- ◆ Project to Date
- ◆ Project Budget
- ◆ Balance Remaining

In early September we presented our report to the Finance Committee and the decision to 'go live' on the 1st of October 1999 was confirmed. We were fortunate in having a dedicated internal project team, but equally fortunate that Software Resources supplied experienced technical staff and in particular, accountants who were highly trained and knowledgeable of JDE Oneworld software.

Hard copies of the departmental reports were sent in the internal mail relatively shortly after the month of October 1999. We had achieved our target, completed our project 'on time' and within budget.

3.4.3 Continued Progress and On-going Consultation Process

Since our 'go live' date we have implemented 'on-line' financial reporting to our budget holders via the Intranet. The data is copied from the database and available to budget holders who now have on-line access to virtual live information twenty-four hours every day. Since commencing the project we conducted four separate budget seminars and workshops with heads of departments and budget holders.

During these conferences we discussed and exchanged ideas and also appointed ‘administrators’ within departments to take responsibility for day to day budgeting within their departments. Having produced on-line reports to budget holders our next assignment will be to examine the level of usage of the reports by business unit holders. Our report-writing package will provide us with statistics of access rates by budget holders. We also intend to provide more workshops for budget holders in relation to supporting and assisting them to understand, monitor and control their own budgets.

3.5 Conclusion

During 1998 we realised the necessity to purchase and implement a new financial software system. We were concerned about the reliability of the legacy system and its capability of dealing with the fast looming ‘Y2K’ issue. We were also aware of the need to improve our budget reporting to heads of departments and end users. The purchase and implementation of the JDE Oneworld ERP system has been a success, due mainly to the dedication of the two teams involved. Since implementation in 1999, we have undergone two upgrades of new versions of the software.

The on going maintenance, and total cost of ownership of ERP will be a cause of concern and this issue was also identified in the survey, where 57% of combined respondents stated this was a challenge for them going forward. Another issue that requires attention is the continued training of university technical and administrative personnel in the maintenance of databases, and report writing techniques. This requirement is necessary as reliance on outside consultancy advice may be expensive and, perhaps more important, outside assistance may not be available when the need arises.

CHAPTER 4: RESEARCH STRATEGY AND FRAMEWORK

4.1 Introduction

This chapter outlines the research strategy and approach used in this dissertation. The research design, administration and instrument are also included.

4.2 Research Method

The research method selected for this dissertation was a postal questionnaire. In order to give a broader perspective to this topic, it was decided to include third level educational institutions in both the Republic of Ireland and the United Kingdom. In this regard therefore postal questionnaires were chosen in preference to interviews or telephone questionnaires.

4.3 Research Design

The research design focused on the main objective of the dissertation, which was “budgeting and ERP control systems in third level educational institutions: some evidence from the Republic of Ireland and the United Kingdom.” This involved defining a list of third level educational institutions in the Republic of Ireland and the United Kingdom to which the postal questionnaire would be sent. The questionnaire was designed appropriately to obtain the required information in order to draw relevant conclusions.

4.4 Institutions Contacted

The institutions were broken down in the first instance between the Republic of Ireland and the United Kingdom.

Republic of Ireland

The researcher is employed in the third level educational sector in the Republic of Ireland, for twenty-five years, and therefore has a reasonable informed knowledge of the structure and background of the sector.

Seven universities in the Republic of Ireland were chosen, as was the Dublin Institute of Technology, and other selected Institutes of Technology throughout the Republic of Ireland. It was also important to include a broad geographical sample throughout the country. Finally a selection of other third level colleges were chosen, to include for example, teacher training colleges and professional management institutes.

United Kingdom

A list of universities and third level educational institutions in the United Kingdom was obtained from the Library in Dublin City University. Allowing for a broad geographical spread a random selection was chosen.

It was also important to obtain a broad spread of institutions based on size and student number population. The student populations of the institutions included in the survey, ranged from 'less than 2,000 to greater than 30,000.

4.5 Design of Questionnaire

There was one questionnaire designed with five sections. The questionnaire is included in Appendix B.

The questionnaire included the following sections:

- ◆ Section 1 Enterprise Resource Planning ERP
- ◆ Section 2 Recurrent Budgeting

- ◆ Section 3 Capital Projects Budgeting
- ◆ Section 4 General
- ◆ Section 5 Respondents

Section 1 Enterprise Resource Planning ERP

This section which referred to enterprise resource planning (ERP), was designed to obtain the following information:

- ◆ Do third level educational institutions have an enterprise resource planning (ERP) system?
- ◆ Who are the suppliers of the ERP system?
- ◆ When was the ERP system implemented?
- ◆ Who was responsible for initiating the change within the institution?
- ◆ What are the challenges going forward, particularly in relation to ERP?
- ◆ The degree of usage of ERP programmes and suite of modules.
- ◆ The methodology or medium used to report budgetary information to budget holders and end users.

Section 2 Recurrent Budgeting

This section which referred to recurrent budgeting, was designed to obtain the following information:

- ◆ What are the ‘satisfactory ratings’ of budget holders to the presentation and content of the reporting formats?
- ◆ Has the introduction of ERP improved the reporting format and content of information for budget holders?
- ◆ Since the introduction of ERP, has budgetary control improved at the departmental level?

- ◆ Are resources duplicated by the maintenance of ‘duplicate’ financial record keeping within departments?
- ◆ Will the emergence of ERP reduce such duplication?
- ◆ Within institutions do budget holders have difficulty understanding financial reports?
- ◆ What report writing packages are used within institutions?
- ◆ Do third level institutions operate e-procurement either as a module attached to ERP or as a ‘stand alone’ procedure?
- ◆ Is e-procurement centralised or decentralised, and what methods are used to match supplier’s invoices to purchase orders?
- ◆ Within institutions do budget holders have access to fully comprehensive ‘on-line’, live and committed financial information?
- ◆ Is EDI (electronic data interchange), and EFT (electronic funds transfer) used within third level institutions?

Section 3 Capital Projects Budgeting

This section which referred to capital projects budgeting, was designed to obtain the following information:

- ◆ What is the methodology and medium used to report capital budgeting information to management and end users?
- ◆ What is the extent of capital expenditure overruns if any, within third level institutions?
- ◆ Within third level institutions are specialised budgeting software systems such as Hyperion, Frango, Cognos, and Comshare etc, used?
- ◆ What method of budgeting for capital projects is used within third level institutions?

Section 4 General

This section was designed to obtain the student population ranges of institutions.

- ◆ What is the range of student population within institutions? The questionnaire was designed to give the following ranges:

Less Than	2,000
2,000	4,000
4,000	8,000
8,000	12,000
12,000	15,000
15,000	20,000
20,000	30,000
Greater than	30,000

Section 5 Respondents

In the final section respondents were asked to supply the institution name and date the questionnaire.

4.6 Summary

Research surveys give a ‘moment in time’ analysis of behaviour existing within organisations at a given point in time. Results and responses will vary over time as circumstances change. The wording of the question by the researcher and interpretation of it by the respondent may bias the replies.

CHAPTER 5: RESULTS OF SURVEY

5.1 Introduction

The results of this survey are presented in a manner, which attempts to ascertain the role of budgeting and ERP control systems in third level educational institutions. The results are presented in graphical format and may not necessarily appear in the same order as the questionnaire. The postal questionnaire may be viewed in appendix B.

5.2 Response Rate of Questionnaire

A postal questionnaire was issued to a selection of 30 third level educational institutions in the Republic of Ireland and 55 in the United Kingdom. The total number of respondents from the Republic of Ireland was 15, which represented a response rate of 50%. The total number of respondents from the United Kingdom was 15, which represented a response rate of 27.27%. The overall response rate was therefore 35.29%. The total combined respondents included in the research amounted to 30, of which 50% was from the Republic of Ireland and 50% was from the United Kingdom as illustrated in figure 5.0 below.

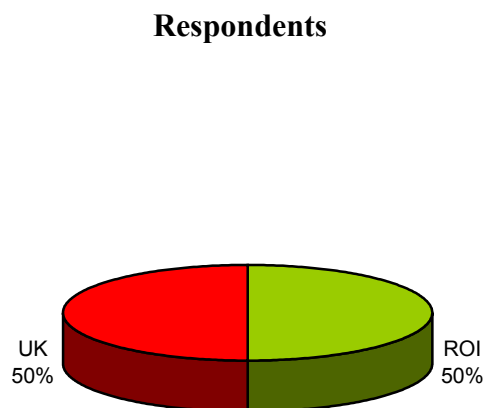


Figure 5.0

In the Republic of Ireland, the respondents included seven universities, some of the institutes of technology and other third level institutions. In the UK the respondents included universities and other third level educational institutions, which were returned from a random selection process.

5.3 Budgeting and ERP Control Systems in Third Level Institutions

The emergence of Enterprise Resource Planning (ERP) systems is well documented. Laudon & Laudon (1999) defined ERP as “a business management system that integrates all facets of the business, including planning, manufacturing, sales, and finance, so that they can become more coordinated by sharing information with each other.” As stated previously there is a paucity of authority and information in relation to ERP in universities and third level educational institutions generally.

It is also recognised that a fully integrated ERP system incorporating financials, human resources and student records, is not readily available on the market place. In the Republic of Ireland for example, it seems the market is recognised as being too restricted for a software supplier to instigate such an integrated system. Therefore separate payroll and human resources systems incorporating Irish income tax legislation together with student record modules are generally separate ‘stand alone’ systems, which interface with the financials. This research project and survey is therefore generally concerned with ERP systems that provide up to date and timely, financial accounting information to administrators and budget holders alike.

All respondents were asked if they had an ERP system currently within their institution. A total of 23 suppliers were listed on the questionnaire, and respondents were requested to indicate the relevant supplier. Many of the suppliers listed provide the same Web enabled software that an ERP system provides to budget holders and end users. The results are graphically represented in figure 5.1.

ERP Systems in Third Level Educational Institutions (Combined ROI/UK)

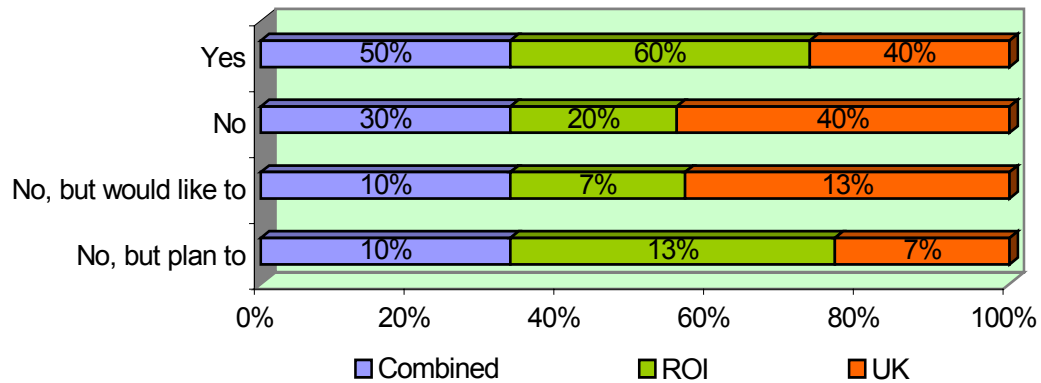


Figure 5.1

The survey indicated that 50% of the combined respondents had one of the ERP systems listed on the questionnaire. 60% of the Republic of Ireland and 40% of the UK respondents indicated they had an ERP system. Of the remaining 50% who indicated they had no ERP system, 10% said they had no plans to implement one and 10% said they would like to. Finally 30% simply said they had no ERP system.

In the Republic of Ireland, the Higher Education Authority (HEA), commenced allocation of special ‘targeted funding’ initiatives in 1998, for the purchase and implementation of new information technology management accounting systems. Since that time many of the universities and some of the institutes of technology have purchased and implemented new information technology systems. The universities remaining to do so are currently in the process of tendering or at the implementation stage.

Neil Pollock (University of Newcastle upon Tyne, UK), writing in ‘Information, Communication & Society’ (2000), wrote an article entitled ‘The Virtual University as ‘Timely and Accurate Information’. The article investigates the implementation of an Enterprise Resource Planning System in a redbrick university in the UK. He addresses

the issue of the replacement of the Management and Administrative Computing ‘MAC’ initiative set up in the UK in the early 1990s, with a new (supposedly ‘ordered’) ‘information model’. Specifically, the article is interested in the mission and justification for the project: the provision of ‘timely and accurate information’.

It seems “currently most UK universities and colleges of higher education.....are re-evaluating the way they gather, process and disseminate information for teaching, research and administration, for many this will mean radical change” (Allen and Wilson, 1996).

During the course of this research, some university administrators in the UK indicated to the researcher that they were in the process of change, particularly in relation to information technology systems. It seems one of the disadvantages of the ‘MAC’ initiative is that it does not provide financial reports on-line to give budget holders responsible for controlling budgets a real-time depiction of their financial position.

This may be a factor in the research findings that 40% of UK universities and third level institutions indicated they had an ERP system where as 60% of Republic of Ireland third level institutions said they had one.

When respondents were asked what ERP system they had the following responses were given and shown in figure 5.2.

Suppliers of ERP Systems

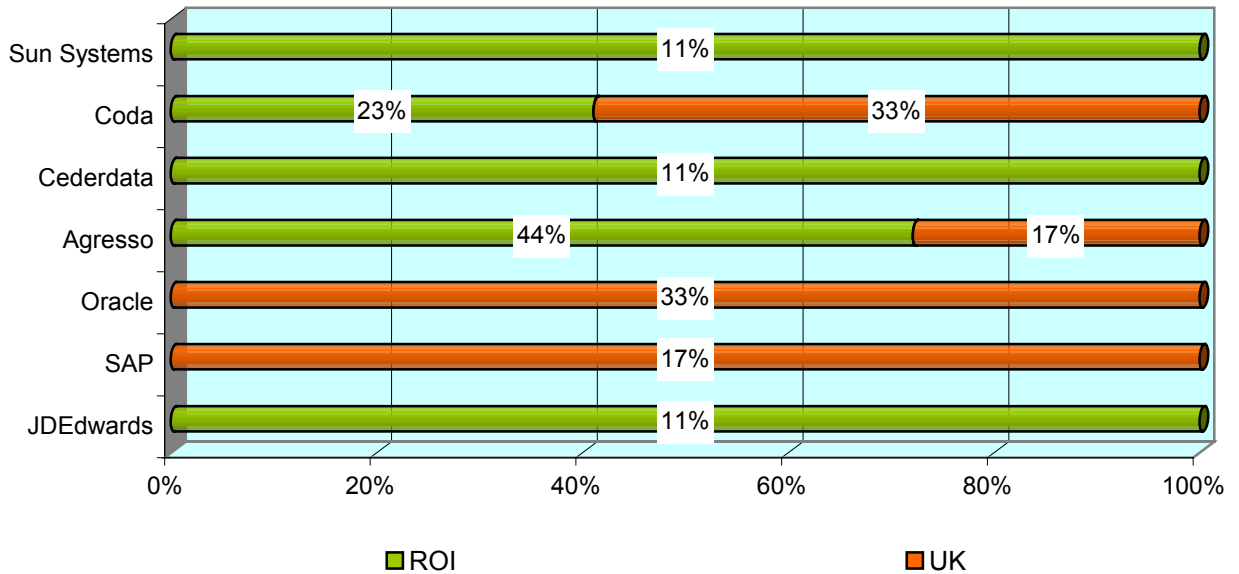


Figure 5.2

In the Republic of Ireland 67% of respondents indicated that they had Agresso or Coda. (44% Agresso and 23% Coda). The combined results from ROI and UK respondents indicated that Agresso had the largest share at 34%. Coda had 28% and Oracle 14%. SAP, JDEdwards, Sun Systems and Cederdata had 6% each. Two suppliers/systems were represented in both ROI, and the UK, namely Agresso and Coda.

Implementation Date

Many organisations and institutions implemented new financial and human resources systems before year 2000. This was mainly due to concerns that old legacy systems were not ‘Y2K’ compliant. While the survey did not specifically address that issue, respondents were asked to indicate when their ERP systems were implemented. The replies are shown in figure 5.3.

When ERP was Implemented (Combined ROI / UK)

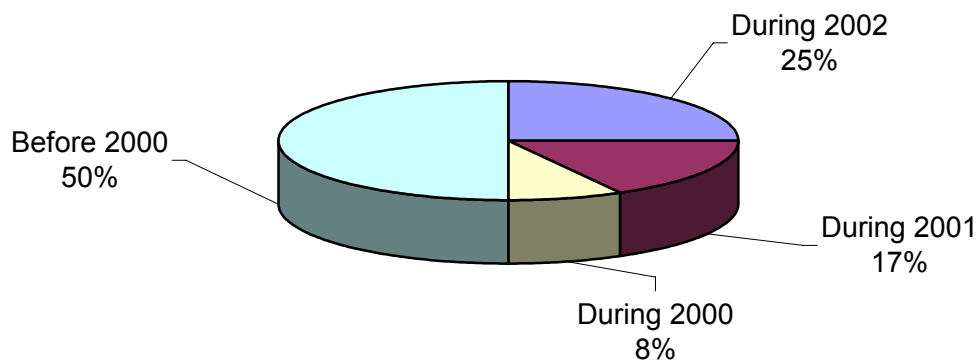


Figure 5.3

The survey indicated that 50% of respondents implemented ERP before 2000. There was a decline in the number of institutions implementing ERP in 2000 and 2001. 25% of respondents indicated that they implemented ERP during 2002.

The fact that 50% of respondents indicated they implemented ERP before 2000 may be due to their legacy systems not being ‘Y2K’ compliant. In the Republic of Ireland, many organisations and companies changed their systems for that purpose. Many software suppliers stated that their own resources were severely stretched to cope with the demands for new IT implementations. The demand for new ERP systems declined in 2000 and 2001, but appears to have increase again in 2002.

Responsible for Initiating ERP

Implementing new information technology systems is a challenging and demanding task. The decision to change procedures and methods involves major cultural and institutional challenges. Besides the financial implications there is also the issue of staff resources

required to make the change possible. The IT press is littered with statistics in relation to the failure rates of attempts by large organisations to implement successful information technology projects.

Respondents were asked to indicate who was responsible for initiating ERP within their institution. The results are shown in figure 5.4.

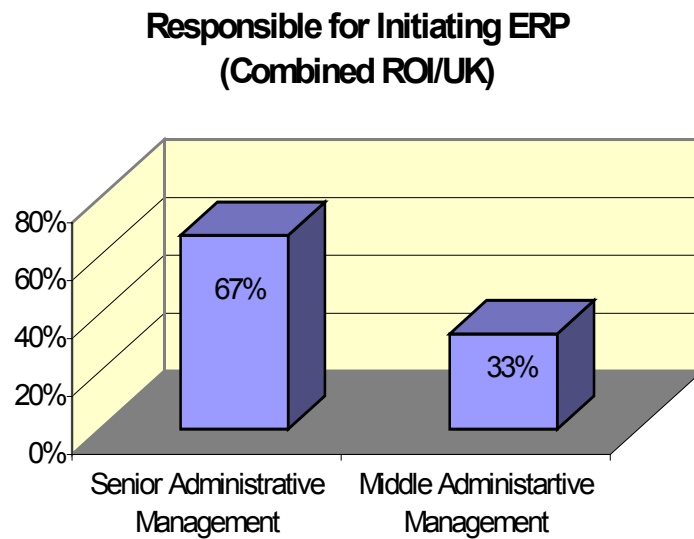


Figure 5.4

67% of respondents when asked who was responsible for initiating ERP within their institutions indicated that it was senior administrative management. 33% indicated that middle administrative management had initiated it. It is perhaps surprising that budget holders, research and end users did not feature in the response to this aspect of the survey. Budget holders regularly demand up to date and timely information, however, it may be that their prompting helped senior and middle administrative management to initiate and instigate change. The respondents in ROI and the UK were identical in their response to this question.

Challenges Going forward, particularly in relation to ERP

In order to consider the ERP priorities that universities and other third level educational institutions have, respondents were asked to rate the challenges going forward. Respondents were asked to rate in order of importance from 1-very important, to 5-not very important. The results are shown in figure 5.5.

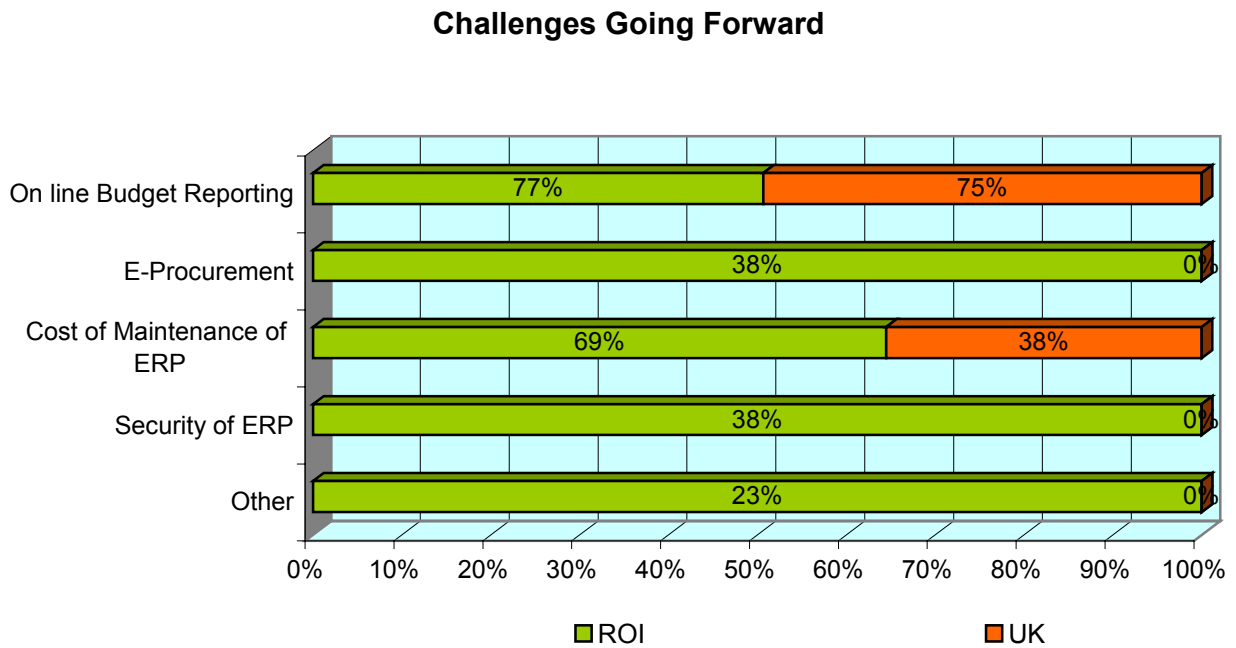


Figure 5.5

Analysis of this information attempts to determine the challenges facing third level educational institutions, particularly in relation to ERP. As indicated above, 1 represented very important and 5 not very important. The graphical presentation above represents the 1 and 2 rating respondents placed on the above issues.

On Line Budget Reporting

There was almost total agreement between ROI and UK respondents on this issue, with 77% in ROI and 75% in the UK rating 'on-line budget reporting' as very important or important. This is not surprising given the demand from budget holders and end users for more 'on-line' and 'on-time' budget reporting.

E-Procurement

38% of ROI respondents rated e-procurement as a very important or important challenge. UK respondents did not consider e-procurement as a very important or important challenge. Research in the US has shown that large organisations can benefit substantially from savings due to implementation of e-procurement. However despite these findings many organisations that have implemented ERP systems are 'stepping back' and 'taking stock', before committing themselves to e-procurement. The e-procurement module on ERP systems places demanding requirements and cultural changes within institutions. It seems many organisations are re-evaluating the added value gained from implementing e-procurement. They are more concerned to ensure that the ERP system itself 'settles down' before committing themselves to undertaking additional modules and projects.

Cost of Maintenance

Cost of maintenance of ERP systems was the second highest rated category by combined respondents as a very important or important challenge. 69% of ROI respondents and 38% of UK respondents rated cost of maintenance as a very important or important challenge. Many old legacy systems in operation in third level institutions were maintained on low budget strategies. ERP systems demand high-level maintenance due to large volumes of data tables and information databases. The management of this information requires constant monitoring and maintenance. Costly licensing agreements and the necessity to upgrade to regular new versions of software increases the ongoing

cost of ERP systems. Many ERP suppliers will not guarantee technical support to 'old versions' of software after an eighteen-month to two-year period.

Security

38% of ROI respondents rated security as a very important or important challenge. UK respondents did not envisage security as a very important or important challenge. Universities in particular are prime targets for 'computer hackers' worldwide. Universities encourage an 'open computing environment' for research and collaboration purposes according to the Beckman Institute. However many hackers take advantage of that fact by gaining access to university networks to launch attacks on the systems of other corporations.

Summary

The Deloitte and Touche Survey (2003), of challenges facing CFOs referred to earlier in the literature review had similar findings to those of this research. There are similarities in the two surveys particularly in relation to budgeting. Universities and third level administrators place on-line budgeting high on their agenda as an important challenge going forward, as do CFOs in the Deloitte and Touche survey, who also regard controlling costs and budgeting as their biggest challenge. What is also somewhat surprising is the issue of risk management and security, which does not feature highly as an important challenge. Only 20% of CFOs regarded risk management as being of importance. These somewhat low percentages are somewhat surprising given the Turnbull guidelines mentioned earlier, particularly in relation to CEOs responsibilities in relation to risk.

Degree of usage of ERP suite of Programmes and Modules

ERP systems contain very comprehensive suites of programmes and modules. Respondents were asked to assess the degree of usage of these programmes and modules as shown in figure 5.6.

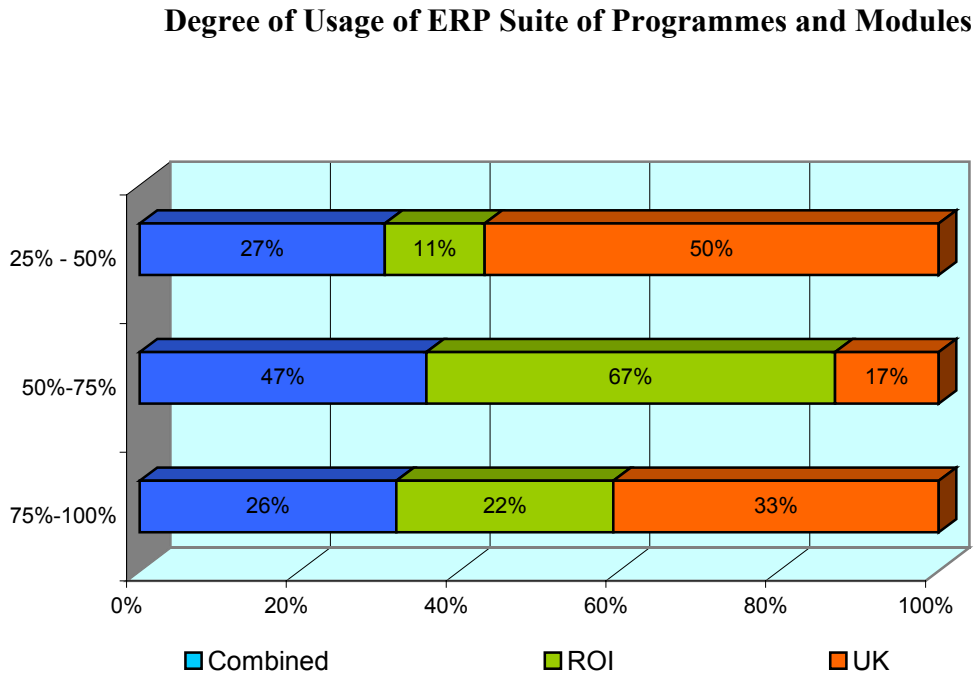


Figure 5.6

26% of combined respondents indicated that they are using between 75% and 100% of the ERP system, while 27% of combined respondents stated they are using between 25% and 50%. From this information it may be argued that large amounts of ERP suites and programmes are ‘redundant’ to many universities and third level institutions. Many vendors of ERP systems sell their product as a ‘packaged deal’, which may contain large amounts of data tables and programmes that may not be of any significant or immediate benefit to the purchaser.

Methods used to report budgetary information to budget holders

The following question addresses the issue of reporting methodology to budget holders. As previously indicated in an earlier question, 50% of respondents stated that they had implemented ERP after 2000. 25% had implemented ERP in 2002. Figure 5.7 indicates the method used to report to budget holders.

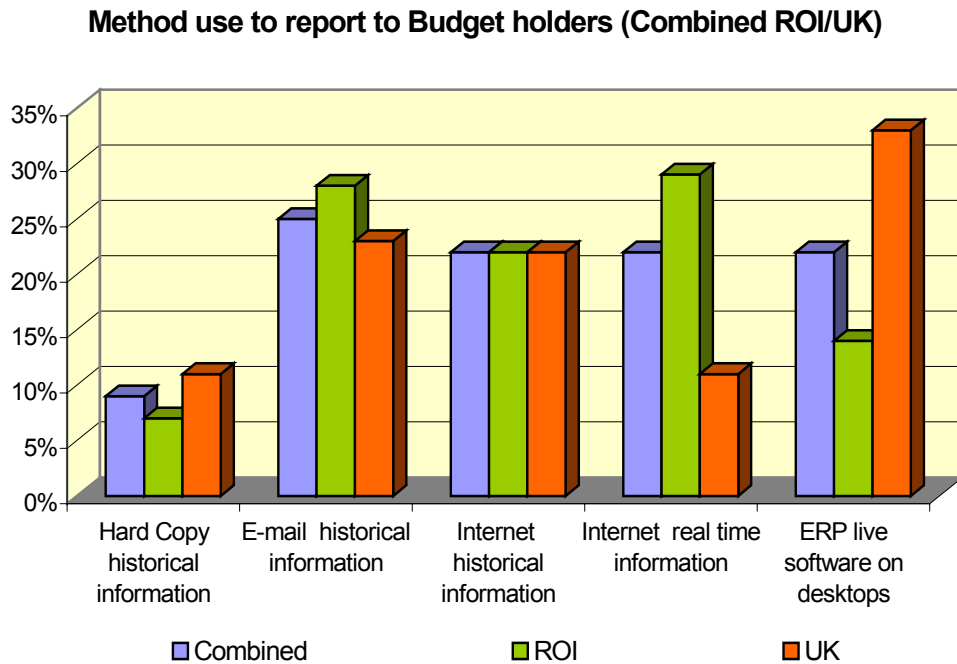


Figure 5.7

56% of combined respondents stated that they were still supplying historical information in some format to budget holders. 9% are using hard copies, 25% are using e-mail, and 22% are using the Intranet, probably in PDF or similar format.

Only 22% of combined respondents are using the Internet to report real time live information to budget holders. However 33% of UK respondents and 14% of ROI

respondents stated they were using live software on the desktops of budget holders. It should be noted that the majority of respondents who stated this indicated they were also using other methods, such as e-mail. From this it may be concluded that live software on desktops perhaps only applies to ‘pilot users’ or targeted heavy users, as the cost of licensing software for this purpose would be significant.

5.4 Recurrent Budgeting and ERP Reporting

‘Satisfactory ratings’ of budget holders to budget reporting format

In this part of the survey an attempt was made to evaluate the ‘satisfactory ratings’ of budget holders to the presentation and content of the current departmental reports distributed to budget holders, by universities and third level administrators. It was not feasible in this survey to seek the views directly from the budget holders themselves, so these ratings are the estimates given by the administrators.

As previously mentioned, a comprehensive research survey was carried out in 1996 by the Department of Information Studies at the University of Sheffield, on ‘the management information needs of academic heads of departments in universities’. In that survey it was found that academic heads of departments believed that the financial and other management information, provided by university administrators was, not timely, inadequate, inaccurate, difficult to access and cumbersome to use.

The results of this survey are documented below in table 2.8, and in some respects similar comparisons may be drawn with the University of Sheffield survey.

‘Satisfactory’ Ratings of Budget Holders

	ROI	UK
Very satisfied	5% - 100%	0% - 75%
Satisfied	18% - 65%	10% - 100%
Not satisfied	5% - 100%	5% - 100%
Undecided / Indifferent	1% - 50%	10% - 45%

Table 2.8

In the Republic of Ireland some administrators indicated (in their own opinion), that in their institution as high as 100% of budget holders were very satisfied with their current reporting formats. In the UK some administrators indicated that up to 75% of their budget holders were also very satisfied. However, in contrast, some administrators in both the Republic of Ireland and the UK indicated that as high as 100% of budget holders were not satisfied with the current reporting format. There appears therefore to be two ‘extreme views’ on this issue.

Improvements to budget reports produced to Budget Holders

Respondents were asked what improvements they regarded as having taken place as a result of the implementation of ERP. The results are shown in figure 5.8.

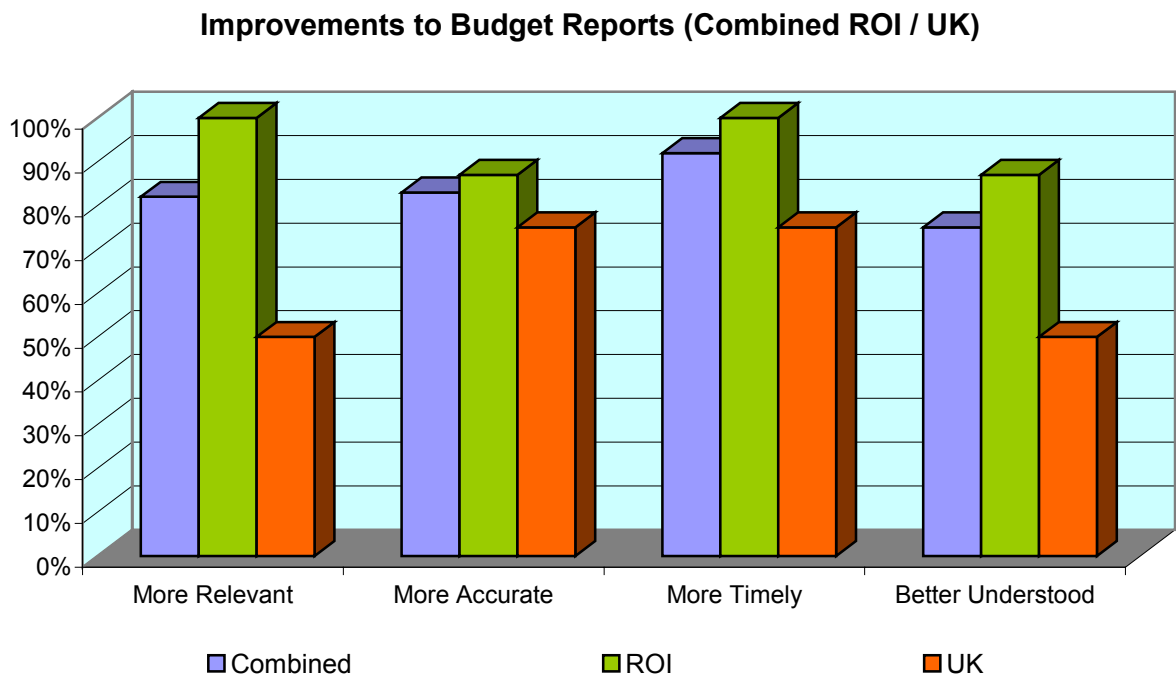


Figure 5.8

82% of combined respondents said that the reports were more relevant, 83% said they were more accurate, 92% indicated they were more timely and 75% that they were better understood.

In the UK just 50% of respondents indicated the reports were better understood. Budget holders regularly claim that understanding departmental budgets is an issue for them. Many simply want to know ‘what balance is remaining to be spent’. Re-designing the new ERP reports to incorporate the ‘grant income’ from central funds may assist in this area. However many budget holders claim that they require ‘tuition’ from central administrators in order to monitor and understand their budget reports.

Improvements to Budgetary Control

In this question respondents were asked to indicate what budgetary control improvements had occurred since the introduction of ERP. The results are shown in figure 5.9.

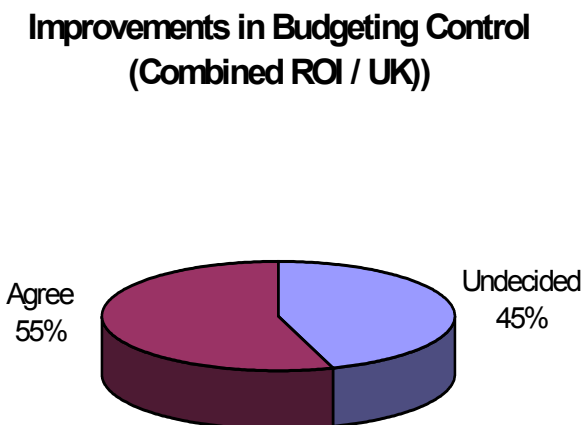


Figure 5.9

Only 55% of combined respondents agreed that improvements in budgetary control by budget holders had taken place since the introduction of ERP. 45% of combined

respondents were undecided. Other research in this area has indicated that budget holders are demanding more relevant and timely information. It is interesting to note that some administrators in this research are not totally convinced that budgeting control has improved as a result of implementing ERP.

Duplication of Financial Record Keeping

This question addressed the important issue of duplication of resources within universities and third level institutions, with regard to maintaining separate financial records within departments.

The University of Sheffield (1996) survey highlighted the unsatisfactory responses of academic heads of departments with regard to the financial reports distributed from central administration. Because of this, and the lateness of reports distributed from central administration, many budget holders and research departments maintain their own financial records.

This 'duplication' of resources places demanding requirements on the departments concerned to 'reconcile' their records with central administration. Heads of departments argue that the lack of on-line financial reporting cause them to maintain separate accounting records for decision making purposes. They maintain that the 'historical' information supplied by central administration arrives too late. See figure 5.10.

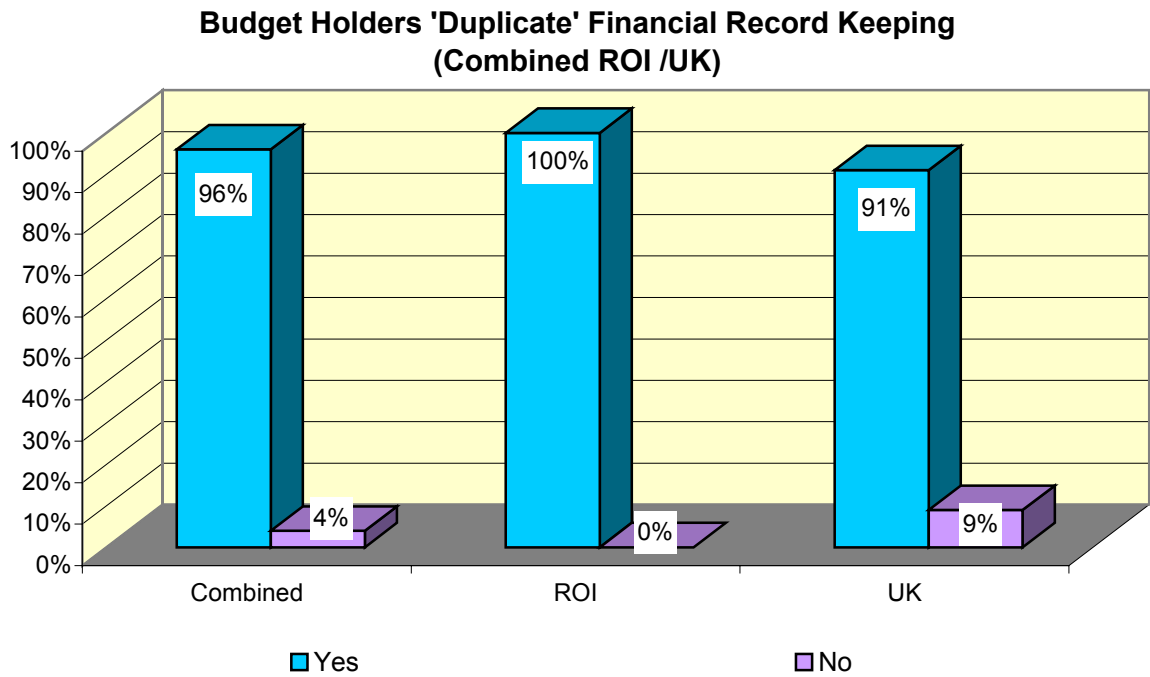


Figure 5.10

96% of combined respondents said that some budget holders duplicate financial record keeping within their department. Only 4% of combined respondents indicated that no duplication takes place. The survey did not address the volume or extent of this practice within each institution, but it is perhaps surprising that duplication still takes place, despite the introduction of ERP in some universities and third level institutions. The next question seeks to address that issue.

Will ERP help Eliminate Duplication of Resources?

This question seeks the views of administrators in relation to eliminating the duplication of financial record keeping due to the introduction of ERP. The results are shown in figure 5.11.

**Will ERP Help Eliminate 'Duplication' of Resources
(Combined ROI / UK)**

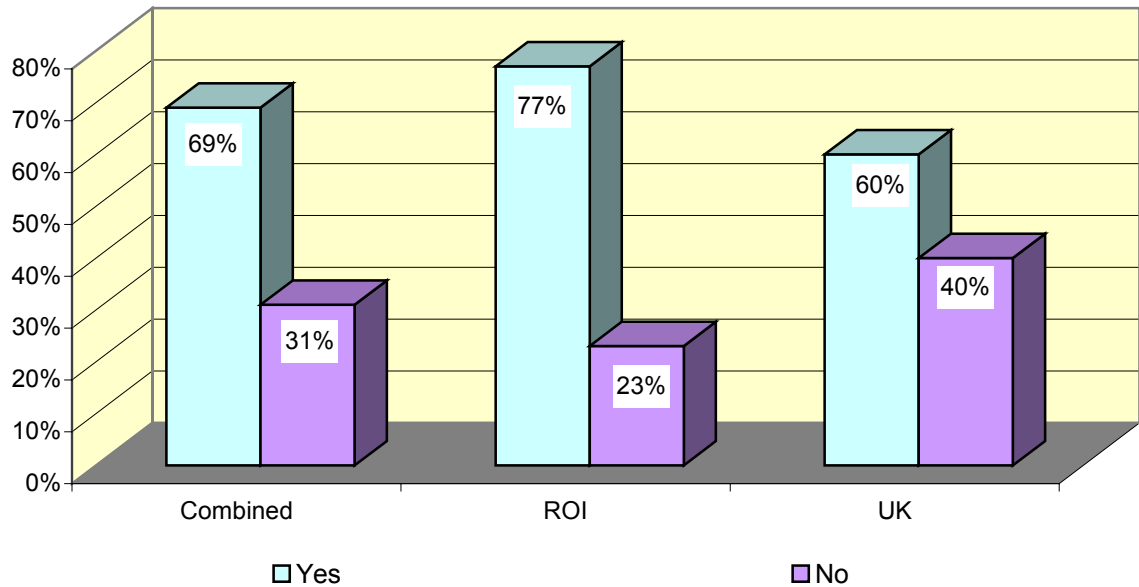


Figure 5.11

69% of combined respondents indicated that the introduction of ERP would help eliminate duplication of financial record keeping. 77% in ROI and 60% in the UK were of that opinion. 31% of combined respondents said the introduction of ERP would not eliminate duplication. It is also interesting to note that as high as 40% of UK respondents were of the opinion that ERP will not eliminate duplication of record keeping. Changing habits and cultures within departments in this regard may be difficult to achieve.

Difficulty Reading and Understanding Budget Reports

In this question respondents were asked to express an opinion as to whether budget holders had difficulty understanding their reports. The results are shown in figure 5.12.

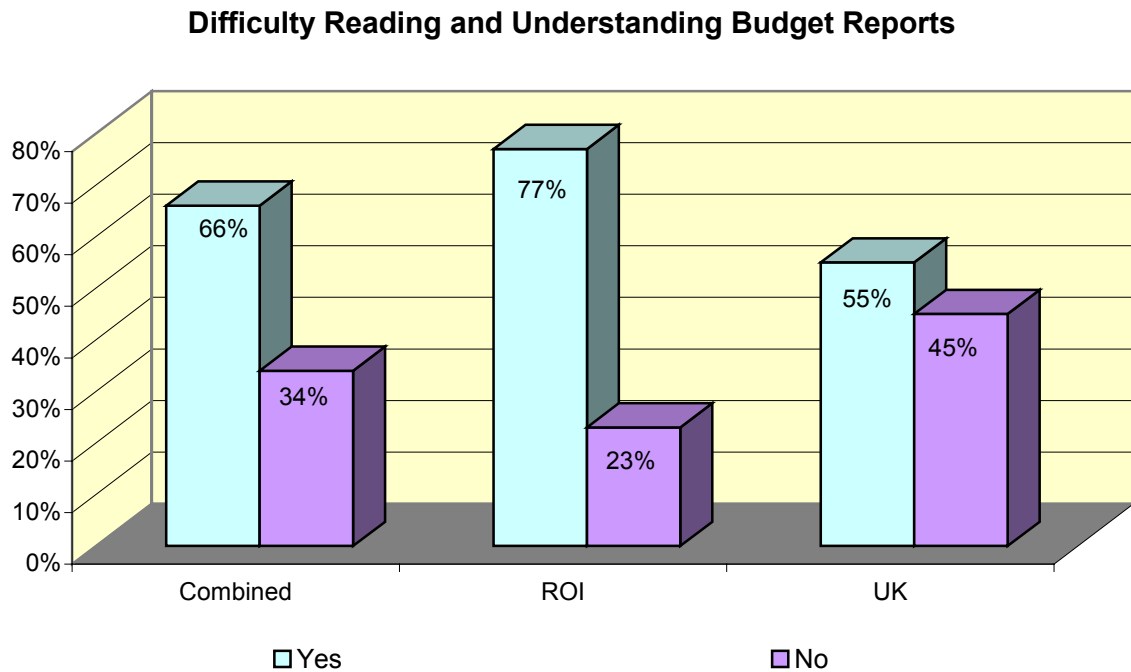


Figure 5.12

66% of combined respondents said ‘yes’ and 34% said ‘no’. This issue was briefly addressed in a previous question where 75% of combined respondents indicated that budget holders, as a consequence of introducing ERP, better understood the financial reports. However while reports may be ‘better understood’ as a result of ERP, it seems that many budget holders still have difficulty reading and understanding their reports. It appears many budget holders require ‘tuition’ in relation to this, irrespective of whether or not they have ERP systems.

Financial Report Writing Packages

Most ERP systems have their own report-writing package attached, which enables financial reports and procedures to be drafted and presented in user-friendly formats. Besides, there are also specialised report writing packages, which are also used. In order to evaluate this issue respondents were asked to identify the report writing package(s)

used in their institution. The packages highlighted in the question were: internally developed, specialised, attached to ERP, spreadsheets and other.

The results are shown in figure 5.13.

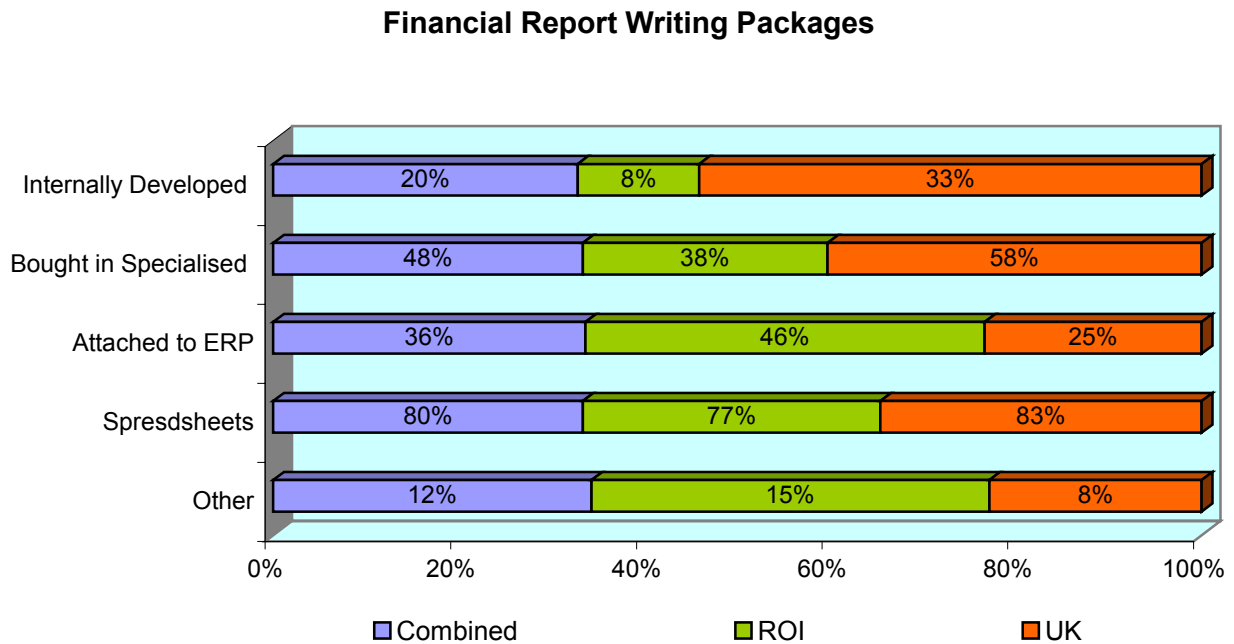


Figure 5.13

Many respondents indicated they used a combination of the packages highlighted in the questionnaire. 36% of combined respondents said they used the ERP package attached to the ERP system, while 48% of combined respondents used specialised report writing packages. Those statistics appear to indicate that ERP report writing packages are not adequate for a large section of institutions.

The most popular reporting tool is still the spreadsheet application, with as high as 80% of combined respondents indicating that they use them for budget reporting. Despite the fact that software suppliers attempt to convince customers that an audit trail is best

maintained by using reporting tools attached to their systems, many organisations and institutions are still content to use spreadsheets.

E-Procurement

In order to ensure that budgets are monitored comprehensively, many argue that future commitments must be taken into account. Despite its apparent advantage, research has indicated that due to cost and complexities of operation many organisations with ERP systems are ‘taking stock’ before implementing e-procurement. E-procurement has already been addressed in a previous question. This question addresses the issue of e-procurement attached to ERP. Respondents were asked to indicate if they operated the e-procurement module attached to the ERP system. See figure 5.14.

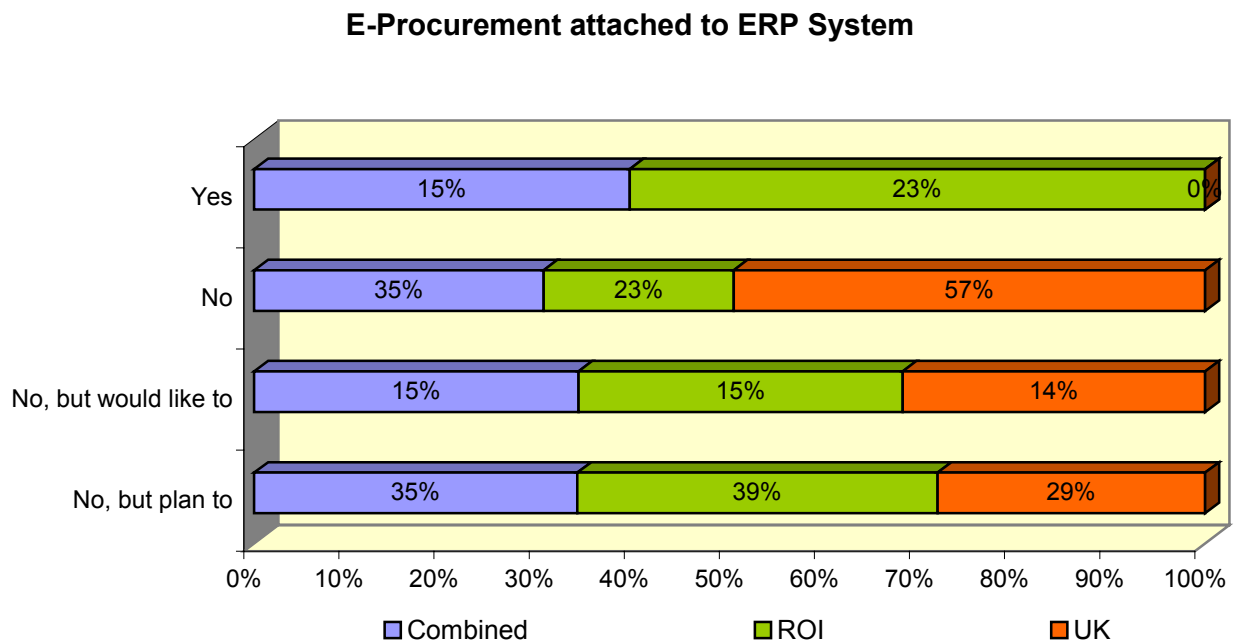


Figure 5.14

Only 23% of ROI respondents indicated that they use the e-procurement module attached to the ERP system. None of the respondents in the UK said that they used it. However in the next question, the stand-alone e-procurement issue is addressed, and 38% of UK

respondents said they used that system for e-procurement. It appears therefore that many third level institutions have not yet implemented e-procurement. Research has indicated that e-procurement has many advantages for large corporations, resulting in savings in the cost of raising manual purchase orders and requisitions.

E-Procurement as a stand-alone System

In this question respondents were asked to indicate if they use e-procurement as a 'stand-alone' module. The responses are shown in figure 5.15.

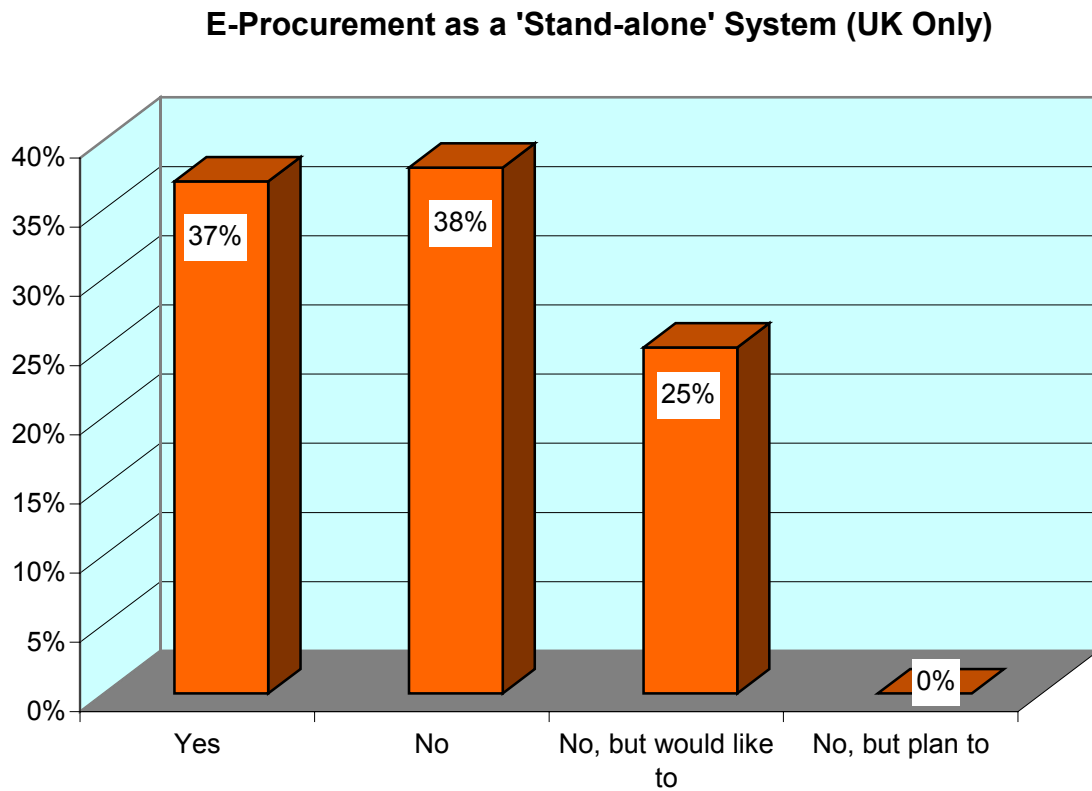


Figure 5.15

None of the ROI universities or third level institutions said that they had this system. In the UK, 37% of respondents indicated that they had. Taking the responses of this and the previous question together, 30% of the combined respondents indicated that they use e-procurement in some format. This low statistic is consistent with a previous question, which addressed the issue of challenges going forward. Just 24% of combined respondents said they rated e-procurement as a very important or important challenge. From these statistics it may be concluded that many universities and third level institutions do not regard e-procurement as an issue of immediate priority.

E-Procurement - centralised, or decentralised.

The next two questions looked at the issue of centralised and decentralised e-procurement, together with the method of matching invoices to purchase orders. See figure 5.16.

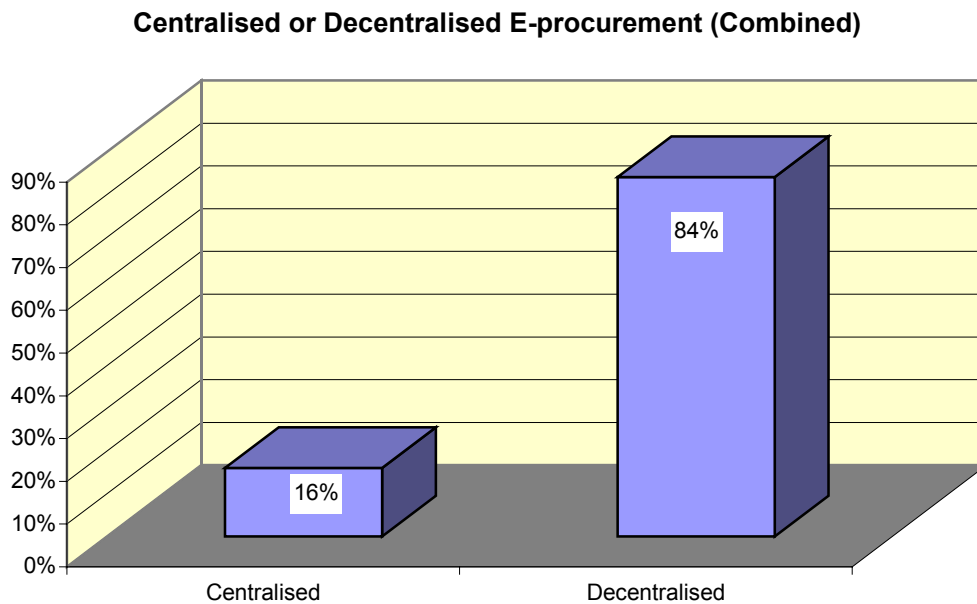


Figure 5.16

16% of combined respondents said they had centralised and 84% said they had decentralised, e-procurement. The research indicated that the larger institutions had decentralised e-procurement. Figure 5.17 indicates the method of matching invoices to purchase orders.

Total Invoice to Order or Line by Line (Combined)

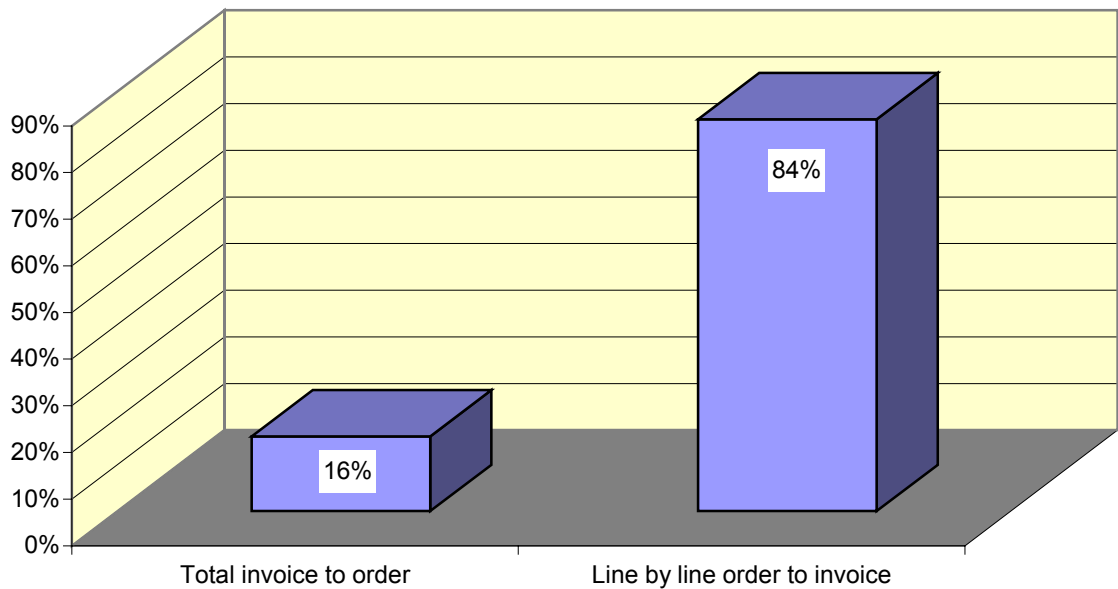


Figure 5.17

16% of combined respondents indicated that they use the ‘total invoice to order’ method of matching and 84% said that they use the ‘line by line’ method.

Access to actual comprehensive and committed information.

This issue was addressed in some detail in a previous question where respondents were asked to state the method of reporting financial information to budget holders. In this particular question the issue was perhaps more directly addressed. Respondents were asked to state if budget holders had access to actual live and comprehensive committed information. The results are shown in figure 5.18.

Access to Actual Comprehensive and Committed Financial Information (Combined)

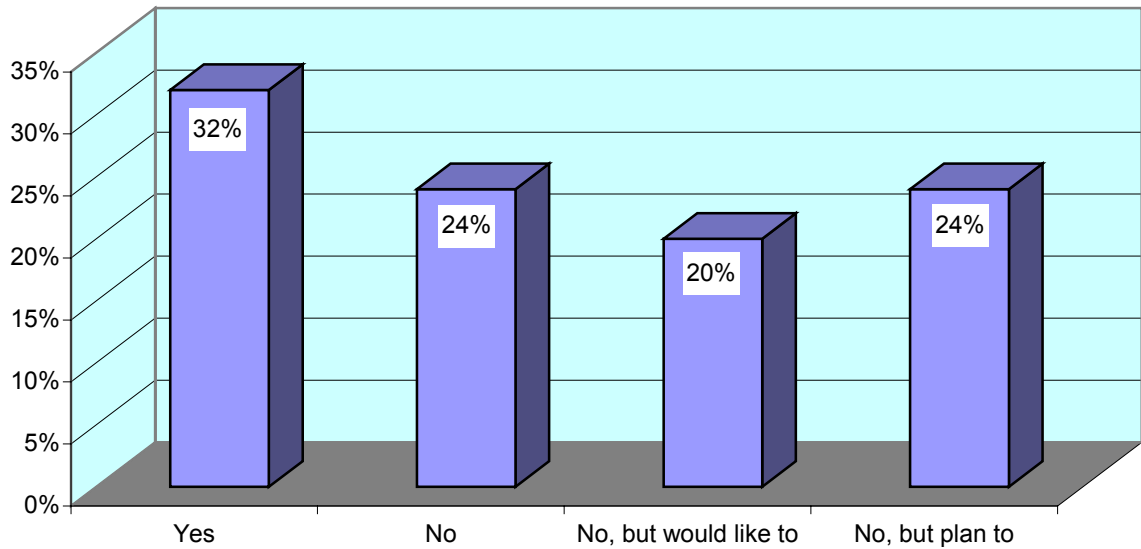


Figure 5.18

32% of combined respondents said ‘yes’, 24% said ‘no’, 20% said no, but would like to, and 24% said no, but plan to. These findings are somewhat comparable to the previous question where 22% of combined respondents said that they use the internet to report real time information, and at the same time 22% said they had live software on desktops.

E-Procurement to project cash flow

In this question respondents were asked if they use e-procurement to project cash flow. The results are shown in figure 5.19.

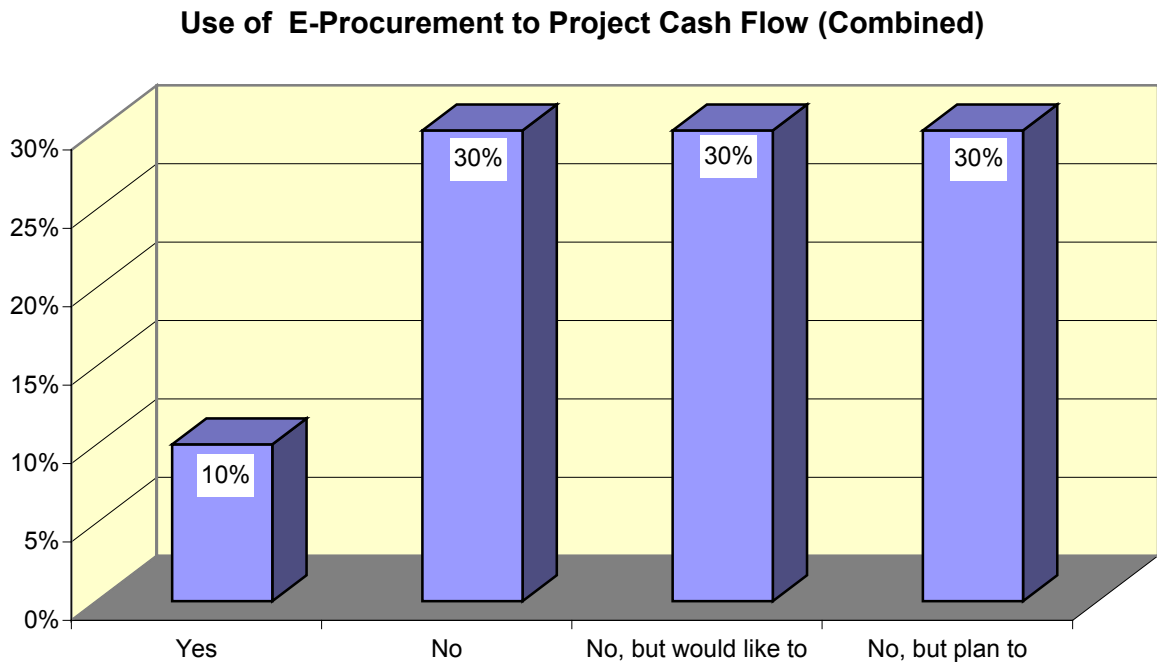


Figure 5.19

Only 10% of combined respondents said that they used e-procurement to project future cash flow. 30% said no, 30% said no, but would like to, and also 30% said no, but plan to.

No institution indicated that their suppliers transferred invoices by means of EDI (Electronic Data Interchange)

Electronic Funds Transfers (EFT)

This question addressed the method of paying suppliers. Respondents were asked if they use the Electronic Funds Transfer (EFT) method. The responses are shown in figure 5.20.

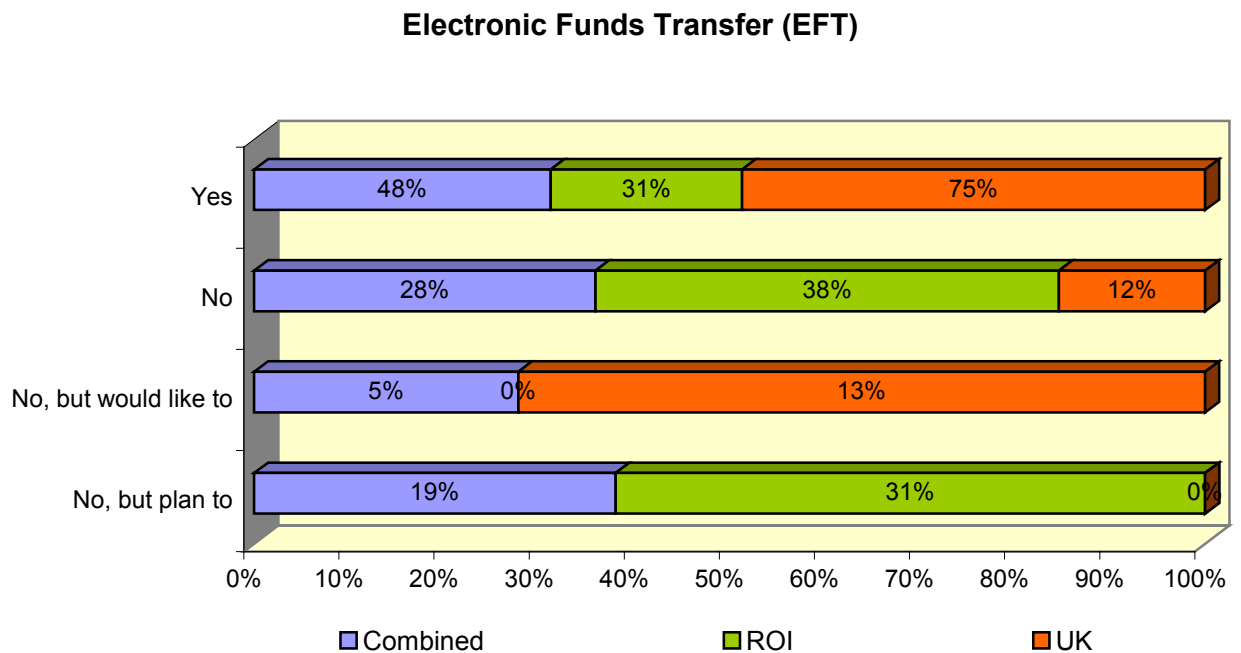


Figure 5.20

As high as 75% of UK respondents and just 31% of ROI respondents said ‘yes’ to this question. This issue is currently being addressed by a number of ROI institutions.

5.5 Capital Projects Budget Reporting

Reporting for Capital Projects

Capital infrastructure and development has increased significantly within universities and third level institutions over the last five years in particular. Monitoring and controlling capital expenditure is essential, and complexities arise due to legislation and special government incentive schemes. This issue therefore attempts to find out the methods used by institutions to report capital project expenditure. Generally these reports are confined to a small number of senior administrative personnel within each institution. The results of the findings are shown in figure 5.21.

Method of Reporting Capital Projects to Budget Holders.

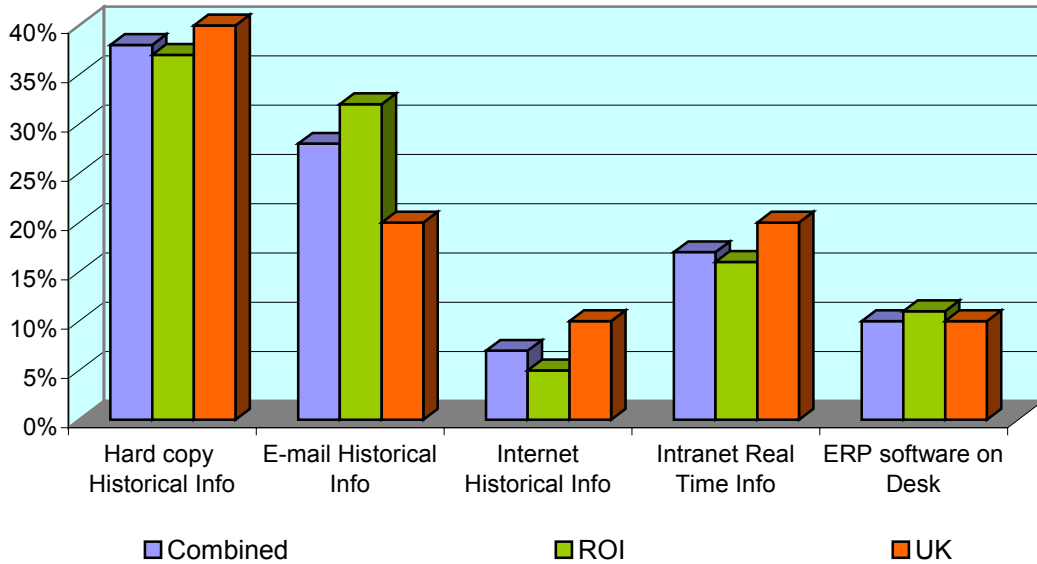


Figure 5.21

38% of combined respondents indicated that they use hard copies of historical information to report capital projects expenditure. 28% use e-mail to transfer historical information, and 7% use the Internet to transfer historical information. 17% said that they transfer real time information and 10% said they use software on the desktops.

A total of 73% of combined respondents therefore report historical information in some format or another to senior staff in relation to capital projects expenditure.

Capital Projects Overruns

Respondents were asked to indicate if they had capital expenditure overruns within the past five years. Respondents were asked to identify this under four headings: significant

and material, critical but not significant, overruns but not material, and no overruns. The responses are shown in figure 5.22.

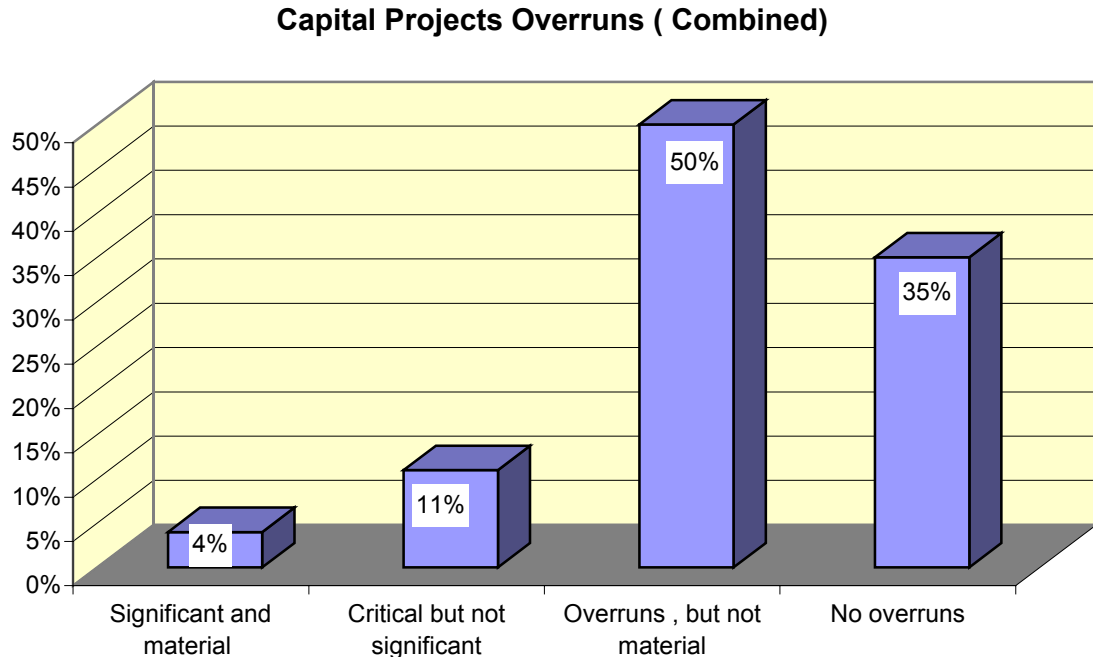


Figure 5.22

4% of combined respondents said that they had significant and material overruns, 11% had critical but not significant, 50% said they had overruns but they were not material, and 35% said they had no overruns. These results indicate that 65% of combined respondents stated that they had capital expenditure ‘overruns’ of some format. These results are interesting when compared to the previous question, which addressed the issue of the method of reporting capital expenditure, where 73% indicated that they use historical information methods for reporting capital expenditure.

Specialised Capital budgeting software

A number of specialised budgeting software systems are currently available and promoted by software suppliers in the market place. This question attempts to observe if

universities and third level institutions use such products for their budgeting process. The responses are given in figure 5.23.

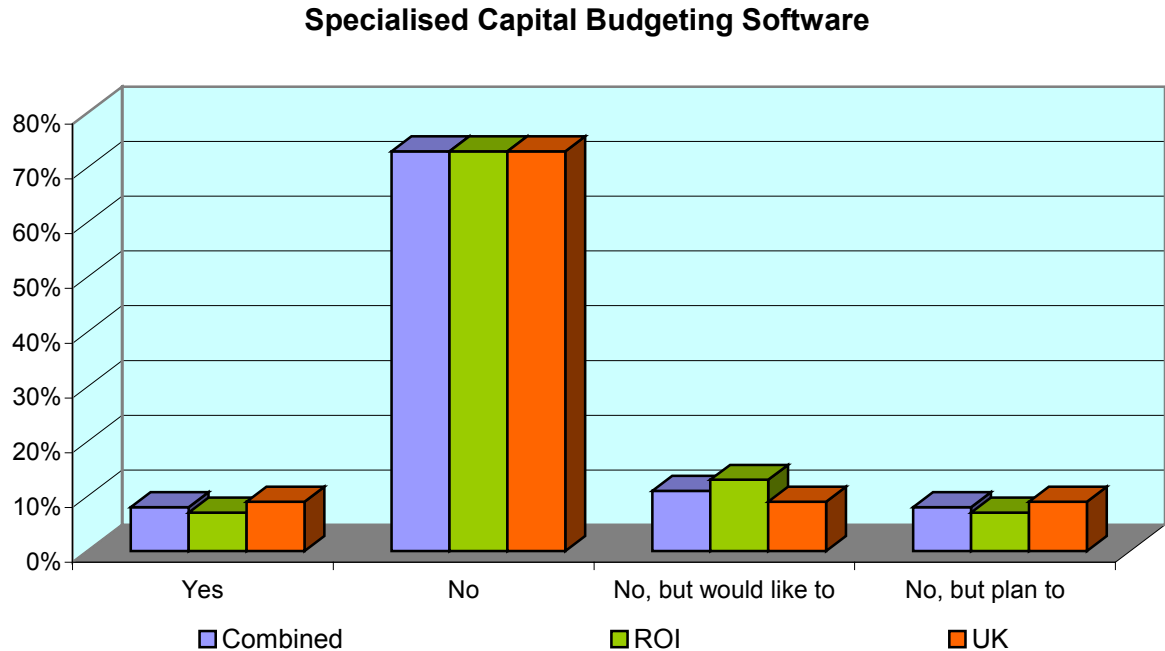


Figure 5.23

When asked if their capital budgeting was supported by specialised software, just 8% of combined respondents said yes and 73% said no. A further 8% said they plan to. Perhaps these findings are surprising given the consequences if budgetary control is not adequate, and taking account of the high values and funding involved. It is also interesting to compare with the previous two questions in relation to current methods of reporting and the capital budgeting overruns. The method of reporting capital projects is addressed in the next question and the findings are indicated in figure 5.24.

Capital Projects Budgeting Methodology (Combined)

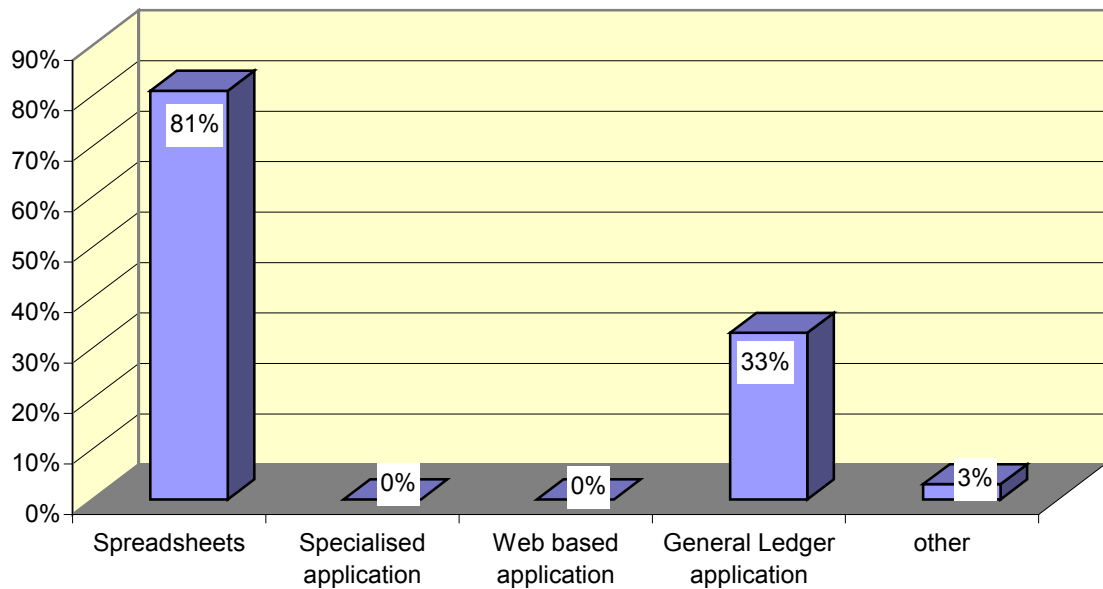


Figure 5.24

The next question attempted to address the current method of reporting capital projects. 81% of combined respondents said that they use spreadsheets, and 33% use general ledger applications. Again spreadsheet reporting is very prominent within universities and third level institutions. The flexibility and easy to use formats are perhaps a factor in this. It is also interesting to compare with the previous three questions. It seems many third level institutions still use historical reporting methods, have capital overruns of some format and still use spreadsheets for this purpose. It appears budgeting software suppliers have some convincing to do in this regard.

5.6 Student Populations

Finally, respondents were asked to indicate the latest range of student numbers within their institutions. The results are shown in figure 5.25.

Student Populations

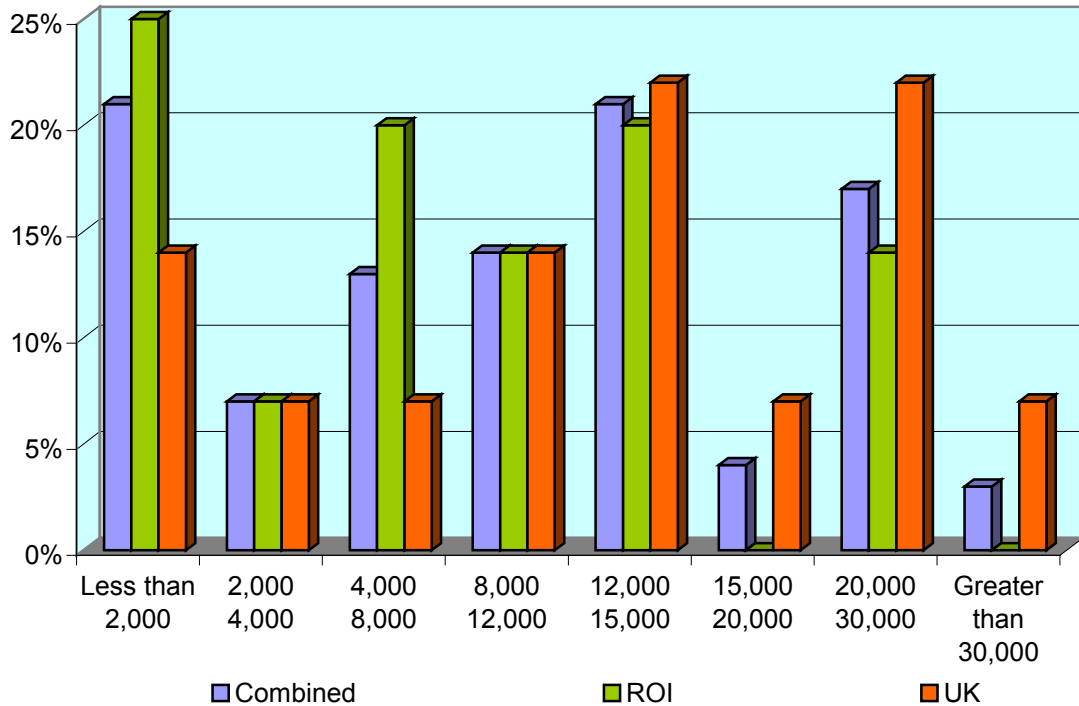


Figure 5.25

The student population ranges from less than 2,000 (21%), to greater than 30,000 (3%). Allowing for the mean within the ranges and taking the precise lower (2,000) and higher (30,000) figures, the approximate student numbers of the combined institutions used in the survey amounted to 340,000.

5.7 Summary

A selection of 30 third level educational institutions in the Republic of Ireland, and 55 in the United Kingdom were mailed a questionnaire and a total of 30 overall responses were obtained, which resulted in a 35.29% response rate.

The emergence of enterprise resource planning (ERP), within the university and third level sector is a relatively new experience. Research on this topic within the third level sector is scarce. Fully integrated ERP systems incorporating financials, student records and human resources/payroll are not available for third level institution as yet in the Republic of Ireland. Evidence seems to suggest they are beginning to emerge in the United Kingdom.

However many 'non profit' and 'non manufacturing' organisations have invested in ERP systems, which incorporates the financial systems including integrated creditors, debtors and asset register modules. These systems also include e-procurement modules and have Web enabled technologies attached to accommodate Intranet reporting on-line. This survey is therefore concerned with ERP as it affects the financials and the reporting of budgets to budget holders and end users.

50% of combined respondents have an ERP system within their institution, 60% in the Republic of Ireland and 40% in the UK. When asked when ERP was implemented 50% of combined respondents said it was before 2000. It is evident therefore that half of the combined respondents have invested in ERP within the past three years. It is also likely that some of the institutions that implemented ERP before 2000 did so due to 'Y2K' issues.

In the Republic of Ireland special incentive initiatives were established in the late 1990s, to encourage and assist the third level sector to invest and implement new management financial accounting systems. In the UK many universities had invested in the 'MAC' initiative established in the early 1990s, and are now re-evaluating the necessity for 'on-line reporting' to budget holders and other IT issues.

34% of the combined respondents indicated they have Agresso as their ERP supplier, while 23% of ROI respondents and 33% of UK respondents have CODA. The greatest challenge that institutions have in relation to ERP is 'on-line' reporting of budgetary information to budget holders, 76% of combined respondents stated this. One of the main

promotional aspects to ERP by vendors is the issue of e-procurement, however it is interesting to note that only 24% of combined respondents rated e-procurement as a challenge going forward. This is consistent with some of the comments made by some observers of ERP in the US. It seems many organisations are 'consolidating' the modules they already have within ERP before taking on the additional financial and IT commitment of e-procurement.

56% of combined respondents are still supplying historical financial information to budget holders, and only 22% are using the Internet to report real time live information. While some institutions said that 100% of their budget holders were very satisfied with their financial reports, other institutions indicated that 100% of their budget holders were not satisfied. A high % of respondents indicated that the reports had improved in their relevance, accuracy and timeliness since the introduction of ERP.

It is submitted therefore that the introduction of ERP greatly increases the satisfaction ratings of budget holders, particularly in relation to on-line reporting. It will be interesting to observe any future research into the issue of whether budget holders actually avail of the on-line reports on a regular basis. 96% of combined respondents indicated that some budget holders within their institution duplicate financial record keeping. Further research into this issue would be interesting, as it is too soon to draw conclusions in relation to ERP on-line reporting. However 69% of combined respondents said ERP would help eliminate duplication.

Only 8% of respondents indicated that they have specialised budgeting software for capital budgeting purposes. Spreadsheets are still the dominant reporting tool used by institutions, were 81% indicated that they use them for capital budgeting reporting. This is perhaps surprising given that a high % of respondents indicated they had capital budget overruns of some format.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The following chapter is based on analysis of the literature review on budgeting generally, together with an analysis of the results of the research survey. The purpose of this research was to investigate the role of budgeting and ERP control systems within universities and third level educational institutions generally.

In order to place this issue in context, the research covered budgeting concepts and procedures within universities and third level institutions, as well as commercial organisations. The research also covered a case study of a successful ERP implementation in the National University of Ireland, Maynooth, in the Republic of Ireland. A postal questionnaire was issued to a selection of third level educational institutions in the Republic of Ireland and the United Kingdom

Budgeting for financial planning and development therefore has many aspects and strategies attached to it. Budgeting ranges from the overall global context of an organisation's planning and development strategies, down to individual or departmental level. Reporting to budget holders and end-users may include the senior administrative officers (overall operational budget) as well as departmental and research budget holders (departmental budgets). Merchant (1990) suggests that highly achievable budgets that are attainable 80-90 per cent of the time require managers to be working consistently at a high level of effort to meet this requirement.

6.2 Traditional Budgeting Under Review

There is a growing divergence of opinion, particularly in the US, as to the 'added value' gained from the traditional budgeting process. MacGregor Serven (2000) indicates that as much as 75% of corporate plans are never executed. Some also believe that traditional budgeting methods are inadequate and ill equipped to deal with today's rapidly changing

environment. A number of organisations have abandoned the budgeting process altogether and are performing forecasting techniques instead. They are looking towards the future, rather than analysing and explaining the past.

According to Aguilar (2003) “once most companies develop their strategies it begins to lose momentum. The result is that departments and business units set their own priorities and objectives”. Recent research also indicates that 80% of companies are dissatisfied with their budgetary strategies, as they are too time-consuming and focus on cost rather than added value.

However, other informed opinions maintain that budgeting is beneficial. Banham (2000) states that “an institution cannot grow effectively without a well-conceived strategy and a supporting budget”. According to Moscovice et al (2001), “a budget is a financial projection for the future and therefore is a valuable management planning aid”. Many organisations are spending large amounts of funds on consultancy fees in order to improve their budgeting process.

6.3 Budgeting in the Third Level Education Sector

According to Glautier and Underdown (1994) “Planning and budgeting alone does not necessarily ensure the realisation of plans”. How is budgetary control measured within the third level sector? Only the reserves or lack of them in their Balance Sheet and a competitive unit cost, measures how effective universities are, in planning and controlling their budgets.

Budgeting from the ‘top down’ or from the ‘bottom up’, have equal relevance to the budget holder. Whether it is the head of the institution responsible for a €200(m) annual operating budget, or the head of a small department trying to manage on a paltry non-pay allocation, the strategy is the same. Both need to manage and control their budgets. It seems many organisations are guilty of inadequate planning and budgetary control, however others reward budget holders for achieving budget objectives. Most

organisations use the same budgets for planning and motivational purposes (Umapathy, 1987).

The methodology of preparing and reporting budgets to budget holders and end users is an important aspect of any financial control system. For example a recent Cap Gemini/Ernst & Young survey found that 63% of organisations stated that their financial systems are inadequate for the new regularity requirements of GAAP. In the third level educational sector only 50% of combined respondents when asked if they had an ERP software system said that they had.

It is also interesting to note that within institutions 66% of combined respondents stated that budget holders had difficulty reading and understanding their budget reports. While some institutions indicated that 100% of their budget holders were very satisfied with their budget reports, it is also worth mentioning that some institutions stated that 100% of their budget holders were not satisfied. Some institutions stated that 50% (ROI) and 45% (UK), of their budget holders were undecided or indifferent on this issue.

In this regard therefore it could be argued that a large proportion of budget holders within third level institutions express few positive responses in relation to their financial reports. The University of Sheffield (1996) survey in the UK also came up with similar findings. In that survey academic heads of departments expressed dissatisfaction with the content and timeliness of their departmental budget reports.

One of the most frequently asked questions of the internal audit function in Columbia University New York is, “why on a report does a negative sign on a fund balance mean a positive fund balance (i.e. funds are available)? The response given is “credits appear with a minus sign in the (accounting) system (standard accounting practice). A positive fund balance is credit, an overdraft is a debit”.

There is significant evidence to indicate that accounting reports to ‘non accounting’ personnel cause confusion. Suppliers of accounting report writing packages claim they

address this issue, however based on the findings, budget holders clearly are not convinced. It appears that despite the introduction of ERP systems and on-line reporting, many budget holders require 'tuition' in relation to reading and understanding their financial reports.

6.4 ERP and the Budgetary Process

Jarvenpaa and Ives (1996) suggested that the introduction of Web technologies within organisations were likely to occur with minimal if any involvement by top management. Romm and Wong (1998) tested Jarvenpaa and Ives (1996) suggestion in an Australian university and found that the Web technologies were in fact carried out with a high degree of involvement by top management.

When asked in this research survey who was responsible for initiating ERP within their institution 67% of combined respondents stated that senior administrative management was responsible. A further 33% said that middle administrative management was responsible for it. These responses are consistent with the findings of Romm and Wong (1998) and appear to suggest that the reason for the divergence of results is due to the 'administrative culture' within universities. The study in the Australian University is consistent with those respondents in the Republic of Ireland and the United Kingdom.

Jarvenpaa and Ives (1996) also stated that a performance crisis can be used to stimulate the introduction of Web technology. This suggestion may be true in relation to the 'Y2K' installations that took place before 2000, as 50% of combined respondents stated that they implemented ERP before 2000.

A recent Forrester Research report indicated that the challenge for e-procurement is to harness the Web in ways that are additive and not distracting or costly to implement and maintain. Ford (2000) states that many organisations are nervous about adding resources to their e-procurement initiatives. Those who have spent heavily on ERP financial systems are anxious to protect and benefit from it. They are concerned about possible

integration problems. Another issue in relation to e-procurement includes the confusing pricing structure, which makes it difficult to evaluate true added value.

It also seems that e-procurement is not seen as an immediate objective by the majority of third level institutions. Only 38% of ROI respondents indicated that e-procurement was a very important or important challenge going forward, while UK respondents did not consider e-procurement as a very important or important challenge. Only 30% of combined institutions indicated that they had e-procurement, either attached to ERP, or a stand-alone system. These findings appear consistent with the above surveys of Forrester Research, and Ford (2000).

However the Aberdeen Group indicated that up to 60% of organisations' expenses are on material, supplies and services, which when purchased through e-procurement can produce substantial savings. Research indicates it costs \$100 to process a manual purchase order, but only \$30 when purchased through e- procurement.

Despite these statistics it appears that many third level institutions that have not already committed themselves to e-procurement are 'standing back' and reviewing their position. It is also likely that financial commitments and staff resources are factors in those decisions. Some large universities in the US are spending in excess of \$50(m), installing ERP systems. Many argue that ERP systems are not suitable for universities or third level institutions, as they were initially designed to accommodate the manufacturing environment. When asked about the best estimate of usage of ERP suite of modules and programmes institutions used, 74% of combined respondents said they were using 75% or less, of the suites available to them, 27% indicated they were using 50% or less. It seems therefore that universities have large proportions of ERP systems which are 'redundant' and unused.

57% of combined respondents indicated that the cost of maintenance was a very important or important challenge for them. ERP systems are expensive to purchase,

implement and maintain, and from the survey it also seems that institutions are concerned about the increasing cost of maintenance of ERP.

Despite the regular publicity and press reports in relation to breaches of security within organisations generally, only 14% of combined respondents indicated that security on ERP systems was a challenge going forward. As an example of the many-recorded cases, recent research by the US Chamber of Commerce indicates that 30% of US companies that go out of business are wrecked by employee theft. ERP systems, due to their structure will require more ‘openness’ and decentralisation in relation to information received into the systems and transferred out. Large data tables will accumulate into single databases and warehouses of information, requiring security and back up for disaster recovery and audit purposes.

6.5 On-Line Budget Reporting

Allen (1995) suggested the need for institutions to plan strategically for the collection, storage, manipulation and dissemination of their information resources. A strong data warehouse of information is a necessity for an institution going forward.

During 1999, Baylor University in the US, created a university wide data warehouse and decision support system. Financial portals with self-service browser interfaces allow users to gain access to disparate data on-line real time within the institution.

When respondents were asked about the challenges going forward, particularly in relation to ERP, 76% of combined respondents indicated that ‘on-line budget reporting’ presented a challenge. However 56% of combined respondents stated that they still report historical information to their budget holders, (9% hard copy via the internal mail, 25% by e-mail, and 22% via the internet - probably PDF or similar format). Respondents were also asked if budget holders within their institution had access to ‘on-line actual and committed information’, only 32% said yes. The importance of budgeting and control is also shown in the latest Deloitte & Touché (2003) CFO, survey, which indicated that 65% said that

‘controlling costs’ was an important challenge and 45% also stated that ‘budgeting and planning’ were important for them. A university or third level institution with a student population of 20,000 is likely to receive in excess of 100,000 supplier’s invoices annually. A miscoding and or misallocation error rate of 0.25%, at the processing level into the ERP financial system, would result in a total of 250 supplier’s invoices being misplaced in the incorrect business unit or departmental budget centre.

A hard copy of a departmental budget issued to a budget holder is a ‘tangible object’ arriving on the desktop. The new ERP ‘on-line’, ‘on-time’, report is already on the desktop. The difference between the two methods of delivery is that central administration personnel know when the budget holder accesses the new on-line reports from statistics embedded in the ERP report writing tool. New ERP reports may be available on-line to the budget holders, but they are not ‘on-time’ if the budget holders themselves do not avail of the opportunity to open and view them.

It would be interesting to determine, if budget holders after seeking and demanding more timely and relevant budgetary information, were themselves not to avail of such information, once it was available to them. Further research into this topic would be interesting, once ERP on-line reporting has become more established. The issue of whether budget holders view their on-line reports or not, is not resolved by respondents when asked if they believed budgeting control has improved since the introduction of ERP. 55% of combined respondents agreed that control had improved, but 45% were undecided.

It seems therefore that the existence of ‘on-line’ ‘on time’ reporting to budget holders does not guarantee improved budgetary control within universities or third level institutions. That improvement can only occur when the reports themselves are more accurate (although 83% of combined respondents said they were more accurate, since the introduction of ERP), and budget holders themselves actually monitor and view their reports.

When asked what financial report writing packages institutions used, 48% of combined respondents stated they used 'bought in specialised packages'. Many of the respondents used a combination of methods. The bought in specialised packages indicated in the responses included for example, Business objects, Cognos business intelligence and impromptu, Crystal, Access, Discoverer, and Opera.

6.6 Specialised Budgeting Software Packages

Budgeting software developers such as Comshare, Cognos, QSP and Hyperion have created technology that allows organisations to access a central database through the Internet. Fujitsu Corporation recently successfully completed an ERP implementation. They also attached Hyperion Pillar to provide a front-end planning and budgetary system.

However 92% of combined respondents of third level institutions do not have a specialised capital budgeting software system. A Web cast survey by Hyperion discovered that more than 50% of the companies surveyed are still using spreadsheets and general ledger systems. 81% of combined respondents in this research survey said they are using spreadsheets for capital budgeting purposes, and 33% indicated they are using general ledger applications. 65% of combined respondents indicated they had capital overruns, while 50% said the overruns were not material. 15% indicated that they had material overruns.

Many organisations are stating that the budgeting process takes too long and is cumbersome to process through their structures. Spreadsheets are not integrated packages, require regular updating and lack control for large institutions. However from the findings in this research survey, on this issue, it seems that many third level institutions have no instant solutions available to address this and have no immediate or medium term plans to change. It is interesting to note that in 2001, UK and ROI universities spent approximately Stg.15 (bn) on teaching and research, equivalent to the market capitalisation of a large international bank.

6.7 Further Research

As previously stated there is a paucity of information and authority on ERP implementations in Universities and third level educational institutions. This survey was completed on fifteen third level institutions in the Republic of Ireland and fifteen in the United Kingdom. The sample should be extended to include other third level institutions. It would also be interesting to compare findings between institutions in the US, Canada, Australia and other European countries. Enterprise Resource Planning is a recent phenomenon. On-line budget reporting to budget holders is even more recent. The views of budget holders themselves in relation to the new on-line reporting formats would be interesting, as would findings on the 'viewing rates' of the reports. If on-line reports are not viewed regularly by budget holders the consequences may result in overspending and material deficits accruing.

Appendices

Appendix A: Questionnaire – Covering Letter

Attention of the Chief Finance Officer

Dear Colleague,

As part of my final (MSc) research, I am undertaking a dissertation entitled “Budgeting and ERP Control Systems in Third level Educational Institutions: Some evidence from the Republic of Ireland and the United Kingdom”.

Please find attached questionnaire, which I would very much appreciate if you would take the time to complete. All information will be treated in the strictest of confidence and the results will be presented in aggregate form only.

The information you provide will be a useful source of research and information to the Third Level Sector, and I would be happy to forward you a copy of my research findings, if you wish to avail of it.

Thank you for your co-operation.

Yours sincerely,

Stephen Byrne.
University Accountant.
National University of Ireland, Maynooth,
Maynooth, Co. Kildare
Republic of Ireland.
Ph No 01- 7083622
e-mail *stephen.byrne@may.ie*

Appendix B: Questionnaire

Budgeting and ERP Control Systems in Third Level Educational Institutions: Some evidence from the Republic of Ireland and the United Kingdom.

(Please place (✓) in the box provided)

Section 1 Enterprise Resource Planning (ERP)

Q 1 Does your Institution have an ERP Software System?

Yes No No, but would like to No, but plan to

Q 2 If your institution has an ERP system, please indicate the software supplier/system?

J D Edwards	<input type="checkbox"/>
SAP	<input type="checkbox"/>
Oracle	<input type="checkbox"/>
Agresso	<input type="checkbox"/>
Cederdata	<input type="checkbox"/>
Coda	<input type="checkbox"/>
PeopleSoft	<input type="checkbox"/>
BAAN (Triton)	<input type="checkbox"/>
Sun Systems	<input type="checkbox"/>
Platinum	<input type="checkbox"/>
JBA International	<input type="checkbox"/>
SSA`	<input type="checkbox"/>
Epicor	<input type="checkbox"/>
Intenia International	<input type="checkbox"/>
Great Plains	<input type="checkbox"/>
Lawson	<input type="checkbox"/>
ERP Plus	<input type="checkbox"/>
Enterprise IQ	<input type="checkbox"/>
Scala 5.1	<input type="checkbox"/>
Progression	<input type="checkbox"/>
Solomon	<input type="checkbox"/>
Traverse	<input type="checkbox"/>
Carillon	<input type="checkbox"/>
Other (please specify)	<input type="checkbox"/>

Appendix B: Questionnaire - Continued

Section 1 Enterprise Resource Planning (ERP) (Continued)

Q 3 If your institution has an ERP system, please indicate when it was implemented

During 2002 During 2001 During 2000 Before 2000

Q4 If your institution has an ERP system, please indicate which of the following was responsible for initiating the change?

- (A) Senior Administrative Management
- (B) Middle Administrative Management
- (C) Heads of Departments
- (D) Research Budget Holders
- (E) Other User Groups
- (F) Other (please specify)

Q 5 What are the challenges for your institution going forward particularly in relation to ERP? *(Please rate in order of importance from 1-very important to 5-not very important)*

	Degree of importance				
	1	2	3	4	5
On line budget reporting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-procurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost of maintenance of ERP systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Security of ERP systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix B: Questionnaire - Continued

Section 1 Enterprise Resource Planning (ERP) (Continued)

Q 6 An ERP system is a very comprehensive suite of programmes and modules. If your Institution has recently implemented an ERP system what is your best estimate of the current degree of usage available to you?

- | | |
|---------------------|--------------------------|
| Less than 25% Usage | <input type="checkbox"/> |
| 25% - 50% Usage | <input type="checkbox"/> |
| 50% - 75% Usage | <input type="checkbox"/> |
| 75% - 100% Usage | <input type="checkbox"/> |

Q 7 If your Institution has an ERP system what method do you use to report financial budgetary information to budget holders?

- (A) Hard copy of historical financial information via the internal mail
- (B) Using e-mail to transfer historical financial information
- (C) Using the Internet (internal Intranet portals) to transfer historical financial information
- (D) Using the internal Intranet portals to down load virtual real time live financial information, which may be exported in spreadsheet format at the desktop of the budget holder.
- (E) Using ERP live software on the desktops of all budget holders.

Q 8 If you use (D) above are the downloads:

- (A) Live from the data tables software files
- (B) Copied data tables (hours) in arrears
- (C) Other (please specify)

Appendix B: Questionnaire - Continued

Section 2 -Recurrent Budgeting

Q 1 In your opinion how would you record the 'satisfactory ratings' of your budget holders to the presentation and content of your current departmental financial reporting format?

(Please complete **all 4** headings to 100 %)

	%
(A) Very satisfied	<input type="checkbox"/>
(B) Satisfied	<input type="checkbox"/>
(C) Not satisfied	<input type="checkbox"/>
(D) Undecided/indifferent	<input type="checkbox"/>
Total	100%

Q 2 If your institution produces ERP financial reports to budget holders, which of the following improvements to the reports has your institution achieved as a result of the implementation?

The reports are more relevant	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
The reports are more accurate	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
The reports are more timely and up to date	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
The reports are better-understood	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Other (please specify)				

Appendix B: Questionnaire - Continued

Section 2 -Recurrent Budgeting (Continued)

Q 3 Since the introduction of ERP, budgeting control by budget holders has improved significantly?

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q 4 In your institution does some budget holders within their departments, 'duplicate' financial record keeping in parallel with the finance office reports?

Yes No

Q 5 If yes, in your opinion will the emergence of ERP help eliminate this duplication of resources?

Yes No

Q 6 In your institution do budget holders have difficulty reading and understanding their financial reports?

Yes No

Q 7 Which of the following financial report writing packages are used in your institution?

- (A) Internally developed report writing software
- (B) Bought in specialised report writing package
- (C) Report writing package attached to the ERP system
- (D) Spreadsheets
- (E) Other (please specify)

(If (B) above please name the report writing package)

Appendix B: Questionnaire - Continued

Section 2 -Recurrent Budgeting (Continued)

Q8 In your institution do you currently operate the e-procurement module attached to the ERP system?

Yes No No, but would like to No, but plan to

Q 9 In your institution do you currently operate the e-procurement module as a stand-alone specialised system?

Yes No No, but would like to No, but plan to

(If Yes, please name the specialised system) _____

Q 10 If your institution uses e-procurement, is it centralised or decentralised?

Centralised Decentralised

Q 11 If your institution uses e-procurement do you use (total invoice to order matching), or (line by line order to invoice matching)?

Total Invoice to Order Line by Line Order to Invoice

Q 12 In your institution has budget holders on line access to fully comprehensive up to date actual live and committed financial information?

Yes No No, but would like to No, but plan to

Q 13 If your institution uses e-procurement do you use this module to project future cash flow commitments?

Yes No No, but would like to No, but plan to

Q 14 If your institution uses e-procurement are supplier's invoices transferred to you electronically by means of 'Electronic Data Interchange' (EDI)?

Yes No No, but would like to No, but plan to

Q 15 Are payments issued to suppliers electronically by means of 'Electronic Funds Transfer' (EFT)?

Yes No No, but would like to No, but plan to

Appendix B: Questionnaire - Continued

Section 3 Capital Projects Budgeting

Major capital expenditure and campus infrastructure has increased significantly in the Third Level Sector over the past five years.

Q1 Which of the following best describes your reporting for Capital Projects ?

- (A) Hard copy of historical financial information via the internal mail
- (B) Using e-mail to transfer historical financial information
- (C) Using the Internet (internal Intranet portals) to transfer historical financial information
- (D) Using the internal Intranet portals to down load virtual real time live financial information which may be exported in excel/lotus format at the desktop of the budget holder.
- (E) Using ERP live software on the desktops of all budget holders.

Q 2 In your institution how would you describe your capital projects expenditure results over the past five years?

(please complete all 4 headings if appropriate)

- (A) Significant and material overruns Yes No
- (B) Critical but not significant overruns Yes No
- (C) Overruns but not material Yes No
- (D) No Overruns Yes No

Appendix B: Questionnaire - Continued

Section 3 Capital Projects Budgeting (Continued)

Q 3 In your institution is your Capital Budgeting process supported by specialised budgeting software, (such as Hyperion, Frango, Cognos, Comshare etc), which allows for centralised sharing of data and control of the budgeting process?

Yes No No, but would like to No, but plan to

Q 4 Which of the following best describes your approach to the Capital Budgeting Process?

Spreadsheet based using Manual Data Entry
Specialist budgeting application: Hyperion, Frango, Cognos, Comshare etc
Web based budgeting application
Budgeting done within the GL solution
Other (please specify)

Appendix B: Questionnaire - Continued

Section 4 General

Q 1 Student Population.

What is the latest range of student numbers in your institution?

- | | | |
|--------------|--------|--------------------------|
| Less than | 2,000 | <input type="checkbox"/> |
| 2,000 | 4,000 | <input type="checkbox"/> |
| 4,000 | 8,000 | <input type="checkbox"/> |
| 8,000 | 12,000 | <input type="checkbox"/> |
| 12,000 | 15,000 | <input type="checkbox"/> |
| 15,000 | 20,000 | <input type="checkbox"/> |
| 20,000 | 30,000 | <input type="checkbox"/> |
| Greater than | 30,000 | <input type="checkbox"/> |

Q 2 Research Results

Please indicate if you wish to receive a copy of the final research dissertation.

Yes No

If Yes, please indicate whether: Hard Copy E-mail

1 E-mail address _____

Q 3 Comments on the Research Survey

Please make any additional comments in relation to the survey or ERP generally.

Appendix B: Questionnaire - Continued

Section 5 Respondents

Institution Name :

Date

Please return completed Questionnaire in enclosed envelope to:

Stephen Byrne
University Accountant
National University of Ireland, Maynooth,
Maynooth,
Co Kildare
Republic of Ireland.

(Thank you for completing the Questionnaire)

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