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THEORY AND PRACTICE IN STRATEGIC PLANNING FOR HEALTH INFORMATION SYSTEMS

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THEORY AND PRACTICE IN STRATEGIC PLANNING FOR HEALTH INFORMATION SYSTEMS

Abstract

Discusses whether strategic planning frameworks developed for commercial organisations can be applied effectively to organisations within the UK National Health Service. Case study research within one Trust (10 interviews, plus questionnaire survey and documentary analysis) showed that the Galliers and Sutherland model assessed the stage of growth well, and that the Segars and Grover model illustrating the gaps in the planning process. There were some reservations on the usefulness of the 'alignment' category. Later developments in the Trust suggest that once a co-operative structure is in place between clinicians and IT, the balanced scorecard approach would support the planning and development of information systems.

1 INTRODUCTION

The history of investment in hospital information systems in the UK has been mixed, with some small scale successes but also some instances of large investment failures and abandoned systems. The Wanless report (2002) on spending priorities for the National Health Service (NHS) noted the poor record of investment in ICT and the need for significant investment. The National Programme for Information Technology (NPfIT, 2004) is taking a centralised approach to IT development in the English NHS, with Local Service Providers responsible for a regional cluster. The case study discussed here (now within the North West & West Midlands cluster) considers the earlier background to the current round of planning and implementation within one large NHS hospital, and considers how theoretical frameworks can contribute to judging where the strategic planning was successful or not.

2 BACKGROUND

Centralised approaches to development of information systems in the UK National Health Service have a long history. The development of the Körner data collection requirements in the 1970's established the principles of data collection that still underpin many systems for collecting activity data in the health sector. The first NHS IM&T (Information Management and Technology) strategy in 1992 (Nichol, 1992) set out a vision "that staff use information to improve continuously the service they provide, where an IM&T environment supports the controlled sharing of information across the Service, and where information is handled and communicated securely, smoothly and efficiently." The second strategy (NHS Executive, 1998) *Information for Health* continued many infrastucture projects started under the auspices of the previous project, but the stated purpose was to improve patient care, the key feature being the creation of the Electronic Health Record. The National Audit Office (1999) commented, in a comparison of the 1992 and 1992 strategies, that the 1992 strategy focused too much on the IM&T issues, lacked coherence, and the vision did not translate into specific, measurable objectives. Later changes to *Information for Health,* set out in *Building the Information Core* (Department of Health, 2001) reflected the shift in health policy towards services centred around the patient. More

recently, the implementation of the National Programme for IT (NPfIT) (Department of Health, 2002) has returned to national direction, with structured partnering with industry for delivery systems across the NHS. There is an accelerated and simplified approach to procurement to ensure that the required infrastructure is in place, in time to make use of the extra government investment in the health service.

The NHS typifies many of the problems and benefits of both centralised and decentralised approaches to information strategy development and implementation. Following the 1998 strategy, Local Implementation Strategies, involving local health communities and local investment plans had to be updated to take account of new national priorities. Common areas for improvement were (Department of Health, 2001) the need for 'much greater involvement of clinical staff in the planning and implementation process and more innovative thinking around the development of cross cutting health informatics services' (para.7.4). The national strategic programme reiterates this theme (Department of Health, 2002) 'working with the Modernisation Agency to facilitate that the opportunities offered by the implementation of modern IT systems are grasped at local level by making changes in working practices in clinical care and healthcare management'.

In the case study discussed in this paper the NHS Trust comprised three hospitals and a number of satellite clinics. The management of information and information systems was the responsibility of the Service Development Directorate. The Trust was relatively mature in IT terms as rated by the NHS Executive's IM&T Maturity Index questionnaire, with particular strengths in training, quality development and management, and the lowest scores in communications, strategy development and clinician involvement. Using the Sutherland and Galliers stages of growth model, the progress made by the Trust between 1997 (prior to *Information for Health* strategy publication) and 2002 seemed, however, clear. The Trust had for some time taken the lead within the Region in the use of information technology and had developed an interfacing strategy for the key patient information systems within the Trust, providing links to the master patient index. The Trust had also implemented a casemix management system which, although technically successful, had not achieved clinical acceptance. The system was decommissioned, although a data warehouse was implemented in its place, to provide the management information the clinical directorates required. In 1999 the business case for an Integrated Patient Care Information Support System (IPCISS) was approved, and a procurement process resulted in the signing of a contract to provide a range of patient-based systems to support the development of an electronic patient record.

3 METHODS

The research work (undertaken for the dissertation element of a Masters degree in Health Information Management) focused on the planning processes within the Trust, examining how (and if) local objectives were incorporated into a plan that reflected national requirements, and how the strategic plans changed over time. The case study research was based on the approach recommended by Yin (1994), and the researcher (K.B) used a variety of methods to collect data. The evidence was gathered from:
- Primary documents (on the Trust's IM&T strategy, minutes of planning meetings, procurement documentation)
- Archival records (budget statements, organisational charts, and data collected for user requirements to help inform the Trust's strategic plan for IM&T)

- Interviews (with the Executive Management Team, Information and Computer Services managers, n=10)
- Questionnaires (clinicians and managers involved in the development of the strategic plan, the Clinical Directorate Team, n=48)
- Observation (as a member of the staff of the Information Department, the researcher was able to make and consult personal diaries of events)

As the Research Policy for the Trust had not been approved by the Trust Board at the time the research work started, the research proposal did not have to obtain the approval of a local research ethics committee. The Director of Service Development approved the research plans, and interviewees were given the opportunity to inspect research data on them. As the researcher was a member of staff, and involved in the development of the strategic plan, the problem of subjective interpretation and collection of data was present. On the other hand, familiarity with the situation permitted easy access to the interviewees, and some of the documentation. The response rate to the questionnaire survey was 77.1% (37/48), with the poorest responses from clinical directors and Directorate Accountants. The vast majority of the respondents had been working at the Trust while the IM&T strategy had been developed.

Interviews were not taped, as the researcher judged that this would make the interview too formal for the interviewee. Full notes were taken and written up as soon as possible after each interview. Summary themes were extracted from each interview report and compared across the interviews.

4 Choosing an evaluation approach

Strategic alignment, measuring how much IT supports an organisation's business strategy (Tallon and Kraemer, 2002), has been estimated in different ways. The Henderson and Venkatraman (1993) model of business and IT alignment identified four linked domains (business strategy, IT strategy, IS infrastructure, and organisational infrastructure/processes) with dimensions for strategic fit (external/internal) and functional integration. Other writers stress the importance of assessing the degree of maturity or evolution of the information system. Smits and van der Pijl (1999) consider the evolution of hospital information systems as Data, Processing, IT, and Network. Galliers and Sutherland (1991) reviewed the various stages of growth models, concluding that the best fit was a six stage model:
- Stage one (adhocracy)
- Stage two (foundations, development of IT professionals)
- Stage three (centralised dictatorship, central planning of IT begins)
- Stage four (democratic dialectic and co-operation between IT professionals and users)
- Stage five (entrepreneurial opportunities, IT seen as providing strategic benefit)
- Stage six (integrated harmonious relationships between IT professionals and the rest of the organisation).

Each of these stages can be characterised using the 7 S's model (strategy, structure, systems, staff, style, skills, superordinate goals). This model provided a basis for estimating the stages of growth in the Trust between 1997 and 2003, as well as assessing whether one of the dimensions (of the 7S) was particularly successful, or problematic.

Evaluation of the success of the strategic planning process itself is not widely discussed in the information systems literature. Much of the concern has been on the necessary components of a strategy (Ward and Griffiths, 2002), and there is an assumption that strategic planning is a 'good thing', rather than an examination of whether strategic planning works, and how. In research on strategic planning, Segars and Grover (1998) distinguish goal centred judgement (meeting targets), comparative judgement (against similar systems), normative judgement (against set standards) and improved judgement (adaptation to changing circumstances), as means of evaluation. Segars and Grover (1998) developed a theoretical model, using a Q-sort exercise, for measuring the success of strategic information systems planning and assessed this model using organisational informants in the corporate, private sector in the USA. Despite the fact Segars and Grover excluded non-profit sector organisations such as hospitals from the model testing, the model was the only one found which addressed evaluation of the planning process fully. The model relates planning success to four criteria:

- Alignment (congruence of IT with the organisation's competitive (or future) needs)
- Analysis (the mapping and understanding of requirements across the organisation)
- Co-operation (measure of the presence of key coalitions and partnerships)
- Improvement in capabilities (ease of adaptation to changing circumstances).

A review of the use of maturity models (Wainwright and Waring, 2000), with emphasis on health service applications, notes that Galliers and Sutherland have proposed a modified version of their IT maturity model for use in the NHS. Other approaches mentioned include a modified capability maturity model for primary care. Wainwright and Waring use the Galliers and Sutherland maturity model stages (initiation, contagion, control, integration , data administration and maturity, adapted from the Nolan model) to map the development of the information technology within the NHS, from the early 1980s to the late 1990s.

5 Results

Document analysis revealed the following timeline of events in planning within the Trust.

1990 - 1992	IM&T Strategic Planning Group formed Strategic Targets produced
1994	Independent evaluation of Trust's IM&T status
1997	First IM&T strategy produced
	IPCISS Project initiated
1999	Revised IM&T strategy published
	IPCISS business case submitted
2001	IM&T management structure changed
2002	More formal clinician involvement initiated

Table 1 Timeline of events

Results of the document analysis and interviews are synthesised under the criteria set out by Segars and Grover (1998).

Alignment

The Trust's strategic business plan was published in 1995, and covered the period to 2005, with no plans to update the corporate strategy to reflect changes that might have been required to meet national health policy changes, e.g. in the NHS Plan (Department of Health, 2000). Such changes would, it seemed, be met through the annual planning process, but that might mean that the Trust would simply attempt to meet new targets, rather revising the business strategy to incorporate policy changes. The problem for the IM&T strategy, and for assessing alignment, was deciding the preferred direction of alignment for the IM&T strategy. Should this be with local business objectives as set out in the 1995 strategic vision, or with national policy objectives as interpreted, on a changeable basis, through the annual planning process? The IM&T strategy developed in 1997 for the Trust was based largely on an independent evaluation of the Trust's IM&T status. That evaluation informed the development of the IM&T Strategy Group. Four main principles were enunciated:

- Information is a vital component in achieving the objectives of the Trust
- The key to providing information would be a set of comprehensive integrated, simply accessed, patient-based systems coupled with effective business and management support systems
- Strong technical infrastructure required to underpin systems
- An effective IM&T organisational framework with appropriate policies and standards

The key objectives included development of greater access to integrated patient information, addressing immediate problems from limited IM&T developments in clinical directorates, and responding to the national agenda. A key part of the revised strategy for 1999 was the delivery of national policy objectives, the 24 national targets set out in *Information for Health.* Assessment of the likelihood of the planned new system in helping to meet the targets indicated that it would do so.

One major problem with the 1997 strategy (and the 1999 strategy, which was very similar) was the wording of the objectives. Objectives described vague aims rather than measurable objectives. For example, the characteristics of 'a strong technical infrastructure' were not listed, and it would be difficult to judge whether 'an effective IM&T organisational framework, whereby information will be owned by the services and staff will have the requisite IM&T skills', had been achieved or not.

Interviews revealed that executives viewed the benefits of the strategy were more in the process than in the strategy itself: '*It provides a mechanism for involving people in the process of decision making about how change can be enabled*', although the necessary identification of resources was also important. Formulation of the strategy was viewed mostly as a reactive process, to fit business planning, to support national strategy, with risks clearly identified by experts. Executives had few suggestions on how the success of a strategy could be tested prior to its adoption except through comparison with other hospital IM&T strategies: '*It is often possible to compare strategy with the experience of others to ensure that it feels right*'. The importance of aligning planning for IM&T with the business objectives was not in doubt, as such planning should be '*fully integrated with all other activities in the Trust and a full part of the change management process*'.

Analysis
The development of the 1997 IM&T strategy was informed by a series of workshops attended by clinicians, board members and managers. Information needs were characterised by availability, utilisation, indicators of (clinical and business) effectiveness, and performance measurement. The strategy does focus on computerised systems rather than paper-based systems, and the 1997 strategy contains few details about information gaps, although it acknowledged that many systems are based on administration needs, and did not produce the information required to support the clinical process.

Most executives thought that the current use of information within the Trust was relatively immature *'largely reactive and based around feeding the beast'*, with more work to be done to *'to persuade them (clinicians) that the use of information was a good use of their time'*. At Board level, there was consensus that information could and should be use to monitor improvements in patient care outcomes, clinical governance and better risk management. Questionnaire respondents indicated that such changes were a possibility but that the process was in the early stages (see Figure 1).

Co-operation
Despite the laudable aims of involving staff in the process of strategic planning, executives referred to the problems of *'the knowledge gap'* on several occasions. The development of the strategy was hindered by the difficulty of getting people involved, the differences in terminology between clinicians and managers and IT staff, getting time for strategic thinking during a period of restructuring, and the *'obsession with targets'* obscuring the longer term issues of changing clinical processes.

Questionnaire returns indicated that while 35 respondents indicated they were aware of the Trust's business goals, only 25 were aware of the IM&T objectives. Lack of awareness was largely due to lack of involvement or lack of communication. Similarly, most respondents claimed they were fully aware of the NHS Plan, but most were only aware, or slightly aware of the *Information for Health* national strategy. Eleven were unable to comment on whether the IM&T strategic plan was supportive of the Trust's business strategy, although 22 indicated that they thought it was supportive. Some of the questionnaire respondents had been involved in IM&T initiatives and this level of responsibility (10 were always involved in IM&T decision making, 16 often involved) reflects more willingness to co-operate than the executives believed existed. In 2002 the IM&T strategy group was reorganised to include more clinicians.

Improvement in capabilities
It was difficult to separate the impact of the actual IT project from the other elements of the strategy, as the executives focused on the project as a measure of the success of the IM&T strategy as a whole. The technical success was *'trailblazing'* although one noted that the success was only partial as it was *'not based on local needs and requirements, but more on delivering national and regional objectives'*.

Questionnaire respondents had mixed views on the value provided by IT on their work and decision making (Figures 1 and 2). Of the five clinical directors, none perceived considerable change to their decision making with increased availability of

IT support. There was considerably more emphasis on the communications and administrative advantages of IT than on the value to patient care, and most considered the value of IT in helping to reduce costs as extremely limited.

6 Discussion

Results showed that the meaning of strategic alignment needs to be carefully defined in situations such as the NHS where there may be considerable difficulty in making changes at Trust level that reflect the changing national agenda. While the IM&T strategy was altered to reflect the changes required by *Information for Health* the corporate business strategy did not change, although local plans did reflect the national policy targets. There may be some conflict between the local and national targets, leading to doubt about the outcomes against which to judge the success of the strategic planning process. It is not surprising that executives resorted to a simplistic comparative judgement, assessing whether or not the IPICSS system was in place, as a measure of the success of the strategic planning process.
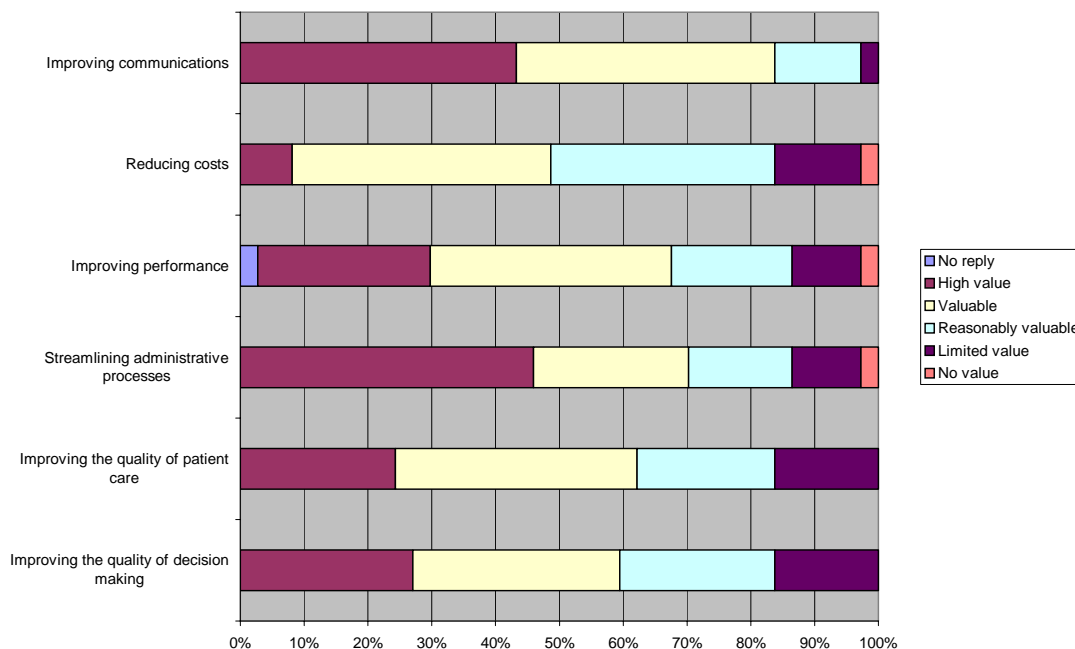

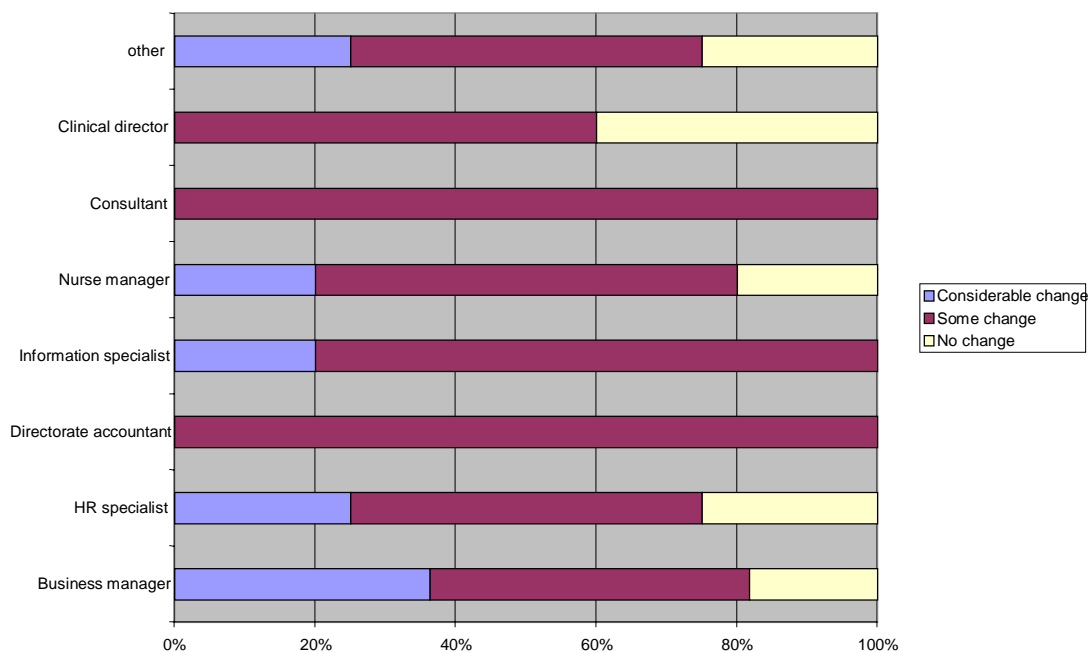**Figure 1 Value of IT in delivering objectives**

Figure 2 Impact of availability of IT on decision making

At this point the value of any strategic planning at all might be questioned when government policies and resourcing can change so quickly. Ciborra (2002, p.105), when discussing system development, suggests that ' appearances, such as goals, plans, control procedures, measurement techniques, and the vaguely persuasive and seductive notion of technology as a familiar domesticated tool, are what the phenomenon under consideration is not'. If alignment is likely to be problematic in an organisation of the size and complexity of the NHS, does it follow that the other elements of the Segars and Grover model are also compromised in the NHS setting? The findings suggest otherwise and the identification of the need to co-operate with clinicians and work on 'improvement in capabilities' is an eerie forerunner of the concerns with the current NPfIT programme that clinician engagement is a real problem. For example, progress to January 2005 with the e-booking programme was far slower than anticipated, and the problem is attributed to lack of interest by general practitioners who are not convinced of the need for this scheme (National Audit Office, 2005).

If some planning is useful, the next consideration is how much planning should be done. Newkirk et al. (2003) validated the information systems planning phases identified by Mentzas (1997) of strategic awareness, situation analysis, strategy conception, strategy formulation, and strategy implementation planning. Their findings indicate that too much planning may be as ineffective as too little planning in the implementation phase of strategic information systems planning, but not in other phases of strategic information systems planning. In the case study Trust, there were gaps in awareness of any links between the business of the Trust and the IM&T strategy, and a limited lack of awareness of the possible impact on working practice. Changing behaviour will take time. Possibly the need to be adaptable, and less focused on systematic planning becomes more important in the implementation phase, although other findings suggest that there are limits to such flexibility. Salmela et al. (2000) compared action research in two organisations in a turbulent environment. One practised formal and comprehensive planning, the other relied on a more incremental

approach. In this case, the organisation practising more formal and comprehensive planning was the more successful, but that could have been a reflection of a better fit between the organisation and the planning process than the planning itself. The tentative conclusion might be that some superordinate goals provide the longterm vision required to ensure the planning is nudged along the right lines. Without some guiding goals, the planning may deteriorate into meeting external targets or a very mechanical measure of IT implementation success. Lederer and Sethi (1988) note that planner satisfaction is important, and this research seems to bear that out. Those involved in the strategy formulation were generally more positive about its success than some of the executives but perhaps they would be expected to say that, in self-defence.

Using the Segars and Grover model as a framework made the problems of the planning process more obvious, and clinical involvement has been stepped up since then. Fitting the findings to the model showed that analysis required more clinical involvement, with more attention to co-operative structures, and the partnerships between clinicians, managers and IT staff.

Alternative approaches to assessing the success of the strategic planning process include a balanced scorecard approach (Van der Zee and de Jong, 1999) which could integrate business and IT management to provide better valuation of the contribution of IT to the organisation. This would have required identification of suitable indicators for financial, customer, internal processes, and learning and growth. In the earlier stages of strategic planning in this setting this might be less successful, as the financial aspects of IT implementations in the NHS are governed by national and regional rules, rather than local rules. The 'customer' should be the patient, but the research findings indicate that relating the success, and value of an improved information system into patient care 'indicators' might be difficult. The internal processes could relate to the same concepts expressed by 'co-operation' in the Segars and Grover model. Similarly 'learning and growth' express similar ideas to 'improvement in capabilities', those of learning and adaptation, responding to change, and learning how to adapt business processes. Judging improvements in clinical processes is probably the key aspect of judging the success of any information systems change within the health sector. In fact, a balanced scorecard approach was proposed for the national *Information for Health* strategy (Protti, 2002). Deciding what indicators should be used locally is not easy, as power, political and social cultural issues within the health sector make decision making a complex process. Protti proposed a mix of outcome measures and corresponding performance drivers. In the case study considered, there are three principles in the 1999 strategy that are high level and difficult to achieve. Management and clinician users may have different perspectives on 'improved quality of patient care', 'improved decision making' and 'reducing costs'. There may need to be considerable debate about the means of achieving these, and the appropriate performance drivers. Action research approaches may be best suited to modelling present and possible business processes (Waring and Wainwright, 2002), and provide a more realistic approach to identifying indicators for a balanced scorecard model. The advantage of the balanced scorecard approach is that it encourages an integrated approach to setting of goals and the means to achieve those goals.

Following the case study work the Trust undertook a major review of its IM&T Strategy. The development of the strategy itself was managed using the PRINCE project management methodology. At the time the Trust began the redevelopment of its IM&T strategy, the National Programme for IT emerged. In developing the new strategy the Trust ran a workshop in which a cross section of senior clinical and managerial staff were asked to think strategically about information management and to look at the potential benefits from increased use of information and information technology within the Trust.

The aim of the workshop was to develop what Silk (1991) called an information management partnership, in which managers, users and IT professionals work together to formulate strategy. This process is representative of the latter stages in the Galliers and Sutherland's growth model discussed earlier and these stages are concerned with the relationships between IT professionals and the rest of the organisation. At the workshop, an information management audit was conducted which focussed on the strategic management and development of IM&T, the identification of benefits and their delivery and how information and information technology could be better used in future.

Following the workshop a framework document was prepared that set out the key themes for the development of IM&T over a five years period. The framework was then 'signed-off 'by the Trust's IM&T Strategy Group and from this the strategic plan for IM&T was then developed. The IM&T Strategy reflected national and local requirements for the development and delivery of IM&T to support the NHS modernisation agenda. The new strategy provided far closer links between the goals and the means of achieving those goals, and in fact is far closer to balanced scorecard thinking than the principles of the 1999 strategy. The strategy provided:

• A clear vision within the organisation for the use of information and information technology

• A supportive learning and development strategy to provide the skills necessary to take advantage of the increased use of information and information technology

• A focus for organisational development that ensures the delivery of benefits and enhances the business value of information and information technology.

Implementation and delivery of the Strategy was to be supported by the approval of an IT Governance framework and managed by the Trust IM&T Group. The strategy set out a clear delivery plan, which, for each strategic objective outlined the actions and timescale required to deliver them and the measures by which performance would be assessed. In developing the strategy the Trust recognised the need for a consistent, comprehensive and systematic approach to the management of information and information technology to provide the leadership, organisational structures and processes to enable the delivery of the organisational objectives and strategies of the Trust.

7 Conclusions

The research conducted was limited to one case study organisation, and the findings may not be generalisable to other hospital Trusts, or other public sector organisations. Although many of the strategic planning frameworks for information systems have tended to focus on commercial and industrial organisations, the research in this case

study suggests that they apply to public sector organisations including the health sector. The Galliers and Sutherland (1991) stages of growth model applied to planning at Trust level, and provided a useful measure of progress. It probably does not matter whether the middle stages of 'centralised' control might refer to national control or to centralised control within the Trust, as the main concern is gaining the co-operation of clinicians locally. The Segars and Grover (1998) framework demonstrated the progress made in improving efficiency and effectiveness of administrative and clinical processes, and the four components (alignment, analysis, co-operation and capabilities) could be applied easily and provided a good diagnosis of the situation. The one reservation is that alignment is more difficult to interpret in an organisation that has local and national business objectives to satisfy. Once a co-operative structure is in place, then it will be possible to apply a balanced scorecard model, to develop meaningful outcome measures and performance drivers. In the case study organisation the development of the latest strategy reflects a more integrated approach and the balanced scorecard thinking. That, however, may be the result of experience gained in the past with previous strategies.

Further research might compare the experience of the newer organisational structures in the NHS, such as the Primary Care Trusts, in development and implementation of their information strategies, with the experience of the Trusts that have a legacy of systems development experience. It might be hypothesised that organisations that have not gone through the earlier stages of the Galliers and Sutherland model (1991) cannot easily leapfrog into the later stages of co-operation and maturity. The Segars and Grover framework might be used to assess whether, and how strategic planning processes were working. Interpretation of alignment deserves more study. Which are more important to determining the success of the strategic planning process in public sector organisations – local business objectives or national policy objectives? Is progress assured if both are similar in purpose, and progress uncertain if the sets of objectives conflict? Do organisations have to work first to satisfy the local business objectives before turning to consider alignment with national policy objectives – alignment being considered in stages? Finally, much of work on strategic planning processes considers growth to be an upward process. Some of the current NPfIT sites may have to adapt their comparatively sophisticated information systems to the simpler model to be adopted in their regional cluster. Research might examine whether strategic planning processes can continue to develop when progress may appear to stand still or go backwards, from the user perspective.

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