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# Linkage Between Business Plans and Information System Strategies Across Hospital Organisational Networks

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## Summary

Public hospital networks in Australia are inherently transforming organisations. The development of new information system strategies and, specifically, the implementation of associated plans will further transform them in the quest for high quality integrated health care services. Yet does the profile of this contemporary organisation show clear and coherent links between business and information systems?

The hospital network in which the research is undertaken is developing a new information technology strategy at that organisational level which is expected to impact on constituent hospitals. Business strategies and plans for each hospital may have been revised recently due to a series of mergers. Business unit information system plans may already clearly reflect the strategic and business plans, but there may be changes in the degree and nature of linkage between these after the process of new IS strategy development has been completed. To provide some form of assessment of linkage, senior management and IS directors are being interviewed from five business units (hospitals) contributing to the new Network. Current documents for business and IS strategies or plans, and observations of steering committee meetings and workshops, are additional sources of data.

Several groups of researchers have worked on how to measure or assess connections between business and IS strategies, plans or objectives. The study will initially trial application of propositions put by Reich and Benbasat (1994) in developing a model for the investigation of linkage between business and information technology objectives and later apply other techniques, used by this pair, to the research.

Implications of this study are related to issues of business operation and success; here, a business in health care is an illustrative case. In the state of Victoria, the way health care will be delivered in 2001 will shift from today's replicated services to redistributed and complementary services in geographical regions. Ramifications of new business strategies for hospital networks might include how IT will be used to support or drive change. With respect to IT, these involve its flexibility, accessibility, standardisation and integration across the network, as well as sourcing and management. In addition, changes in health care concepts, problems of older information technologies, and decisions related to new information system development, will impact on health service delivery and management. The nature and degree of linkage between business strategies and IS strategies, and thence execution and effectiveness of any associated plans, may well affect the success of the Network entity.

## Introduction

This paper reports on current research undertaken in an Australian hospital organisational network (the Network) regarding executive perceptions and emergent issues surrounding the development of IS strategies. In the hospital context, the study will trial application of propositions put by Reich and Benbasat (1994) in developing a model for the investigation of "linkage between business and information technology objectives". Their overall definition of linkage is "the state in which the set of IT and business mission, objectives and plans are of high quality and complementary" together with being "well understood by IS and business executives in the organisation". There is variation in the use of terminology by other researchers, with "linkage" and "alignment" apparently similar. Goals, strategies and plans are clearly defined by Reich and Benbasat (1994) and are applied here. Calhoun and Lederer (1990) talk about "strategic business plans" as encompassing all decisions and actions leading to attainment of long range goals and objectives which affect the whole organisation, with the creation of strategies reflecting goals and objectives, opportunities and threats being the first phase and implementation being the second. They also state that strategic information systems planning should align systems objectives with business strategies. The business strategy produced by the Network executive presents as an aggregate of mission, goals and strategies. Several individual hospitals have a business plan integrated with their strategy or as an addendum. IT and IS are not

always taken to mean the same thing; often IT is defined as technological infrastructure and IS includes IT, people, work practices and organisational culture, as an interactive system. This particular Network has called the new strategy its "IT Strategy", however, some interviewees debated this label on the basis of IS-IT distinctions. IS Strategy, as the more suitable term for this context, will be used for this report.

The main goal is to investigate the nature and degree of change in linkage between business and IS strategies following the IS strategic planning process for constituent hospitals and Network. Objectives supporting this aim include:

- following and documenting the process of IS strategy development for individual constituent hospitals and the Network;
- identifying characteristics of the constituent hospitals in the Network context;
- identifying links between business and IS strategies and how these links are presented;
- distinguishing viewpoints of hospital executives in regard to changes expected in linkage between IS strategy and business strategy at Network and business unit levels;
- identifying lessons learned through the process of IS strategy development regarding linkage between business plans and IS strategies and how these lessons could lead to continued development of IS-Business synergy.

The first phase of the study into the Network is reported here with initial interviews being recently completed.

### **Previous Research**

Several other groups have worked on how to measure or assess connections between business and IS strategies, plans or objectives (Lederer and Mendelow, 89; Coakley and Fiegenger, 95; Henderson and Venkatraman 92, 93; Papp, Luftman & Brier, 96). Henderson and Thomas (1992) focus particularly on strategic planning in American hospitals and suggest perspectives of alignment such as "strategy execution", "competitive potential", "service levels" and "technology potential", which must address both strategic fit and strategic integration. They surmise that hospital executives must recognise a need to adapt planning perspectives in order to achieve strategic alignment and argue for a process of strategic management which alters a hospital's planning perspective and allows new insights for effectively achieving alignment.

Other studies have noted a perceived lack of value of investments in information technology. An example of this is the view that the activity of aligning information systems with corporate goals is concerned with closing the gap between the potential of IT to add value to the business and the reality of what is being achieved (Woolfe, 1993). Woolfe suggests that alignment can only be achieved by IT enabled business reengineering of core business processes. He developed a four stage process for aligning the business and systems plans, acknowledging the dynamic, and sometimes ambiguous, nature of business plans and the difficulty for information systems people to keep up with them.

Coakley, Fiegenger and White (1996) are concerned that there is a lack of valid measurements of strategic IT alignment. They propose a metric based on "strategic consensus" where high levels of strategic consensus between executives suggests agreement on strategic priorities and directions of the organisation. This is seen as a prerequisite to realising strategic IT alignment. They conclude that an important challenge for executives of a transforming organisation is to "direct the different parts of the company to shift in concert with one another".

In their research on enablers and inhibitors to alignment, Papp, Luftman & Brier (1996) comment on results showing that executives frequently don't recognise the true alignment perspective of their organisation. One of their findings is that a inharmonious affiliation between business and IT exhibits poor communication and interaction. Finally, Calhoun and Lederer (1990) suggest that the quality of the communication of business strategy to IS strategic planners is critical to strengthen links between strategic business planning and strategic information systems planning. Reich and Benbasat's model is quite clearly defined over the two reports. They also set out and suggest ways of measuring linkage in a manner which lends itself to being followed by other researchers.

## **Hospital Networks**

Problems associated with health care information systems are peculiar to health care settings in general. For public hospitals, issues include the largely unpredictable nature of customers' (patients) needs; variable availability of services (principally driven by bed spaces); and the nature of medical staff as semi-autonomous managers essentially focused on patient outcome and often not on data collection. The unique combination of science, administration, and human services, requires integrated information. Hospital computing systems cover a range from expert systems and searchable image databases, scientific data gathering and analysis, through management systems in human resources and finance to basic medical record, billing and insurance systems. The current state of information systems in the new hospital networks shows a disparate set of data management systems with varying levels and sophistication in connectivity and information technology infrastructures. The electronic transfer of data from one database to another, either within or across hospitals (including patient records) is currently not possible in most hospital networks.

Public hospital networks in Australia are inherently transforming organisations arising out of State Government initiatives. Mergers and acquisitions are typical of such activities. The development of new information system strategies and, specifically the implementation of associated plans, will further transform them in the quest for high quality integrated health care services. Yet there are fundamental precursors to the success of this quest which may be questioned:

- Does the profile of this type of contemporary organisation show clear and coherent links between business and information systems?
- What indirect or direct influences are peculiar to business plans and IS strategies; administrative and IS executives, in these hospital networks?

## **Factors which potentially influence linkage - some propositions**

In Reich and Benbasat's (1994) formulation and assessment of linkage, views of "cause" and "outcome" of linkage are differentiated. Intellectual and social processes are clearly distinguished. Reich and Benbasat (1996) have expanded on their earlier work by further clarifying the nature of the linkage construct. They consolidate their earlier identification of two major dimensions to the link between business and information technology: Intellectual, where the content of information technology and business plans are internally and externally valid; Social, where the IS and business executives understand each other's objectives and plans. The social dimension of linkage, in regard to the view of linkage as an outcome, underpins the model of factors potentially influencing linkage from which the propositions arise.

The model proposed by Reich and Benbasat (1994) shows factors influencing linkage and incorporates factors they identified through a broad IT literature survey and their work on definition of dimensions of linkage. It is an integrated two stage model of linkage itself and factors influencing linkage. The model reflects antecedents and current practice in relation to observed linkage. They suggest that the contribution of certain factor groups to this model can be examined through a set of eleven researchable propositions. The results from this research can be suitably applied to seven of these at this stage. They refer to the importance of IT to the organisation, processes of strategy development, and communication between IS and business executives in relation to linkage as a state of fit between business and IS strategies.

## **Research Approach**

### **Case Description**

The Network under study currently has five constituent hospitals. Executives of the Network have already developed a 1996-2006 Strategic Plan. They will develop an IS Strategy influenced by the Network's business strategies and working in conjunction with senior consultants from a consulting group. Each hospital has its own hospital strategy, and business plan, which may have been revised recently due to a series of local hospital mergers. Information systems and associated IT plans may already clearly reflect strategic and business plans, but there may be changes in the linkage between these after the process of new IT Strategy development at the Network level has been completed. It is assumed that: hospitals in the Network are heterogeneous in terms of structure, function, and services; expectations of executives regarding the IS strategy and plan for the Network or individual

hospitals, whether short or long term, are likely to vary considerably; executives of the Network customarily develop and refine a Network strategy and business plans.

#### **Data collection, analysis and interpretation**

Key strategic planners suitable for interview were identified after consultation with the senior director of commercial services at the Network level of the organisation. They include general managers of the five constituent hospitals, IT directors, and senior Network management. There are fourteen participant executives. Eleven of this group have given their first audio taped interview over approximately fifty minutes each. Questions related to the two major levels of the hospital network, i.e. the individual hospital level and the Network level.

The early questions in these semi-structured interviews were taken from Reich and Benbasat's Sample Interview (1996, p81). These examine short and long term linkage and are preceded with self-reports on linkage where each executive is asked to rate linkage as high, medium or low, for their business unit (hospital/Network) after being given a definition of linkage (1996, p 63). They are also asked to substantiate their rating. Topics covered in the first interview include: perceived links between the current state of IT and the business plans; critical success factors for the new IS strategy; understandings about adoption of innovation with regard to the development and implementation of plans and projects arising from the IS Strategy; how IS infrastructure and activities will facilitate the goals of the Network; how IT might drive the success of business plans; entities involved other than the Network; perceptions of the nature and degree of change expected in links between IS strategies and business plans at both levels; expectations of outcome from the process of IS Strategy development.

A second interview will be conducted once the initial IS Strategy development process is completed which is estimated as late January 1997. Questioning will then also include perceptions of alignment of business plans and the IS Strategy as well as determinations of the alignment outcome.

Hospital and Network documents such as organisational charts, business plans, written IS plan if available, and public reports, are being reviewed. The advancing process is being observed at meetings of the steering committee and some workshops. Initial results are presented based on Reich and Benbasat's (1996) approach, using a tabular format. Scatterplots will be used, in further reports, to portray qualitative data as suggested by Miles and Huberman (1994). No statistical analysis is undertaken. The complete set of raw data available has not yet been fully analysed.

The following table gives a picture of executives' views of current IS-business connections for their own hospital (business unit). It shows the rating of linkage between IS and business unit strategies as perceived by these executives. The reasons for their overall subjective assessment of linkage are also individually rated as supporting a high, medium, or low level of IS strategy-business strategy linkage. It is important to note that:

- 1) All interviewees report the linkage rating for the Network Level of the organisation as LOW
- 2) All executives expect change in the nature and degree of linkage for their business unit but expressed uncertainty about the actual effects of the Network IS Strategy since they did not, at the time, know what it will entail.

**Initial Findings on Executive Subjective Ratings of Linkage between Business Strategy and IS Strategy or Plans for Business Units**

Unit	Position	Perceived Rating of Linkage at Business Unit Level	Reasons	Linkage Rating Supported by the Reason Given
1	General Manager	High	<ul style="list-style-type: none"> <li>⇒ belief that IT could not have been developed or worked in isolation of the business plan</li> <li>⇒ we have email for executives</li> <li>⇒ have some movement of records electronically</li> </ul>	<ul style="list-style-type: none"> <li>◆ high</li> <li>◆ high</li> <li>◆ high</li> </ul>
	Director IT	Medium	<ul style="list-style-type: none"> <li>⇒ roles of functional areas are under review</li> <li>⇒ information management is the priority, not IT</li> <li>⇒ have a training officer for data collection</li> <li>⇒ decentralisation of patient services is supported by a patient data system</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ moderate</li> <li>◆ high</li> <li>◆ moderate</li> </ul>
2	General Manager	High	<ul style="list-style-type: none"> <li>⇒ top executives very involved in the functionality of the business unit through IT</li> <li>⇒ high quality services facilitated through electronic communication with allied service providers</li> <li>⇒ extensive use of email and bulletin board for &gt;50% of staff</li> <li>⇒ Internet and Web page for research</li> </ul>	<ul style="list-style-type: none"> <li>◆ high</li> <li>◆ high</li> <li>◆ high</li> <li>◆ high</li> </ul>
	Director IT	High	<ul style="list-style-type: none"> <li>⇒ IT is central to unit function through provision of communication</li> <li>⇒ business planning and mode of operating has always included IT</li> </ul>	<ul style="list-style-type: none"> <li>◆ high</li> <li>◆ high</li> </ul>
3	General Manager	Low	<ul style="list-style-type: none"> <li>⇒ poor electronic support for communication</li> <li>⇒ management style restricted by lack of IT</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ low</li> </ul>
	Director Commercial Services	Low	<ul style="list-style-type: none"> <li>⇒ very little computing support for daily activities</li> <li>⇒ data and information not readily accessible</li> <li>⇒ extreme shortage of IT support resources</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ low</li> <li>◆ low</li> </ul>
4	Director Administrative Services	Low	<ul style="list-style-type: none"> <li>⇒ the two merged units have very different infrastructures and operations</li> <li>⇒ very poor communication between executives</li> <li>⇒ poor basic data management and poor access to timely and accurate data</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ low</li> <li>◆ low</li> </ul>
	Director IT	Low	<ul style="list-style-type: none"> <li>⇒ disparate and incompatible systems</li> <li>⇒ poor infrastructure</li> <li>⇒ under-educated users</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ low</li> <li>◆ low</li> </ul>
5	Director HR Services	Low	<ul style="list-style-type: none"> <li>⇒ IT supports local, unit-driven, needs rather than Network needs</li> <li>⇒ foundations of functionality are changing and not supported by old systems</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ low</li> </ul>
	Group Director Finance	Low	<ul style="list-style-type: none"> <li>⇒ only reference to IT in the business plan is the IT Review</li> <li>⇒ service interrelationships do not reflect business needs for my business unit</li> <li>⇒ commercial systems are dependent on IT platforms and hence IT infrastructures which have not yet been developed</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ low</li> <li>◆ low</li> </ul>
	Group Manager HR	Low	<ul style="list-style-type: none"> <li>⇒ the unit is not consolidated as there is no integrated tools for performing the functions</li> <li>⇒ old activities were poorly supported by IT and new ones cannot be developed unless there are better IT tools applied</li> </ul>	<ul style="list-style-type: none"> <li>◆ low</li> <li>◆ low</li> </ul>

## Conclusion

The current findings indicate an overall poor linkage between business units' strategies or goals and their IS strategies or plans, or in relation to the Network IS Strategy. Perception of the quality and level of current IT infrastructure and IS services in relation to hospital activities, is generally moderate to low. Further analysis of the research data will be reported shortly. Some propositions of Reich and Benbasat will then be examined in the light of this. Investigation and interpretation of the nature and degree of change in linkage between business strategies and IS strategies, following the Network IS strategic planning process, will be added to this research once the process has been completed in early 1997.

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