

# A Conceptual Framework for Furthering Understanding of 'IT business value' and its Dimensions

*Marguerite C Cronk & Edmond P Fitzgerald*  
*Department of Information Systems*  
*Faculty of Business*  
*University of Southern Queensland*  
*Toowoomba, Australia*  
*Email: cronkr@usq.edu.au edfitz@usq.edu.au*

## **Executive Summary**

The ever increasing expenditure on IT has been accompanied by an increasing demand to measure the business value of the investment. However this has proven to be a difficult task. The accurate measurement of 'IT business value' is repeatedly reported as one of the top ten major concerns of chief executive officers. Many are convinced of IT's great potential but few are able to justify its expense or document its benefits to the satisfaction of board members, administrators or controllers. Some executives are asking if the value is really there.

Many methods have been proposed by researchers but none has gained wide acceptance among practitioners. In Australian organizations there is still a heavy reliance on cost-benefit or other financial methods of IT evaluation, in contrast to current research which calls for the addition of more qualitative measures. There has been much debate in the literature over appropriate measures to determine this value. However before appropriate measures can be devised, a clear definition of what is to be measured ('IT business value') and an understanding of the dimensions of 'IT business value' are necessary. The appropriateness and value of an information technology investment is a multifaceted, contextually dependent, and somewhat subjective entity. The aim of this research paper is firstly to highlight the complexity of the 'IT business value' picture and secondly to add some clarity to this complex problem of determination of 'IT business value'.

To achieve these aims, firstly, analysis of current 'IT business value' methodologies is undertaken, revealing a number of problems which become the focus of the paper. These include definitional inconsistency, difficulty in comparing methods (and thus deciding what method is appropriate for a given information system), and superficial treatment of the problem. Next, a working definition of 'IT business value' is derived and used as the basis for further discussion. Then, the major dimensions of 'IT business value' are elicited. Finally, literature synthesis reveals categories of measurement approaches which collectively address these major dimensions of 'IT business value'. It is proposed that an 'IT business value' evaluation methodology should include measures from each of these dimensions in order to tap all the aspects of value contribution.

Whilst this is primarily a theoretical paper, it has some relevance to practitioners as it uncovers some problems with current 'IT business value' evaluation methods and suggests solutions that may be applied to evaluations of a range of different IT investment types.

## **1 Introduction**

Research into the 'IT business value' construct has its roots in the IT effectiveness literature. Early evaluation approaches focused on a single system, using only a financial perspective (Hamilton & Chervany 1981). Later studies introduced the concept of IT's overall contribution to organisational performance (Bender 1986; Turner 1985). These methods were also limited to a financial perspective, relating overall IT expenditure to organisational performance through such measures as ROI and ROA. The failure to consistently demonstrate a positive correlation between IT expenditure and organisational performance led to a recognition of the difficulty in isolating IT's contribution from other organisational and external confounding factors. This recognition resulted in a re-focus on the single system and the development of 'financial surrogates' including the more qualitative measures such as user satisfaction and system goal fulfilment (Miller 1989; Symons 1991). Dissatisfaction with the limited scope of these measures led to the development of a number of multi-dimensional methodologies (Banker & Kauffman 1991). However none of these methodologies is widely adopted by practitioners (McBride & Fidler 1994). This suggests deficiencies still exist in methodologies proposed thus far.

Our aim in this paper is to help unify and bring clarity to this rather fragmented field of research. Firstly, analysis of current 'IT business value' methodologies is undertaken, revealing a number of problems which become the focus of the paper. As addressed in this paper, these include difficulty in comparing evaluation methods due to differing levels of complexity and differing issues being addressed by the methodologies, lack of construct validity, and definitional inconsistency. Next, a working definition of 'IT business value' is derived and used as the basis for further discussion. Then, literature synthesis reveals categories of measurement approaches which collectively address the major dimensions of 'IT business value', allowing the construct validity of the evaluation methods to be assessed. This should assist practitioners and researchers alike in appreciating the complexity of the 'IT business value' construct and thence in the development of 'IT business value' evaluation methodologies.

## 2 Current Evaluation Methods

Over the past twenty years there has been a clearly discernible evolution in the methodologies proposed for the measurement of 'IT business value'. This evolution has been congruent with the evolution of information system types and objectives, as well as our understanding of their contributions to the organisation. Table 1 summarizes the plethora of 'IT business value' evaluation methods presented in the literature over the past fifteen years and highlights the diversity of measurement approaches. From Table 1, it can be seen that current evaluation methods may:

- address a single information system or organizational IT in a collective fashion;
- be quantitative or qualitative in nature;
- be single or multidimensional;
- be limited to the system itself or expanded to consider contextual and organisational factors.

Collective wisdom recommends a multi-dimensional methodology involving both quantitative and qualitative components (Banker, Kauffman & Mahmood). Whilst Table 1 lists many independent variables or dimensions of 'IT business value', no currently available methodologies incorporate an understanding of the relationship between the numerous independent and moderating variables addressing issues of context, content and process as suggested by Symons (1991). The process of evaluation, ie. the measures used and the people chosen for the evaluation, is influenced by the type of information system (content) and the context surrounding the information system (Symons 1991). Context encompasses such issues as conversion effectiveness (Weill 1989) differing organisational structures, current financial position and practices, levels at which value is accrued, and organisational culture, including areas of social context such as conflicting value perspectives, power structures, and perspectives on IT as a whole.

Measurement Approach	Researcher *
<b>Quantitative, Organisational Level Measure</b> - some IT factor (eg. annual IT expenditure) vs some organizational performance measure (eg. pre-tax profit)	Brynjolfsson (1993) Cron & Sorbol (1983) Floyd & Wooldridge (1990) Cron & Sorbol (1983) Bender (1986); Turner (1985) Weill (1989,1990); Katz (1993) Strassmann (1990); Hitt (1993) Harris & Katz (1988)
<b>Data Envelope Analysis</b> - converts multiple input measures and multiple output measures into a single measures of relative efficiency	Mahmood (1994)
<b>Information Economics</b> - enhanced ROI, business domain assessment, technology domain assessment	Parker et. al. (1988)
<b>Information Value Approach</b> - the value of the IS is based on the value of the information being processed	Ahituv (1989); Taylor (1986); West & Courtney (1993)

<b>Perceived Values</b> <ul style="list-style-type: none"> <li>- fulfilment of objectives.....</li> <li>- system quality, information quality, use, user satisfaction, individual and organisational impact.....</li> <li>- user information satisfaction.....</li> <li>- user information satisfaction.....</li> <li>- CSF fulfilment.....</li> <li>- UIS &amp; use.....</li> <li>- quality, flexibility, responsiveness, functional integrity.....</li> </ul>	Davis (1989)  DeLone (1992) livani (1994) Miller (1989) Slevin (1991) Srinivasan (1985) Fink & Tjkarta (1994)
<b>Value is Benefit of System and System Goals</b> <ul style="list-style-type: none"> <li>- nature of system benefits.....</li> <li>- support of system objectives.....</li> <li>- value analysis.....</li> <li>- achieving system goals.....</li> <li>- benefits.....</li> <li>- perceived fulfilment of system objectives.....</li> </ul>	Ahituv (1989) Hamilton & Chervany (1981) Keen (1981) Symons (1991) Udo & Guimaraes (1994) Davis (1989)
<b>Value Related to Utility or Usefulness</b> <ul style="list-style-type: none"> <li>- utility.....</li> <li>- usefulness.....</li> </ul>	Ahituv (1989) Seddon & Fraser
<b>Resource View</b> <ul style="list-style-type: none"> <li>- labour and IT considered jointly and treated as a resource deployment issue</li> </ul>	McKeen & Smith (1991)
<b>Service Quality</b> <ul style="list-style-type: none"> <li>- improved client services.....</li> <li>- SERVQUAL a marketing instrument - as a measure of IS service.....</li> </ul>	Broadbent et al (1995) Pitt (1995)
<b>Alignment with Business Strategy</b>	Broadbent (1989) Thurlby (1993)
<b>Process Improvement</b> <ul style="list-style-type: none"> <li>- value demonstrated through process improvement or</li> <li>- (answers the question of how value is added to the business)</li> </ul>	Davenport (1994); Mooney & Kreamer (1995); Taylor (1986)
<b>Multi-Dimensional/Business Perspective Measures</b> <ul style="list-style-type: none"> <li>- balanced scoreboard.....</li> <li>- IT value as a measure of business contributions.....</li> <li>- enterprise level measurement, IT impact on contact with customers</li> <li>- information economics.....</li> <li>- business value linkage.....</li> <li>- Context, content and process.....</li> </ul>	Kaplan & Norton (1992) Rubin (1991) Berger (1988) Willcocks (1992) Banker & Kauffman (1991) Symons (1992)

\* For space reasons, the papers in this table are not listed in the References. Full references are available from this paper's authors.

**Table 1 Summary of 'IT Business Value' Evaluation Approaches**

With the existence of so many evaluation approaches it is no wonder that practitioners interviewed as part of this study indicated they are unsure which method to use. In order to simplify the picture the following discussion places methods into categories, firstly on the basis of complexity or the number and type of measures used, and secondly on the basis of what 'IT business value' question they are addressing.

An analysis of the current evaluation approaches listed in Table 1 shows that the 'IT business value' construct has been considered at three levels of complexity, as depicted in Table 2. The first level seeks to determine appropriate measures for 'IT business value' of an existing single system; or for the organization's IT as a whole. At this level, for single systems, measures such as quantitative cost-benefit analysis or qualitative user satisfaction are proposed, without any considerations of the value chain created by the IT, or why the value is what it is. Similarly simple financial measures are used to measure the collective contribution of IT to the organisation, eg. total IT cost vs.

organisational performance indicators. The second level of complexity addresses these issues in terms of factors influencing value and broader considerations of the ripple effect of IT, thus requiring more sophisticated metrics. The third level of complexity addresses the IT investment question and incorporates many of the factors of the first two levels, with multi-dimensional metrics. However, none of these multi-dimensional measures consider issues of alignment in conjunction with organizational strategy and context.

Level of Complexity	Focus of Measurement	Eg. of Factors Considered	Eg. of Measures Used
1st	Single system	Immediate sphere of influence of the IT	UIS, cost-benefit, CSF fulfilment
1st	Organisation	Collective IT costs, organisational performance	Percentage of total assets vs. total general IT expense
2nd	Single system	Context, alignment with business goals, levels of value contribution other than immediate sphere	Qualitative, degree of alignment, measures of power and politics, organisational impact
3rd	Single system	Combination of above factors	Multi-dimensional measures

**Table 2: Levels of Complexity in the Measurement of 'IT business value'**

Each level of complexity addresses a slightly different business question. The first level of complexity addresses the question of 'current value' of an existing system. The second level explains why the value is what it is, or what factors are influencing the resultant 'IT business value' of the system. The third level answers the "should we invest in this system" question, which takes into account issues such as risk, alignment and estimated cost-benefit. It should also consider contextual factors (eg. power and politics, organisational culture, etc.) as suggested by Symons (1991). The method of choice depends on the stage of the information system development life cycle as well as many other issues beyond the scope of this paper.

### 3 Development Of Definitions

As previous research has provided us with numerous evaluation methodologies but failed to consistently identify positive correlation between IT expenditure and organisational performance (Sethi, Hwang & Pegels 1993), it is generally accepted that future research should firstly focus on defining the 'IT business value' construct before considering the development of appropriate measures (Banker, Kauffman & Mahmood 1993). However, our analysis suggests research into 'IT business value' has tended to proceed from the opposite direction providing a plethora of methodologies but little understanding of what is being measured and of how the components relate to one another. The following section highlights some theoretical and conceptual dilemmas in the 'IT business value' literature (which may in part explain the presence of so many evaluation methods) through analysis of relevant definitions in light of theory relating to validity.

To enable research efforts to be compared, it would be helpful to have a clearer definition of the concepts being discussed. Clear and precise definitions are necessary to enable the construct validity of the instruments proposed in the evaluation methods to be verified. Sekaran (1992) states that construct validity refers to whether the instrument taps the concept as theorized. Without a definition of the construct it is difficult to determine whether an instrument reflects its true meaning. So a precise definition of 'IT business value' and identification of its dimensions should greatly facilitate the development of evaluation instruments having the all-important construct validity.

Convergent validity, an aspect of construct validity, is attained when two instruments measuring the concept correlate highly (Sekaran 1992). As shown in Table 1, many differing approaches have been proposed for the measurement of 'IT business value'. For example one proposed instrument measures user satisfaction while another measures system objective fulfilment and yet another measures ROI. It is unlikely that these vastly different instruments would correlate highly. Perhaps if researchers all shared a common definition of 'IT business value' greater convergent validity would be attained, thereby facilitating comparison of the evaluation methods and their outcomes.

In some cases the definition of the 'IT business value' construct is the same as its measures. For example, Udo (1992) defines 'IT business value' as system usage plus user satisfaction and measures it as such. In this case, what is defined is what is measured but it lacks construct validity

because these two instruments don't adequately reflect the full meaning of the 'IT business value' construct. The construct is complex requiring the measurement of many variables in order to attain construct validity (DeLone & McLean 1992). Thus a clear definition is a good starting place for furthering the understanding of 'IT business value'.

In the following section we propose a working definition of 'IT business value'. However the discussion would not be complete without acknowledgment of the problems in further defining components of this definition and related constructs.

### 3.1 Derivation 'IT business value' definition

The absence of an adequate definition of 'IT business value' is a major omission in this research area. Quite frequently no attempt is made to define 'IT business value' and the discussion proceeds under the assumption that the reader has a similar understanding to that of the researcher. Considering the many different perspectives presented in the literature, this is unlikely to be the case. As discussed below, the term 'IT business value' had its roots in the IT effectiveness literature of the 1980's and its meaning has been evolving through the 1990's. The recent introduction of an organisational perspective has added further definitional inconsistencies with the definition of organisational performance also being problematic.

Kriebel (1989) agrees that one of the key issues in this area of research is that of defining 'IT business value' in a meaningful way. Part of the current confusion may be due to the plethora of terms used to describe the concept. These include IT effectiveness (Iivari & Ervasti 1994), IT success (DeLone & McLean 1992), IT influence (Mason 1978), IT impact (Gurbaxani & Whang 1991; Vogel & Nunamaker 1990), and 'IT business value' (Katz 1993; Broadbent et. al. 1995). As shown below, the same term is frequently used to describe slightly different concepts. The two most widely used terms are IT effectiveness and 'IT business value'.

When an attempt is made to define the concept, the definition varies among researchers. For example, IT effectiveness has been defined as:

- The effect of information on the receiver (Shannon & Weaver 1949);
- performing the right tasks to achieve desired results (McNurlin & Sprague 1989);
- a comparison of performance objectives or a measure of resource (Hamilton & Chervany 1981);
- the contribution to organisational effectiveness (Miller 1989);
- how well a programme is achieving its established goals or other effects (Symons 1991);
- system usage plus user satisfaction (Udo 1992);
- the value IT adds to the firm (Gatian 1994).

A gradual evolution of understanding from a number of perspectives is demonstrated by the change in definitions over time. The final definition in the list above reflects current thinking on 'IT business value'. Note that there is no indication of how to measure value in this definition. Given that different measures may be applicable in different circumstances, a definition free of measures may be the most appropriate.

The term 'IT business value' is a more recent term, appearing predominantly in the 1990's and, according to the literature, may equate to:

- service to the business (Konsynski 1993);
- value added as equal to revenue minus purchases (Strassmann 1990);
- value IT adds to business (Kauffman 1993);
- economic contribution that IT can make to the management's goal of profit maximisation (Banker & Kauffman 1991)
- strategic value (Katz 1993; Berger 1992);
- performance of the IS department and the impact of IT (Katz 1993);
- ability of IT to gain competitive advantage (Hitt & Brynjolfsson 1994);
- an economic measure of IT investment in relation to productivity usually at the organisational level (Jordan 1995);
- impact of IT on business performance (Mukhopadhyay 1995).

As can be seen, there is considerable overlap between the more recent definitions of IT effectiveness and 'IT business value', with the focus moving more to organisational concerns. This is quite different to the earlier definitions of IT effectiveness which looked at the more localised immediate effect of a given information system. This change in focus reflects the growing understanding of the role played by IT in the organisation. Taking into account these various perspectives and the evolution in understanding, the following definition is proffered:

*'IT business value' is the sustainable value added to the business by IT, either collectively or by individual systems, considered from an organisational perspective, relative to the resource expenditure required.*

An organisational perspective is necessary as two given information systems can be effective (doing the right things) but may vary greatly in the value they add to the business. Another reason for including a broader perspective in our definition is that of the ripple effect of IT benefits, ie. the benefits of IT that may cascade or ripple through many SBUs or levels of the organisation. In addition if an organisational perspective is taken, it becomes a high level moderator of the more limited individual perspectives of what constitutes 'IT business value'.

### **3.2. Components of the definition**

Having defined 'IT business value' we need to consider the main terms associated with our definition. Differing perspectives on value make it difficult to define value and consequently value for money, and organizational performance. These difficulties are discussed and suggestions made as to their consequence.

#### **3.2.1 Value**

There are many inherent difficulties in defining value, or its dimensions. Value is defined as "the worth, desirability or utility of a thing" (Concise Oxford Dictionary), but what constitutes worth/desirability/utility to an individual depends on many different factors. An individual's IT value perspective is not formed in isolation but may be a composite of factors, such as:

- preconceived ideas about IT as a whole (how and when it contributes) which influence value expectations (this study's interview data);
- the position or role of the individual within the organisation (this study's interview data);
- personal value system/ethics (Bird & Lehrman 1993);
- factors relating to the organisation, such as:
  - the IT culture, eg. support, service and quality (Symons 1991);
  - nature and intensity of political activity, eg. empire building, self interests, competitiveness, etc (Pfeffer 1981).

This is a definitional problem as one's value perspective determines how value and hence 'IT business value' is defined and ultimately measured. It is important to understand the evaluator's value perspective in order to interpret the result of his/her evaluation. There is some debate in the literature as to whose value perspective should be accepted but we suggest that the answer should include integrated multiple value perspectives (upper and middle management, system users, etc.) in conjunction with organisational objectives (Cronk & Fitzgerald 1996).

#### **3.2.2 'Value for Money'**

The evaluation process according to Willcocks (1992, p.364) "is about establishing by quantitative and/or qualitative means the worth of IT to the organisation, ....bringing into play notions of cost, benefit, risk, and value". So when considering our definition of 'IT business value', two distinct concepts are relevant: firstly that of determining the contribution of IT to business and secondly how this effect compares with the resource expenditure required to gain the effect, together known as 'value for money'. An information system may contribute substantial value to the business, ie. 'IT business value', but the costs may be excessive and thus represent poor value for money. Obviously, if the on-going costs are excessive then the value can not be sustained, hence the need to qualify value with the word 'sustainable' in the above definition of 'IT business value'.

Definitional problems exist in many articles submitted by practitioners which use the term 'value for money'. This question has motivated a lot of the research and is the key question asked by many executives (Katz 1993). Everyone instinctively understands what 'value for money' means and of course consequently establishes their own definition and their own set of criteria. Hence this construct shares the problems of value perspective both in the sense of what constitutes 'value' and then what constitutes 'value for money'. For this reason our discussion of dimensions of 'IT business

value' is restricted to the first part of the equation, that of what constitutes 'IT business value' and not the value for money issue (see Figure 1). Further research will be required to determine how this relates to expenditure (which takes into account notions of risk and comparisons with other investments).

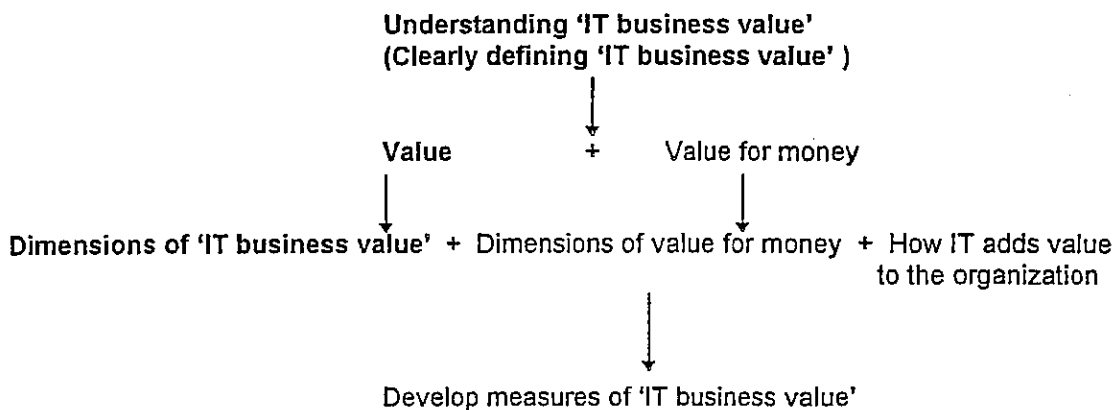
### 3.2.3 Organizational Performance

Whilst not of direct relevance to our definition of 'IT business value', a further definitional problem exists for researchers who include organisational performance in their definition. According to Miller (1989), organisational efficiency and related performance are also a question of values, differing depending on perspective. Research in this area has given rise to multiple models, multiple dependent variables and multiple independent variables to measure this construct (DeLone & McLean 1992; Willcocks 1992). "Unfortunately, these have obfuscated a clear definition of organisational efficiency and, as a result, no singular, parsimonious models or theory has emerged" (Mahmood 1994, p.96).

In summary we believe our definition has at least partially addressed these definitional problems, as we have defined 'IT business value' in a generic fashion free of suggested or implied measures that result from a specific value perspective. This is appropriate as the context of the information system will determine the required measures (Cronk & Fitzgerald 1996). Thus whilst the differing value perspectives add to the difficulty in defining terms such as value, value for money and organizational performance, current research directions indicate the problem is not insurmountable. The approach we propose is to start with a more generic definition, assign dimensions of value that in total reflect the true meaning of the construct and allow the IS context to direct the choice of measures from each of the dimensions that represent 'IT business value'. These dimensions are discussed in the next section.

## 4 Dimensions Of 'It Business Value'

Our approach to understanding the 'IT business value' construct, resulting in measures that reflect its true meaning, is shown in Figure 1 (focus of this study shown in bold). The motivation for this study was the statement that "IT business value' research should initially focus on understanding the 'IT business value' construct and how IT adds value to the organisation, and then on the development of appropriate measures" (Banker et. al 1993). Thus far our focus has been on the first two steps, that of understanding 'IT business value' and value via clearer definitions. The final step addressed in this paper identifies, through literature synthesis, the dimensions of 'IT business value' and proposes the relationship between these dimensions. Our discussion is restricted to the value side of the equation (see Figure 1). Future research will need to determine how IT adds value and what specific measures to choose.



**Figure 1 Approach to understanding the 'IT business value' construct**  
(Focus of this study shown in bold)

Our criticism of existing methodologies is that their measurement instruments tap only part of the true meaning of the construct, therefore not attaining construct validity. Because of the complexity of the 'IT business value' construct, the methodology should contain instruments that tap all relevant aspects of value. Synthesis of the literature revealed four natural groupings or dimensions of 'IT

business value', as depicted in Table 3, partitioned on the basis of what aspect of value is being addressed. From these dimensions, two models are proposed (see section 5).

Measures	Aspect of Value	Dimension
Financial, ROA, ROI user satisfaction, use, system quality, system goal fulfilment	Value attributed as a result of the type and characteristics of the system	System dependent characteristics
Measures of system alignment with organizational objectives  measures of system fulfilment of organizational CSF	Value attributed as a result of alignment with business strategy	Organization dependent characteristics
Largely quantitative financial measures	Value attributed to the role the system plays in the organization	Organizational impact
Instrument developed by Pfeffer (1981)  Instrument yet to be developed	Value affected by power and politics  Value affected by infrastructure issues	Contextual factors

**Table 3: Dimensions of 'IT business value'**

The four natural groupings or dimensions of 'IT business value' are:

- *system dependent characteristics*: measures of value pertaining directly to the system itself, eg. quantitative system quality, user satisfaction with the system, system goal fulfilment, etc.;
- *organization dependent characteristics*: measures that relate value to organisational factors, eg. alignment of system objectives with business objectives;
- *organisational impact*: the role which the information system plays in the organisation; to illustrate this concept, consider the differing value contributions of a new word processing package to that of Lotus Notes: it is not just the usage but also the impact of that usage on business processes that creates value;
- *contextual factors*: measures which link value to the organisational context, eg. content, context and process measures.

## 5 Preliminary Model Specification

The following represents our first attempt at modelling the relationships between the main dimensions of 'IT business value', as depicted in Table 3 above. These dimensions become the independent variables in the models as it is predicted that they cause the presumed effect of 'IT business value' (the dependent variable). The problematic variable is that of context: it may be an independent variable (model 1) or a moderating variable (model 2). These two models, and others yet to be formulated, will be tested using structural equation modelling:

### Model 1

'IT business value'  $f$  System dependent characteristics + Organization dependent characteristics + Organizational Impact + Contextual factors

### Model 2

(Moderating Variable:- Contextual factors)

'IT business value'  $f$  System dependent characteristics + Organization dependent characteristics + Organizational Impact

It should be noted that the models address the 'IT business value' of a system currently in existence and as such don't address issues of risk and value for money (the other half of Figure 1). These



issues are more pertinent to a different question, that of whether to invest or not. However the added dimension of value for money is largely intuitive and made easier to answer once 'IT business value' is understood.

The models encompass quantitative, qualitative, content, process and contextual issues, and they are also flexible. As differing information systems contribute value in different ways (Weill 1989), measures used for determining their value should in part relate to the goals for the system (Banker et. al. 1993). The above models are flexible in that they enable choice of measures relating to *system characteristics*, (eg. financial, user satisfaction), that best fit the system goals, whether they be quantitative or qualitative in nature. Instruments exist for the operationalization of alignment (Thurby 1993), organizational impact (Jenster 1987), and contextual factors such as power and politics (Pfeffer 1981). Some of the less structured and less tangible aspects of context may be considered as part of the equation in a cognitive fashion.

## **6 Conclusion**

In order for new theory to be accepted, we posit that it must be highly operationalizable, better explain that which already exists or bring clarification to an area where confusion exists. The lack of understanding of the 'IT business value' construct, attested to by the numerous evaluation methods proposed in the literature, of which none are widely accepted, suggests a need for clarification. This study contributes to the clarification of this area of research by:

- deriving categories of measures which illuminate the similarities and differences in the approaches taken in existing evaluation methods;
- proposing a working definition of 'IT business value'; and
- through literature synthesis, suggesting the dimensions of 'IT business value' and the relationship between these dimensions.

The proposed framework should assist in the development of evaluation methods with a higher level of construct validity by better reflecting the construct as theorized.

## References

- Banker, R. & Kauffman, R. "Quantifying the Business Value of IT: An Illustration of the Business Value Linkage Framework." Working Paper, August 1991.
- Banker, R.D; Kauffman, R.J.; & Mahmood, M.A. Strategic Information Technology Management: Perspectives on Organizational Growth and Competitive Advantage. Idea Group Publishing, Harrisburg, 1993.
- Bender, D.H. "Financial Impact of Information Processing." *Journal of Management Information Systems*, Volume 3, Number 2, 1986, pp. 22-32.
- Berger, P. "Critical Issues in IS Management." *IS Analyser*, Volume 30, Number 12, 1992, pp. 1-16.
- Bird, A. & Lehrman, W.G. "The Effects of Major Information Technology Adoption in Japanese Corporations." *Japan and the World Economy*, Volume 5, Number 3, 1993, pp. 217-242.
- Broadbent, M.; Butler, C.; Hansell, A.; & Dampney, C.N.G. "Business Value, Quality and Partnerships: Australian Information Systems Management Issues." *Australian Computer Journal*, February 1995, Volume 27, Number 1.
- Cronk, M.C. & Fitzgerald, E.P. "A Conceptual Approach to Understanding IT Business Value." *Proceedings of 7<sup>th</sup> Australasian Conference on Information Systems*, 11-13 Dec 1996, pp. 127-137.
- DeLone, W. & McLean, E. "Information System Success: The Quest for the Dependent Variable." *Information Systems Research*, Volume 3, Number 1, 1992, pp. 60-95.
- Gatian, A. "Is user satisfaction a valid measure of system effectiveness?." *Information & Management*, Volume 26, Number 2, 1994, pp. 119-131.
- Gurbaxani, V. & Whang, S. "The Impact of Information Systems on Organizations and Markets." *Communications of the ACM*, Volume 34, Number 1, 1991, pp. 61-73.
- Hamilton, S. & Chervany, N. "Evaluating Information System Effectiveness." *MIS Quarterly*, September 1981, pp. 55-69.
- Hitt, L. & Brynjolfsson, E. "The Three Faces Of IT Value: Theory and Evidence." *Proceedings of 15th International Conference on Information Systems*, December 1994, pp. 263-277.
- Hofstede, G; Neuijen, B; Daval, D; Ohayv, V; & Sanders, G. "Measuring Organizational Cultures: A Qualitative and Quantitative Study across Twenty Organizations." *Administrative Science Quarterly*, Volume 35, Number 2, 1990, pp. 286-316.
- Iivari, J. & Ervasti, I. "User Information Satisfaction: IS Implementability and Effectiveness." *Information & Management*, Volume 27, Number 4, 1994, pp. 205-220.
- Jenster, Per V. "Firm Performance and Monitoring of Critical Success Factors in Different Strategic Contexts." *Journal of MIS*, Volume 3, Number 3, 1987, pp. 17-33.
- Jordan, E. "A Global Strategy for Building Information Assets: An Agenda for Information Professionals." *Proceedings of ACIS '95*, Perth, 26-29 September 1995, pp. 915-926.
- Katz, A. "Measuring Technology's Business Value." *Information Systems Management*, Volume 10, Number 1, 1993, pp. 33-39.
- Kauffman, R. "Introduction to Part I.": In Banker, Kauffman & Mahmood (eds.), *Strategic Information Technology Management*, Idea Group Publishing, Harrisburg, PA, 1993, pp. 15-24.
- Konsynski, B. "A perspective on the 'Case Study approach' to IT Investment Evaluation.": In Banker, Kauffman & Mahmood (eds.), *Strategic Information Technology Management*, Idea Group Publishing, Harrisburg, PA, 1993, pp. 15-24.
- Kriebel, C.H. "Understanding the Strategic Investment in Information Technology.": In K. Laudon & J. Turner (eds.), *Information Technology and Management Strategy*, Englewood Cliffs, New Jersey, 1989, pp. 106-118.
- Mason, R.O. "Measuring Information Output: A Communication Systems Approach." *Information & Management*, Volume 1, Number 5, 1978, pp. 219-234.
- Mahmood, M. "Evaluating organizational efficiency resulting from information technology investment: An application of data envelope analysis." *Journal of Information Systems*, Volume 4, 1994, pp. 93-115.
- Miller, J. "Information Systems Effectiveness: The fit between business needs and systems capabilities." *Proceedings of the 10th International Conference on Information Systems*, December 1989, pp. 273-283.
- McBride, N. & Fidler, C. "An Interpretative Approach to Justification of Investment in EIS." *Proceedings of 1st European Conference on IT Evaluation*, Henley, UK, 1994, pp. 16-26.
- McNurlin, B. & Sprague, R. *Information Systems Management in Practice*. Prentice-Hall, London, 1989.
- Mukhopadhyay, T. "Business Value of Information Technology: A Study of Electronic Data Interchange." *MIS Quarterly*, Volume 19, Number 2, 1995, pp. 137-156.
- Pfeffer, J. *Power in Organizations*. Pitman, Marshfield, Massachusetts, 1981.
- Sekaran, U. *Research Methods For Business*. 2nd edn., John Wiley, New York, 1992.
- Sethi, V.; Hwang, K.; & Pegels "Information Technology and Organizational Performance." *Information & Management*, Volume 25, 1993, pp. 193-205.
- Shannon, C. & Weaver, W. *The Mathematical Theory of Communication*. University of Illinois Press, Urbana, 1949.
- Strassmann, P.A. "The Business Value of Computers: An Executive's Guide." *The Information Economics Press*, New Canaan, Connecticut, 1990.
- Symons, V. "Review of Information Systems Evaluation: Content, Context and Process." *European Journal of Information Systems*, Volume 1, Number 3, 1991, pp. 205-212.
- Thurby, R. "Strategic Information Systems Planning: A Process to Integrate IT and Business Strategies." *ICL Technical Journal*, May 1993, pp. 417-437.

- Turner, J.A. "Organizational Performance, Size and the Use of Data Processing Resources." Working Paper Number 58, Center for Research on Information Sciences, Stern School of Business, New York University, 1985.
- Udo, G. "Rethinking the Effectiveness Measures of Decision Support Systems." *Information & Management*, Volume 22, 1992, pp. 123-135.
- Vogel, D. & Nunamaker, J. "Group Decision Support System Impact: Multi-Methodological Exploration." *Information & Management*, Volume 18, 1990.
- Weill, P. "The Relationship between Investment in Information Technology and Firm Performance in the Manufacturing Sector." Working Paper No. 18, 1989.
- Willcocks, L. & Lester, S. "How Do Organizations Evaluate and Control IS Investments?." *Organizational and Social Dimensions of Information Systems Development*, North-Holland, 1993.
- Willcocks, L. "IT Evaluation: Managing the Catch 22." *European Management Journal*, Volume 10, Number 2, 1992.