

# **How Before What - An Exploration of the Process of Developing Competencies for Managing a “Central Selection, Local Ownership” Diffusion Policy to Support Organisational Transformation**

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## **Abstract**

Diffusion of IT innovation studies have typically studied single technology innovations. For many organisations, diffusion is a policy by which IT is managed. One particular form of the policy seeks to achieve “central selection, local ownership” (CSLO). This paper explores the organisational development of the competencies to successfully operate a CSLO policy. It explores a single case history involving diffusion of three systems as part of an IT strategy in a divisionalised public health care organisation. It highlights (1) the need to develop relevant CSLO competencies through practice ahead of committing to a strategy; (2) the considerable time it takes to develop them; and (3) the current difficulty of recognising in advance whether an organisation has them.

## **Keywords**

IT diffusion, IT transfer, competencies, management of diffusion, IT strategy, organisational transformation

## INTRODUCTION

Managing information technology (IT) in large divisionalised organisations is fraught with difficulties arising from the tensions between corporate, divisional and business unit interests (Yetton 1997). Where there are common applications, such as accounting, there is considerable incentive for corporate IT to mandate a common system because it offers cost savings, simplified management, and uniformity of standards and data. The risks associated with developing a common system are considerable but can be mitigated by buying commercial products (Sauer 1997). Organisations therefore often encourage IT management policies which favour transferring a system from a third party supplier and diffusing it into its sub-units. (In what follows technology transfer refers to the adoption of technology established in one organisation, context or culture by another organisation in a different context or culture. Diffusion refers to the implementation and use of a system throughout multiple parts of the adopting organisation. The term “diffusion policy” here includes technology transfer.) A particular class of diffusion policy can be characterised as “central selection, local ownership” (CSLO). There are various forms this could take, but its defining characteristic is its balancing of system selection at corporate or divisional levels to achieve purchasing economies and standardisation (central selection) with active business unit acceptance and use (local ownership).

The processes of IT transfer and diffusion are not risk free. The differences of interest at each level of a divisional structure mean that it is difficult to select a single system which meets all corporate, divisional and business unit needs. Where selection is dominated by corporate interests, any sacrifice of business unit interests will create tensions militating against the successful achievement of local ownership. If the system is intended to transform the organisation by bringing significant change to the way it does business, success is likely to require substantial change to strategies, structures, management processes, roles, skills and other technologies (Scott Morton 1991).

To manage CSLO successfully, organisations need an appropriate set of competencies. A competence is an individual's or organisation's ability to perform some action or task (Pralhad & Hamel 1990). Competencies are the product of many ingredients including skills and explicit knowledge. They are not acquired simply by assembling the right set of ingredients; rather they are developed over time through experience (Sambamurthy & Zmud 1997). The ability to put in place the appropriate structures, roles, processes and technologies for a task may be an indicator of the existence of a relevant competence. Successful operation of a CSLO policy requires appropriate competencies. Where selection creates tension across structural levels, the organisation will need enhanced competencies to manage the problems that arise.

This paper explores issues associated with the management of a CSLO policy through the experiences of a large, divisionalised, Australian organisation providing health care services to the public, New South Wales Health (NSW Health). It identifies the problems of learning how to conduct a successful CSLO policy while attempting transformation. In focusing on the sequence in which change takes place, this paper highlights the importance of establishing diffusion competencies

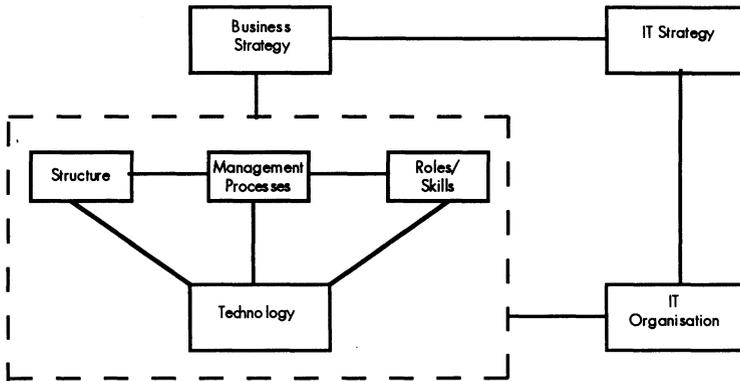
ahead of adopting and implementing a changed business and IT strategy – that is, of the organisation learning *how* to operate a CSLO policy *before* deciding *what* strategic objectives to pursue.

## RESEARCH QUESTION

Diffusion research has been dominated by the diffusion of innovations (DOI) approach which has principally focused on consumer adoption of specific innovations (Rogers 1995). Its extension to IT innovations, particularly commercial and administrative applications, has resulted in user level analysis, highlighting task-technology compatibility (Brancheau & Wetherbe 1990, Cooper & Zmud 1990, Davis 1989). Effective diffusion is typically seen as a matter of ensuring the presence of certain factors which are associated with high adoption rates for a particular kind of system and of the smooth passage of diffusion through a series of stages (Prescott & Conger 1995). Top management support is often identified as an important contextual variable but it is rarely elaborated (Leonard-Barton & Deschamps 1988). Rather, a project champion is prescribed and most management activity bundled into that role. Because DOI studies' focus has typically been confined to individual systems or projects, management issues relating to diffusion are rarely analysed at the organisational level (*pace* Doll 1985). However, diffusion of new applications within an organisation is often a key task of IT departments. Diffusion should not therefore be treated as though it were solely an ad hoc or one-off process but should also be considered at the organisational level of analysis. Consequently, this paper asks *how should a CSLO diffusion policy be managed?* In particular, it explores the process by which an organisation learns to conduct a CSLO diffusion policy as a means to achieving organisational transformation.

## ANALYTICAL APPROACH

There are various approaches to the general problem of managing IT. There is widespread agreement that the separation of the IT function from the rest of the business is the source of much difficulty (Sauer & Yetton 1997). The federal structure solution to this problem aligns IT and business units at corporate, divisional and business unit levels (Zmud, Boynton & Jacobs 1986). Strategic alignment theory recognises that it takes more than structural alignment to prevent tensions across levels. Specifically it recommends alignment of business and IT strategies, and of business and IT organisation (which include structures, technologies, work processes, management processes) (Henderson & Venkatraman 1992). Configuration theory emphasises multivariate fit among business strategy, structure, technology, management processes and roles and skills without making such explicit separation between business and IT functions (Scott Morton 1991). For the purpose of exploring the current case, we combine strategic alignment and configuration theories into a single framework which depicts the separation of business and IT but which includes the multivariate fit of the components of the business organisation (Figure 1).



**Figure 1** Framework for analysis of this case.

When applied to the process of organisational transformation, strategic alignment and configuration theories have typically been understood to imply the following sequence for change: 1) business strategy, 2) IT strategy, 3) IT organisation, 4) technology implementation, 5) business organisation. However, analysis of the sequences (paths) organisations actually follow shows that various paths can be successful (Ciborra 1991, Yetton, Johnston & Craig 1994). Craig and Yetton (1997) see technologies, roles, skills and management processes as the source of competencies. They argue the importance of paths which develop competencies ahead of strategies, that is which put learning how to exploit IT ahead of deciding what kind of transformation to make. In this paper we apply path analysis to the framework in Figure 1 in order to analyse the formation of CSLO competencies in the context of an effort at organisational transformation.

## RESEARCH METHOD

Our research approach is exploratory. In the absence of directly relevant research results, a single case history is an appropriate method from which to develop initial findings (Benbasat, Goldstein & Mead 1987, Yin 1994). Our concern is to identify what is involved in the management of a diffusion policy. It is premature to seek critical determinants of diffusion policy success. Instead, this study observes and analyses management behaviours, problems and solutions. Two particular characteristics reinforce the case's value: it encompasses three projects thereby permitting comparisons; the management issues are "transparently observable" (Pettigrew 1988) because the diffusion policy is new to the organisation.

The field research was conducted at NSW Health between February and June 1996. Data collection involved interviews and document review. All the relevant files were made freely accessible, thereby allowing iterative reading of key documents so as to triangulate data and validate interpretations.

Interviews were conducted with staff from all the relevant organisational locations within NSW Health, including the corporate centre and five pilot sites. Vendor staff and staff who had exited NSW Health were also interviewed. In total

64 people were interviewed. Interviews were tape recorded and transcribed where possible. Detailed field notes were taken. There were some group interviews, and some by telephone. Interview duration varied between 45 minutes and 3 hours.

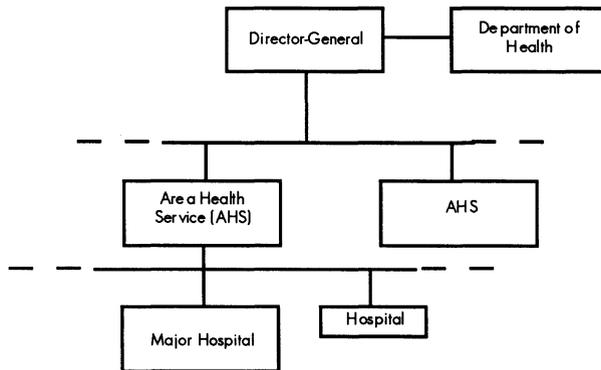
The researchers maintained a consistent discipline of sharing the data as it was collected, holding regular meetings and communicating by email to enable a continuing critical assessment of progress and to permit follow-up where necessary.

Data and interpretations have been checked with NSW Health through an interim report, a final report of 50 pages, and through two formal presentations.

### CASE DESCRIPTION

New South Wales (NSW) is the most populous state in Australia, with over seven million people in an area larger than Texas. Sydney, the state capital, has over three million people. NSW Health is a state government organisation responsible for providing public health services including integrated hospital and community services. It operates a budget of approximately \$A6 billion (\$US4.8 billion) and has 100,000 employees. Hospitals range from large, highly specialised hospitals in the cities to smaller, more general units particularly in rural areas. Most medical staff provide their services as independent contractors although there is a substantial number of salaried specialists in the major hospitals. Services are normally free to patients.

NSW Health has a geographically divisionalised structure (Figure 2). Its chief executive is the Director-General who reports directly to the NSW Minister for Health. The Department of Health is the corporate centre reporting to the Director-General. Its responsibilities include state wide funding and policy. Provision of hospital based care is the province of the Area Health Services (AHSs) and rural Districts (for simplicity we refer to them all as Areas). Areas have a significant level of independence in respect of the organization and provision of health care services in their area. Areas typically include one large teaching hospital and several smaller community care units. The hospitals are professional bureaucracies (Mintzberg 1979) with medical staff having considerable autonomy.

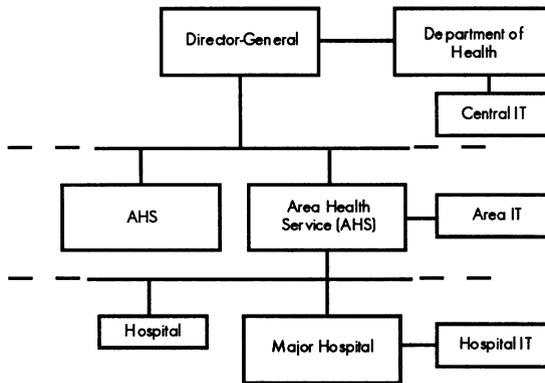


**Figure 2** Geographically divisionalised structure of NSW Health.

**History**

Until the late 1970s information systems for both administrative and clinical purposes were developed by independently established computing units in the major hospitals. Starting in the early 1980s, a unit within the Department of Health established a common operating environment, and a coordinated development policy. During the 1980s it developed a suite of core systems covering financial, patient administration, pathology and other applications referred to as the “HOS” products. While these systems delivered significant functionality and achieved economies of scale, administrative and clinical staff were dissatisfied at their limitations. However, as the main coordinating body central IT controlled key IT resources, so hospitals and Areas had little option than to cooperate.

At the same time, expectations regarding the role that IS could play in health services were rising. Individual hospital departments started purchasing PCs for specialist clinical applications. Increasingly, user-driven initiatives fuelled the need for larger hospitals to run their own IT units. Areas developed these to maintain local operations, support local software, develop smaller applications and provide policy support for their own administrations. Some units came to have more than fifty staff. A federal structure for IT emerged (Figure 3).



**Figure 3** Federal structure for IT in NSW Health.

By 1989, the “HOS” products appeared outdated. Systems integration was a growing problem. Tighter coordination of activities demanded better links between systems. Areas became keen to exploit IT better for their specific needs. North Sydney Area Health Service (NSAHS) undertook its own Advanced Hospital Information Systems (AHIS) initiative to acquire "state of the art" systems. It completed search and selection procedures before the project was terminated by a political decision. Thus, by 1989 the federal structure was supporting the growth of independent initiatives at all levels which were the result of a combination of emerging opportunities and dissatisfaction with the centrally provided systems.

While Areas and hospitals were recognising a larger role for IT, policy makers were adopting a business oriented approach for managing NSW Health. Corporate

planning required information about the operational activities of Areas and hospitals. Federal government was pressing to use case-mix data to determine its contribution to state health funding. The state government was increasingly keen to cap growth of its annual health bill. The key emerging strategic driver was more efficient use of resources.

## **1989 IT Strategy**

In 1989, the NSW Minister of Health engaged a consultancy to undertake a review. It recommended that the “HOS” systems be replaced, and that expenditure on IT be increased from 1% to 2% of total operating expenditure. A ten year IT strategy was formulated with the active participation of staff from NSAHS based on the AHIS experience. The objective was the installation of new, integrated systems, starting with financial, laboratory, patient administration and clinical applications. The strategy boasted the potential to transform management of NSW Health by providing integrated information to enable more efficient resource use and to provide clinicians with the capacity to choose more effective and resource efficient therapies. The case was argued as offering economies of scale for development and state-wide implementation. \$A140 million was initially allocated.

## **Implementing the IT Strategy through CSLO**

Strategy implementation was by a CSLO diffusion policy overseen by the Information Services Steering Committee (ISSC) consisting of policy makers, CEOs of Areas, and IT specialists. Central IT’s role was to direct the selection and purchase of “best of breed” systems for each application area rather than develop them, and to facilitate roll-out to hospital sites. Integration was to be a separate initiative. Its new role meant that the central IT unit had to be completely reconstructed. Staffing, tasks, work roles, policy, procedures and relationships with Areas and hospitals all had to be established afresh at the same time as implementing the IT strategy. Hospital sites’ role was to be “owner” of the systems and to project manage installation.

Diffusion of the financial, laboratory and clinical systems was undertaken in parallel. The clinical system requirement was for a patient administration system (PAS) and for order communication (OC) which comprises order entry (OE) by which doctors order laboratory tests, and results reporting (RR) through which they receive test results. Where we focus on events relating to a particular system, it is typically the clinical system (PAS/OC) because it was the most problematic and hence most demanding of the CSLO policy. The description that follows covers the period from the formulation of the 1989 IT strategy to the 1995 decision to abandon the PAS/OC system.

## **Selection**

The selection team comprised central policy makers and site IT specialists, including members able to draw on the AHIS experience. The search and tender process was international. All short listed products were trialed with set-piece

scripts under the same conditions and judged by the same criteria. Selecting “best of breed” resulted in differing outcomes for the different systems. A well reputed financial system which provided much needed accrual accounting functionality was selected and has been widely diffused throughout NSW Health. The laboratory system had excellent functionality for the diverse needs of large hospitals, in four of which it has been successfully implemented but diffusion has not proceeded to smaller hospitals because of its complexity and cost. The PAS/OC system was a limited fit with the selection criteria but was accepted as the best available.

The successful vendor for the PAS/OC system, with approximately 100 sites in the United States and Europe, described selection as “the most rigorous” it had encountered. Nevertheless, the process had limitations. Although the selection team included both doctors and managers, some interested parties were not adequately consulted – the Department of Health staff responsible for formal management reporting were not consulted, and subsequently found that the system had not been adequately assessed for its ability to generate official statistics. Also, the selection process did not fully address some issues. For example, site IT operating staff discovered on implementation that the system required 24 hour operational support even though some sites only ran a single 8 hour shift.

## **Transfer**

NSW Health had less experience of technology transfer because the AHIS initiative had not proceeded beyond selection. Preparing contracts proved time-consuming because NSW Health had no precedent for three part agreements between vendors, central IT and individual pilot sites. An acquisition methodology was drafted to guide the current and future processes. Area administrations were invited to become pilot sites for the different systems with funding coming one third from central funds, and two thirds from the Area. However, this proved insufficient incentive for Areas who were under continuing financial constraint. The central contribution had to be increased to 80% before the Areas would agree to participate in pilot studies.

Once the pilot sites had been determined, the next step was to “Australianise” the PAS/OC product because not only did it include different minutiae such as American zip code formats but more importantly it was designed for the needs of private health care. Tailoring proved problematic because central IT, the sites and the vendor had differing expectations of each others’ responsibilities. Pilot sites did not expect to make major organisational change and so sought substantial amendments to align the system with their work practices; the vendor, with the incentive of a large growth in profits once state wide implementation was approved, sought to minimise the changes; and central IT was caught between the two. Initially, central IT was seen as discouraging communication and cooperation among the sites so as to make it easier to resist the high level of amendments being requested. Subsequently, new central staff with stronger negotiation and mediation skills improved relationships. The initial resolution was a series of amendments which took the vendor one year to implement and which did not entirely satisfy the pilot sites. Further revision became a continuing process for which formal consultative structures were established in due course.

## **Diffusion**

NSW Health also encountered problems in the diffusion of PAS/OC. The consultants' 1989 report had explicitly referred to the limited IT skill base in Areas and hospitals yet the CSLO policy gave them considerable autonomy over implementation. Different sites took different approaches to acquiring project management skills, some hiring contract project managers, one appointing a research nurse to the position. They also had little or no experience of rolling out systems for clinicians and little background in how to obtain clinician cooperation.

The central IT unit was not well positioned to help even though it had a role to facilitate implementation. It had no direct authority in relation to sites. Its ability to influence them informally on the basis of greater expertise was undermined by sites' perception that PAS/OC had been centrally selected and was deficient in functionality. It was unable to use funding as a source of influence because the ISSC, dominated by Areas, always approved funding requests from sites.

The policy of pilots also did not work as intended. Initially, there were just three sites for PAS/OC. When it was realised how much delay there would be in technology transfer, it was decided not to wait for implementation of the initial pilots to pilot integration of the core systems. Management at two further sites agreed to become pilots. Project staff subsequently complained that this had been without adequate evaluation of progress at other sites. Indeed, there was a widespread perception among the project teams that central IT actively discouraged sharing of knowledge and experience across sites because it was concerned this would lead to further demands for change and further delays.

A consultant reporting in 1995 found that it was not until diffusion was well advanced that relatively effective communication and consultation groups were established to include both central IT and pilot sites. Prior to that, communication channels were not always open. Pressure of achieving implementation proved an inhibitor to the open transmission of information, particularly negative evaluations of the system. Although post-implementation reviews were undertaken by central IT, for most of the duration of the PAS/OC project sites undertook independent reviews without any process for sharing the learning across sites.

The pilot sites had varied appreciation of the organisational change implications. One took a thorough approach, examining options and consulting widely. The others focused more directly on the technology implementation. Central IT established a benefits management group to learn how to facilitate the achievement of organisational benefits. It was successful in achieving patient administration work practice redesign in one site but it was unable to generalise this to all sites, or extend it to clinical areas.

Implementation of PAS was successfully completed in four sites although there remained a number of features with which users were dissatisfied. Implementation of OC proved more difficult. In most cases clinicians were not consulted until too late for significant change. In a belated effort to win support one hospital employed a clinician liaison officer. Central IT also strengthened its complement of clinical IT specialists. Implementation started with Order Entry. Doctors were faced with a cumbersome interface which was difficult to learn and extended the time it took them to place orders for tests. They did not have the benefit of improved Results

Reporting because the critical link to the laboratory system was not complete. Since the majority of doctors were contract staff, their infrequent use of the system impeded learning. OC was sustained for fifteen months at one site and six weeks at another. Clinicians at another rejected it before implementation. In 1995, it was decided to abandon the whole PAS/OC system.

## ANALYSIS

NSW Health conducted its CSLO policy in three steps. Its first step was to formulate its IT strategy (figure 4a). This was consistent both with the existing business strategy of providing geographically differentiated services, and with emerging drivers for improved health care delivery and management of resources. In principle, it offered benefits for the Department, Areas and hospitals including clinicians and patients. In the second step, the strategy was implemented through the CSLO policy. This involved establishing the new central IT unit and pilot site project arrangements in parallel with selection, transfer and diffusion of the technology (figure 4b). The third step was to develop and modify these organisational arrangements for IT in reaction to experience of diffusion from the previous step (figure 4c). It was thus in this stage that NSW Health started to grow its CSLO competencies. It developed, formalised and refined the technologies, management processes and roles and skills needed for diffusion including developing an acquisition methodology, acquiring project management skills, establishing a funding process, introducing benefit management, experimenting with redesigning work practices, and putting in place processes, roles and skills for achieving effective communication and consultation. While this third step was appropriate, we argue that it needed to precede the technology step if it was to influence the success of the PAS/OC diffusion process. To support our argument we explain why NSW Health's existing competencies were not adequate for diffusing PAS/OC. We show the special problems this system occasioned relative to NSW Health's experience.

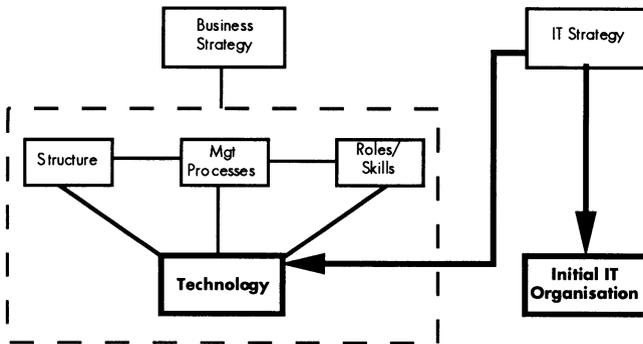
When it adopted its CSLO policy, NSW Health believed itself capable of delivering on the strategy. As a result of the AHIS process a number of Area and central staff had acquired valuable experience in selection. The central IT unit had also been rolling out the "HOS" products for many years. It is understandable therefore that it should have been thought that there were already in place the necessary competencies for a CSLO policy. However, appearances were deceptive. While AHIS experience contributed to the quality of the PAS/OC selection process, it did not contribute similarly relevant experience of transfer and diffusion. And roll-out of "HOS" products had left a level of dissatisfaction in the sites.

There were two principal differences in the new circumstances as they affected PAS/OC. First, success of OC and the whole strategy was dependent on complete acceptance by clinicians, yet NSW Health as an organisation had little experience of diffusing systems to clinicians. Second, the system selected did not deliver obvious and immediate benefits to sites. It was a system which appeared to sites to serve corporate rather than operational interests. This meant that while the IT strategy as formulated was consistent with business strategy at all organisational levels, the strategy as realised through PAS/OC was not – it did not respect

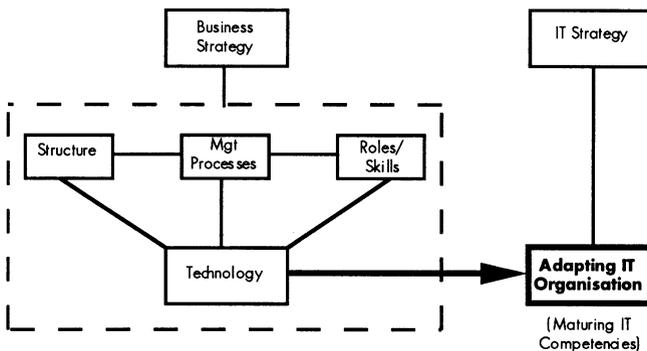
hospitals’ strategic emphasis on and clinicians’ deep commitment to service delivery. This undermined the “local ownership” part of the diffusion policy. The result was that the processes of transfer and diffusion involved continuing conflicts, with site staff trying to gain changes which would yield local advantage at the cost of implementation delays, and central IT and vendor staff seeking to expedite the implementation at the cost of local service. Within the hospitals, many clinicians simply refused to cooperate. Conflict resolution was not easily or swiftly obtained because of the lack of sufficiently developed competencies to manage the tensions between central and local interests and the problems these caused.



**Figure 4a** Step 1 – Formulating the IT strategy.



**Figure 4b** Step 2 – Developing IT organisational arrangements and implementing the CSLO policy.



**Figure 4c** Step 3 – Maturing IT competencies from experience of CSLO policy.

Diffusion was more easily carried out for the financial and laboratory systems because they offered hospitals more immediate benefits; important changes were confined to self-contained departments; and central IT and site IT units had more experience of dealing with these departments. Thus, the alignment between the IT strategy and business needs combined with existing IT diffusion competencies were together sufficient for NSW Health to achieve successful implementations for financial and laboratory systems. However, even if PAS/OC had been successfully transferred and diffused with the available competencies, it is questionable whether the strategic benefits would have been achieved because there was so little attempt at organisational change.

## DISCUSSION

CSLO policies will encounter conflict whenever the selected system fails to offer a win-win outcome for central and local interests. This will occur when the system is defective from the local perspective. Where local interests are differentiated, as they typically are in divisionalised organisations, it will be virtually impossible to satisfy all parties. Where organisational transformation is linked to system diffusion, either to gain business benefits or compensate for deficiencies in the selection, conflict will also be likely. Thus, central to the competencies required for operating a CSLO policy is the ability to manage the tensions and conflicts that will commonly arise.

Our analysis has focused on the sequence in which NSW Health undertook change. It has shown that staff were charged with implementing a strategy which had the potential to transform NSW Health at the same time as acquiring the necessary competencies. In many cases staff were either learning through solving problems or reacting to problems. The final outcome is that NSW Health is now better equipped to carry out a diffusion policy for a similar project, both in terms of the skills and experience of central and local staff and in the structures, roles and processes now in place, but it has gained these competencies the hard way and at considerable cost. Ideally, these competencies should have been present prior to the technology step. However, this option was precluded by the adoption of the IT strategy.

We believe that a more managerially realistic path to organisational transformation through CSLO would be to adopt the diffusion policy as a first step, putting in place certain basic skills, roles and processes to support implementation. The next step is to operate CSLO for a series of IT projects, driven by a broad strategic intent (Hamel & Prahalad 1989) but not a detailed IT strategy, incrementally developing competencies through this experience. Because such projects will have business pay-offs they will typically be sufficiently important to generate tensions between central and local units, and these will provide the experience from which to develop competencies for even more problematic situations. Business and IT strategy can then be formulated when the organisation knows its own capabilities and hence what it can realistically achieve. This relieves staff of the extreme burden of *doing while learning how*. It also lowers the cost of abandonment when mistakes made through lack of competencies indicate it would be sensible to make a new start.

## LESSONS

Six lessons can be identified. First, appropriate competencies are important for managing a CSLO policy in the context of a federal structure because of the tension between central selection and local ownership. Our chief concern has not been to identify the exact structures, processes, roles, skills and knowledge required as a basis for CSLO competence. However the case does show us that much of what NSW Health learned during 1990-1995 amounted to skills in compensating for the perceived deficiencies of the selected PAS/OC system, providing incentives for local adoption, and improving communication and coordination between centre and sites. Recognition of the contribution of these to CSLO competence would be a good starting place for any organisation.

Second, NSW Health’s experience shows us that it takes years to develop IT management competencies. It is not realistic to suppose that they can be developed at the same time as a major strategy is being implemented without cost to strategy implementation. The strategy’s importance reduces the slack available for effective learning.

Third, diffusion competencies should be developed before a full-blown IT strategy is based on them. Skills and processes can be put in place based on the best available knowledge and the organisation’s own prior experience, but competencies have to be achieved through practice. Effective learning from practice requires an environment where (1) there is strong incentive to make the diffusion process successful while containing the potential costs of failure, and (2) there is sufficient organisational slack to permit active learning from mistakes.

Fourth, it is difficult to determine in advance whether an organisation has adequate competencies. Where strategy precedes competence development the strategy creates powerful pressure for the IT organisation to believe that it has the necessary competencies. Where the diffusion policy is new, and particularly where the central IT organisation is new, it would be prudent to determine the existence of relevant competencies ahead of committing to the strategy. There is an instrument available for assessing IT management competencies (Sambamurthy and Zmud 1994) but its applicability to CSLO policies is uncertain.

Fifth, competencies for diffusion are organisation wide rather than confined to the IT function. Our earlier speculation that the lack of business change would have threatened successful implementation of PAS/OC implied that part of what is needed for the success of “central selection, local ownership” lies with business management understanding. IT management competencies include understanding that organisational change is required if IT is to transform the way the business is conducted. More generally, although we have focused on the learning achieved by IT units, there needs to be learning throughout the organisation.

Sixth, undertaking a CSLO policy prematurely can build up costs for the future if the business draws negative conclusions about IT’s competencies. Thus, where the central IT unit forfeits respect from local business and IT units it may find that the motivation and communication competencies it has developed are no longer sufficient to engender cooperation. Thus, rather than pursue elusive win-win projects, it may be better to develop competencies with projects selected on the least cost of failure principle according to which minimising the cost of failure is

given higher priority in investment and management decisions than pursuit of maximum benefits (Collingridge 1980).

## CONCLUSIONS

CSLO is one realisation of a diffusion policy for implementing an IT strategy. In a federal IT design for a divisionalised organisation, central selection will often be inconsistent with local interests. In such cases, the management task is to seek to resolve the resulting tensions in such a way as to achieve local ownership and hence successful diffusion. Acquiring the necessary competencies is a matter of learning through practice. This paper demonstrates the difficulties of attempting to develop these while implementing a major IT strategy to transform the organisation. An alternative, lower risk path is to develop the competencies to conduct CSLO prior to developing an IT strategy. This reverses the normal precedence of the “what” of IT strategy over the “how” of implementation.

This reversal of precedence has a number of implications. First, it implies that, in contrast to current practice where business strategy is motivated by creative IT designs and relatively unconstrained by the realities of implementation, in the formulation of business strategies around IT the organisation’s IT competencies should be a significant constraint. Second, since the competence development process involves diffusing and implementing projects which will have been chosen because they are consistent with the organisation’s strategic intent, strategy is more likely to emerge from the organisation’s successes rather than be explicitly designed *de novo*. As a result, we may need to recast our expectations of the strategy design process because the emergent approach will appear sub-optimal by comparison with an ideal strategic design. It will therefore be important to legitimise settling for what is achievable rather than striving for impossible ideals.

Third, the competencies-first approach requires deft and assiduous management because direction is sustained by intent rather than clear vision and detailed plan. It recognises that strategic alignment is unlikely to be tight and hence that CSLO projects will be problematic to manage. This will be demanding on both IT and business managers, but not as demanding as attempting organisational transformation before the requisite competencies are in place.

Research on IT management competencies is still in its infancy. This paper has identified the importance of pre-establishing competencies for CSLO. While noting the role of structures, processes and skills for compensating for technological deficiencies, providing incentives and communicating, this paper has not aspired to link specific competencies with CSLO. Further research is needed not only to identify the requisite competencies and to help organisations assess their own level of competence, but also to explore alternative ways of developing them. Pending further research, IT managers considering adopting a CSLO policy are advised not to commit to a strategy that depends on it until they have demonstrated through successful implementations that the organisation knows how to manage diffusion.

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