

A Credit Union Case Study on the Business Value of Information Systems/Information Technology

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Abstract

Partial results of an investigation into the business value of Information Systems/Information Technology (IS/IT) investments in the Financial Services Sectors (FSS) in Australia are presented. Using Case Study methodology to develop and refine a conceptual model of the relationship between IS/IT investment and organisational performance. The preliminary results from a Credit Union case reported indicate support for components of the conceptual model. Further, analysis indicates the existence of intermediary factors (operations, product delivery, customer service and staff). Directing IS/IT investments to these areas is likely to have a positive impact on organisational performance.

Keywords

Information Systems, Information Technology, Investment, Organisational Performance, Case Study, Financial Services Sector, Credit Unions

INTRODUCTION

This article presents partial results of an ongoing series of case studies that examine the relationship between Information Systems/Information Technology (IS/IT) investment and organisational performance within the Financial Services Sector (FSS) in Australia. We present the results from a single medium sized Credit Union.

Modern Financial Institutions (FIs) are heavily reliant upon IS/IT in all facets of their business, from purely operational aspects to strategic applications designed to gain competitive advantage and provide leverage in the market place (Apte & Vepsalainen 1993). Consequently, FIs tend to allocate significant portions of their total capital expenditure budgets to acquiring new technologies and to maintaining existing IS/IT portfolios (Carrington, Llanguth & Steiner 1997). In addition, as the FSS tends to be regulated (sometimes heavily), these expenditures may be discretionary, driven from within the organisation, or mandatory, required for regulatory compliance (Lilja 1999). Further, the fact that revenues are derived from a variety of channels makes this relationship a difficult one to understand. Clearly, IS/IT investments are deemed to contribute to organisational performance, but how they do that and where they have the most impact remain subjects of much debate (Harker & Zenios 2000b). If FIs are to successfully use IS/IT as a competitive tool, then the need to understand this relationship becomes increasingly important, as does the need to demonstrate that potential and existing investments in IS/IT will be or are being beneficial to the organisation.

Research on the Business Value of IS/IT

Issues relating to the business value of IT in general have been the subjects of much research in the past. Closer examination of the body of research reveals a number of themes, namely: Effect of IS/IT at an industry level (Palmer & Markus 2000; Andersen 2001), Performance of IS/IT departments (Miller 1993; Slevin, Stieman & Boone 1991), IS Performance and Productivity (Scudder & Kucic 1991; Menon, Lee & Eldenburg 2000), IS/IT Investment and Performance (Dewan, Michael & Min 1998; Thatcher & Oliver 2001), IS/IT Evaluation/Value (Dos Santos 1991; Davern & Kauffman 2000), IS/IT Benefits Realisation/Management (Jurison 1996; Lin & Pervan 2003).

It is also well worth noting that much of this previous research appears to have been conducted in what may be considered to be less information intensive industries such as manufacturing, yet paradoxically, the FSS which is typically regarded as a highly information intensive industry appears to have received less attention.

The rest of this article is laid out as follows: the next section briefly reviews the IS/IT investment and organisational performance literature followed by a brief overview of the Credit Union industry. Following that the research methodology and design are discussed and preliminary results presented after which a summary is

given. Finally, some preliminary conclusions are put forward which are then followed by a discussion of the limitations and directions for further research.

IS/IT INVESTMENT AND ORGANISATIONAL PERFORMANCE

Lucas (1993) identified three main objectives for the growing interest in understanding the IS/IT investment and organisational performance relationship as being: (a) the need to better understand how IS/IT is implemented and used, (b) to better understand the impact of IS/IT, (c) for justifying new and continued investments in IS/IT by demonstrating perceived benefits. Subsequently, there have been a number of studies with mixed results. Further, careful consideration of this body of knowledge reveals three critical issues, namely: (1) an apparent lack of theory (Alavi & Carlson 1992); (2) problems with measurement (Kauffman & Weill 1989); and, (3) lack of generalisability of results, possibly due in part to (1) and (2) (Kauffman & Weill 1989).

Theory Issues

Kaplan & Duchon (1988) and later Alavi & Carlson (1992) observed that the dominant approach to research in the field of IS/IT has been based on the positivist philosophy and that most studies measured quantitative outcomes such as technical impact, economic value, improvements in effectiveness/efficiency and financial performance. Although Lucas (1993) noted that researchers have in fact used theory from a number of fields/disciplines in an attempt to better understand this relationship, there still appears to be a lack of strong testable theory on the business value of IS/IT (Markus & Soh 1993).

Consequently, in much of this earlier research, there appears to have been a tendency 'test' hypotheses using a variety of statistical analytical techniques applied to data using models derived from and developed using theory from other fields (Kauffman & Weill 1989; Capon, Farley & Hoenig 1990). Markus & Soh (1993) identified and lamented both the apparent lack of consensus and theory in the IS/IT investment literature. Indeed, there have been many calls to build strong testable theory on the business value of IS/IT with suggestions that there needs to be a structured approach to building a cumulative tradition of research into the business value of IT if we are to better understand this relationship (Trauth 2001; Gregor & Hart 2002). It is partly in recognition of this need to lay theoretical foundations that this study utilises Case Study methodology (Yin 1994; Cavaye 1996) to develop, test and refine a conceptual model of this relationship.

Methodological Problems

Kauffman & Weill (1989) identified a number of weaknesses in previous research: (1) equivocality on the contribution of IS/IT investments to the value/performance of organisations; (2) predominant use of statistical data analysis techniques; (3) predominance of the positivist paradigm; (4) lack of consideration of context (which is recognised as being an important issue when considering performance); (5) Lack of explicit consideration of actual system performance; (6) Application of theory from other disciplines (economics, marketing, organisation theory etc), (7) use of different measures.

The apparent lack of commonly accepted measures leads to inconsistencies in results obtained and therefore affects generalisability. Differences in research methods and measures employed have also contributed to this problem. From a purely contextual perspective (Trauth 2001), differences in time periods and locations/regions in which studies was conducted would have an influence on the results. This is a definite weakness that points to need to build theory and lends support to the use of Case Study methodology as a theory building tool (Yin 1994).

Re-introducing the Concept of an IS/IT Investment Threshold

It is generally agreed within the IS/IT domain that organisations need to maintain a certain level of expenditure in order to remain competitive (Willcocks & Lester 1999; Harker & Zenios 2000a). However, there appears to have been little work done to date to determine what might be considered an appropriate level of investment for a given industry, despite Bender's (1986) observation that there appeared to be a threshold for IS/IT investment IS/IT that organisations needed to maintain in order to remain competitive. Comparing information processing expenses with total expenditure, Bender (1986) found ratios of 5% - 10% (22 out of 132 companies) and 15% - 20% (35 out of 132 companies) and concluded that there appeared to be a *threshold* of around 20% to 25% for IS/IT investment. Clearly, the establishment of such a threshold could have implications for FIs as it could be used as a benchmark by which FIs could compare respective IS/IT expenditures and subsequent analyses could contribute significantly to the Strategic Information Systems Planning process. Such a threshold could be viewed either as an *enabler* when justifying IS/IT expenditure or as a *limiter* when used to cap IS/IT expenditures.

DEVELOPING THE CONCEPTUAL MODEL

In order to better understand the IS/IT investment and organisational performance relationship, a conceptual model grounded in the literature (Maimbo & Pervan 2002) is proposed. To understand how this model was developed, it is useful to consider earlier models. Beginning with a simple cause and effect model and using the organisation as the unit of analysis, it may be argued that IS/IT investment leads to better organisational performance. This view, though intuitive, is simplistic and fails to take into account the effect of factors such as the role of management, the environment and the internal and external aspects of organisational performance. Further, this view assumes that all IS/IT investment(s) are the same. A broader perspective is therefore necessary. Hence Trice & Treacy (1986) suggested utilisation as the link between the two major components with other factors such as IS budgets, personnel and IS efficiency influencing the relationship.

McKeen & Smith (1993, p625) later tested these ideas and concluded “there is a strong linear relationship between IT investment and IT usage. This result though encouraging had limited generalisability due to a number of weaknesses most notable being that the study focussed on a specific technology (main frames). In addition, earlier models were open-ended and thus did not suggest any form of feedback or secondary interaction between organisational performance and IT investment. This poses the question, how can investment be judged to have brought about any purported increases in performance if this secondary link is not explicitly considered? Since then, a number of models have been proposed. Some, such as Weill (1992) and Markus & Soh (1993) went further and suggested the need to consider the impact of different types of IS/IT investment within a given organisation and introduced the idea of the effect management. Others studies suggested the need to consider the effects of time lags and the impact of learning and growth (Brynjolfsson 1993; Devaraj & Kohli 2000).

We therefore propose a conceptual model that has four main components, namely: the IS/IT portfolio (Infrastructure Systems, Transaction Processing Systems and Management Information/Decision Support systems), Organisational Performance (internal and external), Managerial Effectiveness and Considerations for Strategic Information Systems Planning and organisational context (Maimbo & Pervan 2002).

This research is focussed on the FSS and the conceptual model described above applies to FIs. The largest industry in this sector is the Credit Union Industry. An overview of Australia’s Credit Union industry now follows.

CREDIT UNIONS IN AUSTRALIA

Crapp & Skully (1985, p1), define a Credit Union as;

“a democratically controlled voluntary co-operative society of individuals, bound together by a common bond for the pursuit of the economic welfare of members through the receipt of funds from members and other, and the provision of loans and other forms of credit and financial services to members”

The Credit Union movement in Australia began after World War II, after concept was observed in Canada by Australian Royal Air Force personnel and as a direct response to the perception that traditional banks were unresponsive to customer needs (Cooke 1989). In Australia, most Credit Unions are members of Credit Union Services Corporation Australia Limited (CUSCAL), which serves as both an industry body and a service provider to its members. CUSCAL had approximately 181 member unions with a 32.45% share of the market as at the end of 2001 (WOCCU 2001). Credit Unions in Australia comprise the largest single industry of the FSS with a combined asset base of approximately AUD\$24 billion and approximately 3.5 million members.

Credit Unions provide a wide range of products and services including Loan products, ATM access, Internet banking services, Credit Card services and Insurance. In fact, it has been noted that Credit Unions in Australia have been very innovative in the development of financial products and services and consequently have been noted for being first to introduce many services that consumers today often take for granted. As the issue of customer service and quality continues to gain prominence (Duncan & Elliot 2002), the future for Credit Unions is strong, provided they can continue to provide comparable or better financial services at a lower cost to traditional retail and commercial banks. For Credit Unions this is an area in which IS/IT can provide competitive advantage if applied and utilised effectively/efficiently.

RESEARCH METHODOLOGY AND DESIGN

Due to the nature of the research project, the authors chose to use a highly structured Case Study methodology with recommendations from Yin (1994) and Miles & Huberman (1994) being adopted to address issues of rigour and validity. Further, to increase manageability of an otherwise complex research project, the design

incorporated a phased approach built around Eisenhardt's (1989) framework thus enabling the researchers to group tasks into three phases, namely model development, testing and refinement. One of the key aspects of the research design was the development of a comprehensive Case Study Protocol (Yin 1994), which outlined the procedures and rules that governed the conduct of the researchers and the research project. The protocol contained the research instrument (a detailed and structured interview guide) and a guide for the data analysis phase of the research project. Primary data were collected via a series of interviews with senior management. In this case, four interviews were conducted with the CEO and three departmental heads, namely, MCS (Head of Corporate Services), SMFA (Finance and Administration) and ITM (IT Manager). Each interview was approximately 60 – 90 minutes long, was recorded and when later transcribed averaged around 20 pages. In addition, secondary data in the form of financial data, annual reports, enterprise architecture schemas, meeting notes, strategy/planning documents, web based documents, industry statistics and other documentation/data were collected from the participating FI to enable triangulation of information (Yin 1994). Data were analysed using inductive, deductive, comparative and pattern matching techniques (Miles & Huberman 1994).

RESULTS SUMMARY

Background

DECU¹ (Pvt) Ltd is a medium sized Credit Union operating primarily in one Australian state. It has over 50 000 members and a widespread branch network within the metropolitan area of the state capital. DECU has a relatively flat organisational structure built along functional lines, namely the corporate head office (which provides administrative and back office functions) and Points Of Representation (PORs) such as branches. DECU provides a wide range of services and products to its members including: Automated Teller Machines (ATMs), Electronic Funds Transfer/Point Of Sale (EFT/POS), Internet Banking, Loans, Mortgages, Term Deposits, Savings accounts, Insurance, Credit cards, Financial planning, Share trading, Estate planning, Travel and many more. Over the past two years DECU has experienced profitability growth of over 60%, much of which has been attributed to previous and ongoing investments in information technology. DECU prides itself on its ability to deliver a wide range of products and services both effectively and efficiently to its members through its technology.

<i>Model Component</i>	<i>Supported/Not Supported</i>	<i>Comment</i>
Level Of Investment (IS/IT Portfolio)	Supported	<ul style="list-style-type: none"> • Complex/diverse portfolio • More congruence needed with respect to senior managers' views of IS/IT portfolio importance and roles
Organisational Performance	Supported	<ul style="list-style-type: none"> • Appropriate performance (internal/external) indicators identified
Considerations for Strategic Information Systems Planning (SISP)	Not Supported	<ul style="list-style-type: none"> • No formalised SISP
Managerial Effectiveness	Supported	<ul style="list-style-type: none"> • Role of senior management has a strong impact on IS/IT investment
Organisational context	Supported	<ul style="list-style-type: none"> • Mandatory and discretionary IS/IT investments decisions affected by context

Table 1: Results Summary For Conceptual Model Components

DECU (Pvt) Ltd provided an interesting case study on the business value of IS/IT. Table 1 provides a summary of results so far and these indicate preliminary support for four out of five components of the conceptual model.

Emergent Themes

In addition to the components of the conceptual model, the following themes or factors were identified in the case as being those areas at which IS/IT investment is targeted and that in turn have a direct impact on organisational performance as follows;

1. Operations(Alpar & Moshe 1990)* – Banking operations relating to front office functions (points of representation) and back office functions (including head office).

¹ Pseudonym, the real name has been suppressed for confidentiality reasons
Maimbo , Pervan (Paper #234)

2. Product delivery (Carrington, Llanguth & Steiner 1997)* – Channels through which customers access products and services.
3. Customer service (DeLone & McLean 1992)* – activities relating to the satisfying customer needs and managing relationships with customers
4. Staff (DeLone & McLean 1992)* – ensuring that staff have adequate access to IS/IT resources and are able to fully utilise them.

**Indicates support in the literature for each factor*

The analysis suggests that this set factors forms a group of intermediary variables and observations lead to the conclusion that there will be some interaction between the factors themselves. Organisations that focus IS/IT investment in these areas are more likely to attain positive performance benefits. Further, the level of focus on each area will be different for different organisations. Thus, it is proposed that FIs will invest in an IS/IT portfolio in such a manner that they will target each of these areas with express aim of achieving improvements in organisational performance. However, at this stage no causality between such IS/IT investments and organisational performance is attributed, as much more work needs to be done in refining and testing the model.

IS/IT Investment Threshold

DECU appears to have an IS/IT investment threshold of around 5%. Although this figure appears to be consistent with results reported by Bender (1986) and therefore encouraging with respect to establishing the concept of an IS/IT threshold, caution needs to be exercised in the interpretation of these results before any generalisations can be made. This is due to differences in research design, industry, period and region between this current study and (Bender 1986). It is noteworthy that when the idea of such a threshold was discussed, participants generally indicated their agreement that such a concept would be useful in determining appropriate levels of IS/IT investment and benchmarking performance.

PRELIMINARY CONCLUSIONS

Utilising Case Study methodology research was conducted in a medium size credit union and results so far indicate support for four out of five components of the conceptual model. In addition, observations revealed the presence of a set of intermediary factors at which FIs appear to be directing IS/IT investment. Comparison with the literature also provides preliminary support for this set of intermediary variables.

Therefore, it is concluded that DECU needs to focus IS/IT investments at these areas, as they appear to be more likely to lead to performance improvements provided these investments are made in the context of a broader corporate strategy. It is also recommended a more formalised process of SISP for DECU (the current informal process may not be sustainable with organisational growth). As part of this process, DECU also needs to consider the financial implications of their decisions by monitoring levels of IS/IT expenditure against overall expenditure and revenues and by benchmarking themselves against competitors using key ratios such ROE, Non-Interest Income, Interest Income, Cost to Income ratio.

DIRECTIONS FOR FURTHER RESEARCH

The findings for this case study are very encouraging as we are move towards a better understanding of the relationship between IS/IT investment and organisational performance. However, more work needs to be done to verify the emergent themes and thereby refine the model, before these results can be generalised across the FSS. As mentioned earlier, this is but one case in a series of multiple case studies in which we use a structured approach. Findings from all cases will be used for both “within case” analyses and “cross case” analyses at a later stage.

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