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Linking Organisation Culture to IS Strategy: A model and interim results

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Executive Summary
Throughout IS research literature, recognition is growing that organisation culture is a major independent variable contributing to IS success. Professional organisations in particular exemplify the dichotomy between bureaucratic and organic cultures. This paper explores the impact of conflicting organisation culture on IS strategy, suggesting that the degree of knowledge-intensity is an important dimension. The authors discuss existing frameworks of IS strategy and organisation culture, and advocate a model of organisational information systems that recognises the existence of conflicting cultures. An initial test of the model is performed using NSW secondary schools.

The PACT model (Parents, Administrators, Children, Teachers) provides a framework for relationships found in a professional bureaucracy. A survey of NSW secondary schools was performed during 1996. One hundred schools were surveyed, using strata based on affiliation (State or Catholic), location (urban or rural), and student gender and population.

Our initial hypotheses were that schools would exhibit tensions between bureaucratic and organic cultural forms, and that schools from different affiliations would display different organisation cultures, and different levels of satisfaction with the IS function. The optimal solution for effective IS management in schools required a balance between organic and bureaucratic tensions.

Although the survey response was low, results tended to confirm the authors' hypotheses. Overall, bureaucratic cultures dominated in the schools surveyed. In particular, Catholic schools exhibited greater conflict between organic and bureaucratic cultures than state schools, and rural schools exhibited greater culture conflict than urban schools. Satisfaction with the IS function was mapped to an orthogonal grid, whereby scores for each cultural group were represented on each axis. Interim results demonstrate the model's diagnostic features, offering insights into links between the two variables of organisation culture and IS strategy. Individual scores mapped to the model lend themselves to accurate interpretation, enabling diagnoses and recommendations to be made to each school.

The study clearly demonstrates the importance of acknowledging organisation culture differences in determining IS management strategies. It is recommended that results of this study be generalised from the school context to other professional bureaucracies in order to provide further validation of the PACT model.

Introduction
IS researchers recognise that organisation culture interacts with information systems, but understanding and manipulation of the cultural variable remains an essentially qualitative endeavour, described as 'pre-scientific' (McGrath et al 1995). Culture issues can seriously cloud an organisation's mission and goals, hampering effectiveness and compromising competitive advantage. The fact that an organisation may embody many subcultures adds further complexity to such research. These subcultures are dynamic, changing over time in response to both internal and external influences. Our purpose in this paper is to explore the interactions between organisation

cultures and IS strategies, and present a framework for analysing the nature and degree of these interactions.

Some useful generic models already exist (Scott-Morton 1991, DeLone & McLean 1992, Henderson & Venkatraman 1993, Sauer 1993). We borrow from these models in order to develop a theoretical framework which concentrates on interactions between organisational cultures. This framework, the PACT model, enables a well focused analysis of the issues, proving to be not only descriptive but ultimately prescriptive. Professional organisations provide a rich environment for studying culture clash and IS strategy. They are knowledge-intensive, characterised by a high proportion of knowledge workers (Dampney 1995). This characteristic leads often to dysfunction between bureaucratic administrative cultures and organic collegial cultures (Burns & Stalker 1961; Robbins & Barnwell 1989), and a situation where colleagues become adversaries. This preliminary study, using secondary schools as an ideal example of professional bureaucracies, demonstrates the usefulness of the model.

Using the PACT model, we rdpresent the dysfunction between bureaucratic and organic environments as a dichotomy between 'efficient' and 'effective' management cultures, with the IS strategy variable measured by user satisfaction. Cases from educational institutions exemplify the critical nature of the relationship between organisation culture and IS strategy.

The Culture Variable
The essential theme running through popular definitions is that organisation culture refers to a system of shared meaning or values (Robbins & Barnwell 1989, ch 16). The fluid and dynamic nature of organisation culture is difficult to encapsulate, however, leading to lack of consensus in the literature (Cooper 1994). Consider a definition originating from Japan:

> *"The philosophy that guides an organisation's policy towards employees and customers"* (Pascale & Athos, 1981).

This definition conveys the sense that culture has both an internal (employees) and an external (customers) manifestation. It also conveys the impression that culture is both cohesive and static, which we argue is not always the case - many cultures may exist in the one organisation (Turney et al 1992), and these cultures are themselves subject to change (Dunphy & Stace 1992). Bureaucratic and organic cultures, as discussed by Burns & Stalker (1961), can be responses to differing organisational environments - stable versus dynamic.

Culture thus encapsulates both the values or philosophy that guide the organisation, and the way business is carried out - why and how things are done. Management formalise how things are done in a professional organisation by assigning roles to people. Roles define what people are supposed to do and the area of knowledge and skills required to assume that role (Dampney 1995). Thus a particular role reflects a particular sub-culture within the overall culture of the enterprise. From a political perspective, therefore, roles are pivotal in the power plays, the battle for influence, for establishing the values, within the organisation.

The literature of Organisation Theory further discriminates between different organisation 'types', including machine, professional, divisionalised, adhocracy and missionary (Mintzberg 1994). Each of these types displays identifiable characteristics, with corresponding differences in management culture. It is the professional bureaucracy type that is our particular focus here. Jordan (1994) notes that "Hospitals, legal practices and educational institutions are typical examples". Professional bureaucracies can be clearly identified as examples of organic cultures, and their modus operandi contrasted to mechanistic cultures, as shown in Table 1.

Characteristic	Mechanistic	Organic
Task definition	Rigid	Flexible
Communication	Vertical	Lateral
Formalisation	High	Low
Influence	Authority	Expertise
Control	Centralised	Diverse

Table 1: Characteristics of differing organisational cultures

(Robbins & Barnwell 1989)

Discussion of organisation types generally assumes a single culture for each type. Yetton & Southon's (1994) work has, however, demonstrated the existence of conflicting cultures in

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professional bureaucracies. They argue conclusively that the classic clash between practitioners and bureaucrats within the one organisation is endemic. Furthermore, when practitioners are appointed into essentially bureaucratic roles, collegiality can soon give way to conflict. Using Scott-Morton's (1991) MIT'90s framework, they note that these two groups may be opposed in their strategy, structure, processes and technology. Similar conflicts occur in the school, whereby teachers map to practitioners, and administrators map to bureaucrats.

Studies by Sauer (1993) and Cooper (1994) are examples of the growing recognition being paid to organisation culture in IS research. Both advocate a closer analysis of the culture variable in the quest for effective IS strategies. Gilbert & Amott (1995) argue the importance of organisation culture in influencing IS structure, but do not elaborate on causality between the two. These are representative of increasing calls from IS researchers and practitioners for greater understanding of organisation culture.

The IS Strategy Variable

Definitions of information systems strategy are inextricably linked to an organisation's mission and stated objectives. IS strategy does not exist in isolation, but in response to business needs and aspirations. Traditional definitions, however, pay little cognisance to the influence of organisation culture. For example, Lederer & Sethi (1988), define IS strategy as *"The use of a portfolio of computer-based applications to assist an organisation in executing its business plans and consequently realising its business goals."* In professional bureaucracies, this definition has limitations. Professionals are obliged to manage their own activities as they are guided not only by their organisation but also the requirements and ethics of their professional calling. Business plans will in fact be partly formulated and interpreted by the knowledge worker according to their professional obligations. This immediately suggests an element of conflict. Nonetheless support is, or should be, provided for knowledge workers who are likely to be more self-directed and thus be required to meet certain outcomes, rather than just follow particular procedures, in the normal pursuit of their tasks.

We define strategy as the ways and means of achieving stated objectives, taking into account the factors judged to be critical to success or avoidance of failure (CSFs).

Determining an organisation's IS strategy often presents difficulties. An organisation's business plans, for instance, are themselves not always clear, and the appropriateness and efficacy of IS strategies is difficult to quantify. Driven by an economic climate of global competitiveness, IS strategic planning has been under close scrutiny by researchers and practitioners alike. Guidelines for the ISSP process abound (Computer Technology Research Corp, 1993), but over recent years it has lost favour (Mintzberg 1994). Inherent organisation culture conflicts may in part explain this disaffection.

Many other problems can beset the IS strategic planning process. These include

- An inability to evaluate the outcomes of strategic planning. Fitzgerald (1993) pointed out the interchangeable terms used to describe IS strategic planning (ISSP, SISP, etc), and that appropriate evaluation measures were still unavailable. Many stakeholders are unwilling to participate in ISSP as the relationship with key deliverables is difficult to measure.

- The use of organisational power to subvert IS strategy. Given the use of IS strategy as an agent of change within organisations, conflict in IS strategic planning is seen as inevitable. McGrath et al (1995) has demonstrated the propensity of the ISSP process to be manipulated by factions within an organisation. Hirschheim & Smithson (1987) have also pointed out the political nature of ISSP evaluations.

- Misalignment between organisational groups. This misalignment is the consequence of differences not resolved by the corporate strategy process and includes the conflict between professional and bureaucratic objectives. Using Henderson & Venkatraman's (1993) strategic alignment model, Dampney (1995) provides examples of misalignment being a critical problem in determining and implementing IS strategies. He illustrates that misalignment between business processes and the computer-based component of information systems is a major stumbling block against achieving operational integration.

Development Of The Pact Model

Given that organisational culture is being perceived as worthy of scrutiny in IS research, and given that this variable has differing impacts depending on organisational type, we propose our PACT model as an attempt towards understanding. PACT is an interaction model between roles and systems, specifically addressing the characteristics of professional bureaucracies. It can be seen to build on work by Scott-Morton (1991), Henderson & Venkatraman (1993), and Yetton & Southon (1994). The PACT model highlights a number of relationships and dynamics within professional bureaucracies.

Figure 1 presents the model with school-based labels. Friedman (1994) has suggested that school information systems can strategically affect four key groups. These groups are Administrators, Teachers, Children and Parents. The PACT acronym is drawn from these four groups. The teaching/learning relationship, for instance, is readily recognised in the left-hand side of the model. This relationship is collegial or organic in nature, seeking effectiveness in its outcomes. On the right-hand side we see a school's bureaucratic activities. Parents and Administrators operate in a more quantitative, 'efficient' culture. Measurements of success within the two cultures also differ. Learning outcomes tend to be assessed qualitatively or at least by a large number of quantitative indicators. Administrative outcomes are more quantitatively

The PACT Model

Figure 1: IS strategy in Professional Bureaucracies

measured in terms of resources expended and the number of students passing a particular grade. Information systems are thus shown in the PACT model as attempting to bridge the divide between different organisational functions or cultures.
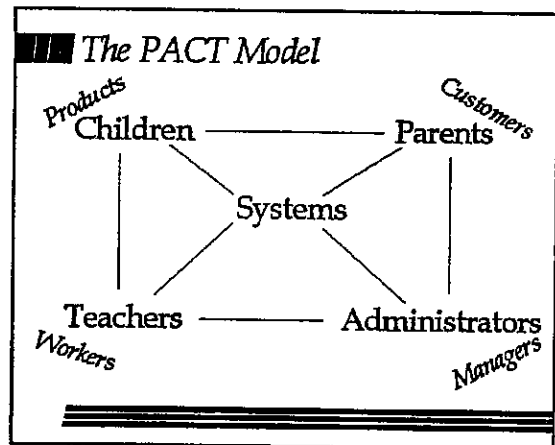
Other forms of professional bureaucracy can also be mapped to the PACT model. In Public Hospitals, PACT may refer to relationships between the Public, Administrators, Clinicians and paTients (Yetton & Southon 1994). In legal firms, PACT may refer to relationships between Public, Administrators, Clients and parTners. It is also possible to generalise the model for other organisational forms. Thus in Figure 1 we sub-label the constituent groups as Customers (P), Managers (A), Products (C) and Workers (T).

In applying the PACT model to other professional bureaucracies, another trend emerges. Conflict between bureaucratic and organic cultures arises from differing value sets, and appears to be endemic, unavoidable, perhaps necessary. The object of conflict is seen to centre on relationship to the product. Professionals perceive their customers and products in quite different ways to bureaucrats. Although the product in professional bureaucracies is human (eg school student, hospital patient, legal client), the bureaucratic culture perceives the product as an inanimate, static resource. The organic culture, on the other hand, perceives the product as animate and dynamic, capable of independent action and reaction. In the bureaucratic culture, relationship to the product is one-way and constant. In the organic culture, relationship to the product is two-way and variable.

We hypothesise further that value sets between organic and bureaucratic cultures differ in varying degrees. Where the interaction with the 'product' is low, value sets between organic and bureaucratic cultures converge. Where the interaction with the 'product' is high, value sets between the two cultures diverge. We propose that the key variable influencing this divergence is knowledge intensity (Dampney 1995). Thus where a function is characterised by data work, such as transaction processing systems, professionals and bureaucrats have similar perceptions of the product. Where a function is characterised by knowledge work, such as decision support systems and executive information systems, professionals and bureaucrats have very different perceptions of the product.

Table 2 exemplifies this issue:

Organisation	Function	Knowledge Intensity	Product	Value Sets
School	Enrolments	Low	Student	Convergent
Hospital	Immunisations	Low	Patient	Convergent
Legal Practice	Conveyancing	Low	Client	Convergent
School	Vocational counselling	High	Student	Divergent
Hospital	Intensive care	High	Patient	Divergent
Legal Practice	Negligence litigation	High	Client	Divergent

Table 2: The knowledge-intensity variable.

Enid Mumford has highlighted the need for an integrated approach to IS management. She quotes "one of the most important principles of socio-technical design ... that if a technical system is created at the expense of a social system, the results obtained will be sub-optimal." (Mumford 1994). This principle translates well to the PACT model: information systems which do not support all four PACT groups adequately will be sub-optimal. In schools the long-term optimal balance must be found between the bureaucratic and organic cultures, between efficiency and effectiveness. In terms of the PACT model, optimality in IS solutions will be the outcome of balance between the "PA" culture and the "CT" culture.

Information systems are used to support such activities as student registration, fees collection, assessment reporting and timetabling, as well as many curriculum activities. Each of these impacts on and requires the participation of at least some of these groups. In the literature concerning IT in schools (Visscher 1995), these activities are often categorised into either Curriculum or Administrative IT. This dichotomy parallels the dichotomy between organic and bureaucratic cultures. Optimality in school information systems thus demands appropriate consideration of multiple stakeholder needs. The PACT model is useful in conceptualising interactions between these groups (Table 3).

Relationship between ...	Functions supporting relationship:
Parents and Administrators	Fees collection, Registration, Reports, Newsletters
Teachers and Administrators	Payroll, Timetable, Teacher Development, Reporting
Children and Administrators	Timetable, Reports, Registration, Preferences
Parents and Teachers	Reports, Timetable, Discipline
Children and Teachers	Curriculum systems, Teaching and learning functions
Children and Parents	Communication systems

Table 3: Examples of PACT relationships supported by IS.

Like other professional bureaucracies, interactions between the four key groups can be fraught with problems. Conflicts between teachers and administrators have been identified in previous work by O'Mahony & Dampney (1995). In this case, the PACT model highlights two dichotomised cultures, with teachers and children operating in a collegial, effective, qualitative mode, and administrators and parents operating in a bureaucratic, efficient, quantitative mode. School communities are of course not always so clearly polarised, but the seeds of discontent can often flower into a tangled jungle of mistrust and animosity.

Other models portraying relationships between IS and Organisational variables certainly exist. These models, however, are either highly generalised (Scott-Morton 1991), or seek to highlight other relationships (Henderson & Venkatraman 1993, Sauer 1993). None address the specific characteristics of professional bureaucracies or concentrate closely on the culture variable. Furthermore, methodological difficulties in validating these models compromises their usefulness. We believe the PACT framework, as a preliminary 'working model', overcomes such difficulties by the use of tightly defined variables and concrete examples.

Research Design And Methodology

The PACT model investigates the relationship between two variables - Organisation Culture and IS Strategy. Both terms are the subject of much scrutiny and, as noted in the literature, their analysis tends towards the qualitative, soft end of the research spectrum. Although many definitions exist for each, we note that clear and concise definition of our variables is critical to measuring relationships between them.

In terms of Organisation Culture, we limited our enquiry to a dichotomy already recognised in the literature - Efficiency vs Effectiveness (Yetton & Southon 1994, Beare 1977). This dichotomy equates to the differences between bureaucratic and organic cultures, which we have already discussed. We argue that professional bureaucracies exhibit characteristics of both these cultures, each having an influence on the organisation's IS strategy.

As noted in the literature, IS strategy is lacking in measurement tools (Fitzgerald 1993, DeLone & McLean 1992). For the purposes of our model, therefore, we take advantage of a recognised evaluation criterion - user satisfaction. User satisfaction has been argued in the literature as one of the more reliable measures of IS success (Ives et al 1983, Lawrence & Low 1993). DeLone & McLean (1992) suggest Stakeholder Satisfaction is critical to IS success.

The broad methodology we have used parallels the classic model of scientific enquiry, whereby observation and experience of the real world drives the inductive generation of theories and laws (Galliers 1992). The PACT model is built on our experiences and observations of professional bureaucracies in action. The framework models the relationship between organisational culture and information systems strategy, and we believe it leads us from a merely descriptive mode towards prediction and understanding.

The PACT model thus exemplifies the interdisciplinary nature of much IS research. In the natural sciences, models are used to predict the behaviour of a system, and are confirmed by quantitative measurement. In the social sciences, models are used to explain or understand the behaviour of a system, and are confirmed by qualitative measurement, aided and abetted by statistics which seek to reduce to the quantifiable. In both cases we develop theories which provide the best prediction of behaviour within our ability to perceive and understand it. Ultimately, the research question under scrutiny and the nature of the data to be gathered determine the most appropriate methodology (Leedy, 1992). In this instance, both Case Study and Survey were considered to be appropriate methodologies. Both are identified as valid in the information systems domain. A survey was used for quantitative data collection in Phase One. In order to provide further richness to the investigation of organisation culture, case studies provided valuable qualitative data for Phase Two. The rationale for the research methodology used in this study is drawn from Galliers (1992).

Our primary research hypothesis was that differing school cultures would express differing levels of satisfaction with the IS function. The optimal situation would be represented by balanced satisfaction between the bureaucratic and organic cultures in a school. In cases where either the bureaucratic or organic cultures held power in a school, the IS function would be sub-optimal. These hypotheses were tested in a two-phase research design, of which Phase One is substantially complete.

In the first phase, a stratified sample of NSW schools was selected. Strata were Department of School Education (DSE) schools vs Catholic Education Office (CEO) schools, urban vs rural schools, and male/female/co-ed schools. In consultation with DSE and CEO research officers, these strata were selected as those most likely to demonstrate differences in organisation culture. A mailout to 100 schools was performed in June 1996, achieving a response rate of 20%. This response is low and the authors note that any conclusions drawn will need to be validated in later studies. Responses are shown in Table 4 grouped by strata.

Stratum	DSE	CEO	Urban	Rural	Male	Female	Co-Ed
Population	13	7	12	8	3	2	15

Table 4: Breakdown of Sampled Schools.

The survey instrument was designed to elicit data concerning both school management culture and school IT satisfaction. Our questionnaire design brought together recognised techniques from both the social science (Leedy 1992) and IS (Pervan & Klass 1992) domains. Content validity was achieved by an extensive search of Educational Administration and IS literature; construct validity

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was achieved by interviews with and further development of the instrument by experts in educational administration. Part A of the questionnaire collected demographic and background data for each school. Part B collected user satisfaction data from each of the four PACT groups. Satisfaction scores for 'PA' and 'CT' groups were summed and graphed orthogonally, producing an 'Optimisation Framework' with four quadrants. Correlations were then sought between the variables and between quadrants.
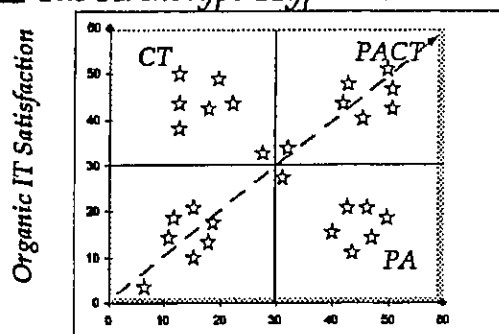

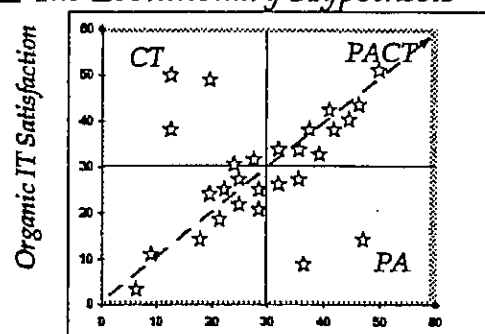Figure 2: The Archetype Hypothesis

Figure 3: The Evolutionary Hypothesis

By mapping scores to our Optimisation Framework, it was anticipated that survey results would reveal one of two trends. One likely scenario was that schools would 'cluster' in the four quadrants, thus tending towards archetypes (Figure 2). The other likely scenario was an evolutionary trend, with schools grouped closely along a path from Low PA and Low CT satisfaction through to High PA and High CT satisfaction (Figure 3). In these diagrams, the 'CT' quadrant represents schools with a predominantly 'effective' culture, where Parent/Administrator IS satisfaction is low. The 'PA' quadrant represents schools with a predominantly 'efficient' culture, where Child/Teacher IS satisfaction is low. Ideally, a school should seek to balance the tensions between 'efficient' and 'effective' cultures, as shown by the dotted arrow.

In the second phase, a small number of schools will be selected from each of the framework quadrants. Case studies, by way of structured interviews, will be performed on these schools in an attempt to answer the research questions. Sensitising concepts to be used in interviews will be based on investigating the link between management culture and IS strategy. These concepts will be structured into questions based on results from the first phase. This method of selection is described as purposive sampling (Harris 1991). The use of case studies in IS research is well recognised (Sauer 1993, Willcocks 1994, McGrath et al 1995).

Interim Results
Although only 20 survey responses were received, a number of interim conclusions were able to be made. As discussed in the above Methodology section, Part A of the survey instrument collected background data from each school. This data provided an interesting profile of schools participating in the survey, and supported conclusions drawn in previous studies by the authors (O'Mahony & Dampney 1995) which suggested a trend for schools to become more business-like in their approach to IS management.

Questions 8 and 9 of the survey compared school IT spending in both curriculum and administration areas for the year ending 1996. Across all strata, average spending on curriculum IT was higher than average spending on administrative IT, although 30% of schools did in fact spend more on administrative IT in 1995/6. The sector with the lowest IT spend was rural schools, and this lack of IT expenditure may in some part explain the low satisfaction scores recorded in Part B of the rural responses. The sector with the highest IT spend was CEO schools, although this did not translate to high user satisfaction scores.

Questions 10 - 15 of the survey dealt with organisational issues in schools (Table 5). We noted an evolving tendency for schools - both State and Catholic - to become more 'business-like' in their operations. This was demonstrated by the fact that 95% of schools had Mission Statements, 80%

had a formal IS Planning Group, and 60% had an IS Strategic Plan in place. Whereas most schools (85%) relied on teaching staff to take on the role of IT Coordinator, three schools had chosen to employ full-time IS Managers responsible for the whole school's IT functions. Unlike other organisations, individual DSE and CEO schools have little autonomy in determining major operational policy. Only recently have school managers been given greater leeway (and greater accountability) in budgetary control.

Question	DSE (13)	CEO (7)	URBAN (12)	RURAL (8)	TOTAL (20)
8. Avg Curriculum IT spend	$63611	$71088	$69377	$61203	$66366
9. Avg Admin IT Spend	$25662	$60270	$50495	$17700	$38412
10. Mission	12	7	12	7	19
11. Business Plan	5	2	5	2	7
12. Organisation Chart	7	2	4	3	7
13. IS Planning Committee	12	4	10	6	16
14. ISSP	9	3	7	5	12
15. IS Manager	2	1	2	1	3

Table 5: Summary of Part A survey responses.

An emerging role in schools equates to the Chief Information Officer in other organisations. School managers have become increasingly aware that effective support of school IT activities cannot be done by teachers. Until recently in both DSE and CEO systems, an 'IT Coordinator' was a teacher who received release time from the classroom in order to support school IT functions. This state of affairs has become increasingly inadequate, and it is encouraging to note that the NSW Department of School Education has now committed itself to providing full-time IS Managers in all State high schools by the end of 1999 (Richardson 1996).

Part B responses displayed further differences between selected strata. As seen in Table 6, Administrators are most satisfied of the four PACT groups; Parents are least satisfied. This result reflects an organisation culture which is predominantly bureaucratic. Such a culture is to be expected in DSE and CEO schools, which are governed by hierarchical bodies. In terms of the selected strata, CEO schools display lower satisfaction scores to their DSE counterparts. This result confirms the presence of differing cultures between DSE and CEO school systems. Extension of this analysis will be performed in Phase Two of the project. Similarly, Rural schools display lower satisfaction scores than their Urban counterparts, a result which indicates political factors at work in the delivery of school information systems.

Question	DSE (13)	CEO (7)	URBAN (12)	RURAL (8)	TOTAL (20)
Average P satisfaction	55.6	57.6	61.1	49.1	56.3
Average A satisfaction	68.0	65.7	68.8	64.9	67.2
Average C satisfaction	62.1	52.7	64.8	49.8	58.8
Average T satisfaction	57.0	55.6	58.7	53.3	56.5

Table 6: Summary of Part B survey responses.

A weak positive correlation was noted between school IT expenditure and satisfaction scores. This was stronger in Rural schools (r = 0.628), and weaker in DSE schools (r = 0.577). The result confirms the increased spending policy proposed by the DSE.

As discussed in the Methodology section, individual Part B responses were graphed on a scatter chart, allowing clear comparisons with the authors' hypotheses. Figure 4 shows the results for the survey sample, and Figure 5 breaks down the results by strata. Although the sample of schools is small (20), the sample showed clear trends across the four predicted quadrants. The overall trend line suggests that schools have a tendency to display bureaucratic culture characteristics, but also shows a reasonable balance between PA satisfaction levels and CT satisfaction levels. Trends for Urban and DSE schools (Figure 5) are clearly discerned, in a result which supports the authors' 'Evolutionary Hypothesis'.

Total PACT Survey Results
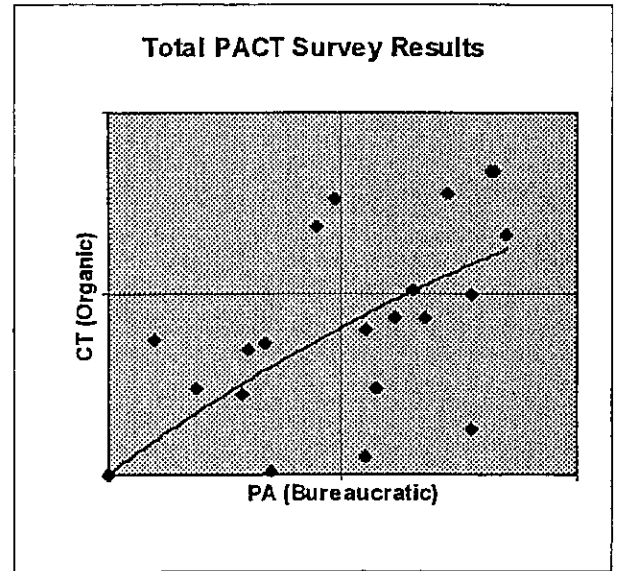
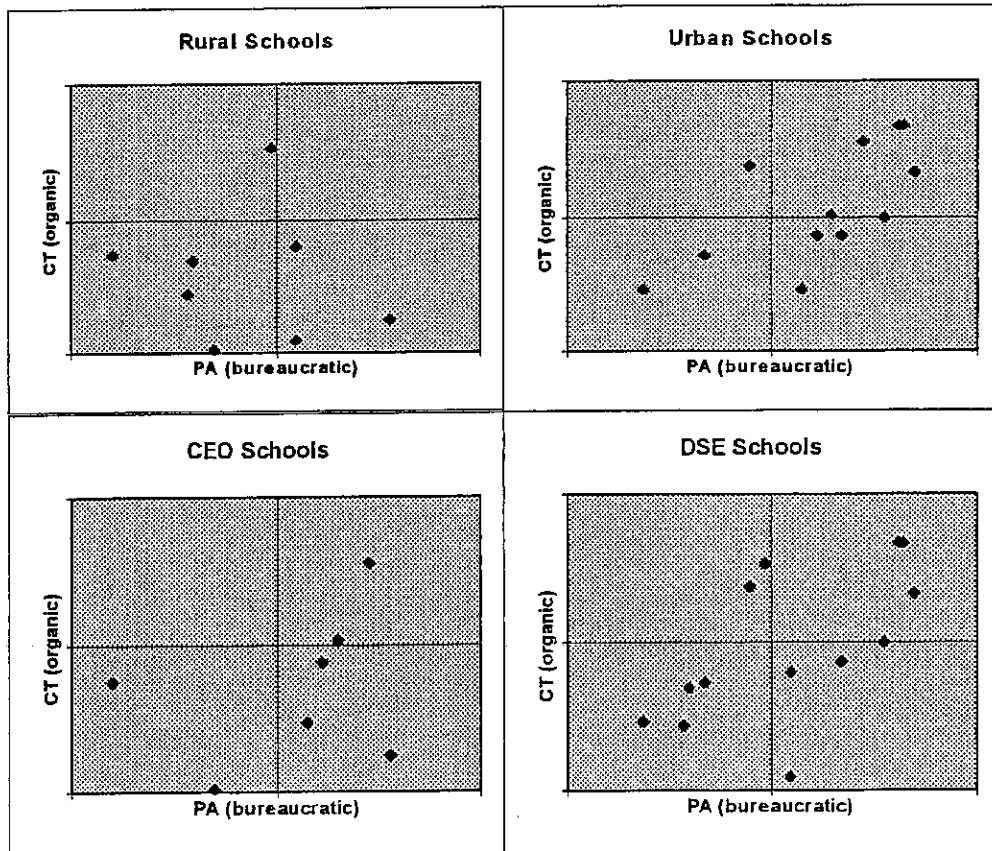| Quadrant	# Schools
Effective	2
Efficient	6
Low/Low	6
High/High	6

Figure 4: Overall PACT results

Figure 5: PACT results by strata.

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Among Urban schools, there is a clear indication of relative balance between the bureaucratic and organic cultures, as represented by PA and CT groups respectively. 67% of observations were positioned in the Low/Low and High/High quadrants, with 8% positioned in the 'Effective' quadrant, and 25% in the 'Efficient' quadrant. The picture for Rural schools is quite different, although a strong tendency towards bureaucratic culture is evident.

Among DSE schools, the 'Evolutionary Hypothesis' is again clear, with 62% of observations in either Low/Low or High/High quadrants, 15% in the 'Effective' quadrant, and 23% in the 'Efficient' quadrant. CEO schools on the other hand, show no clear trend apart from a tendency towards bureaucratic culture.

The diagnostic power of the PACT model can now be perceived. Individual schools can make use of PACT results in their IS strategic planning. For instance, a school currently positioned in the 'Effective' quadrant should focus on Administrative IS functions in order to balance its culture conflict; a school currently positioned in the 'Efficient' quadrant should focus on Curriculum IS functions; a school currently positioned in the Low/Low quadrant should focus its strategic planning on all IT/IS areas. School systems such as DSE and CEO can use overall PACT results by observing trends and acting upon them.

Conclusions

It is clear that competing organisation cultures influence an organisation's IS strategy. The purpose of this paper has been to investigate that influence more closely, as measured by stakeholder satisfaction. We have argued that tight definition of variables such as 'organisation culture' and 'IS Strategy' is crucial to a useful analysis of these issues, and propose the PACT model for studying correlations between dichotomies.

The PACT model highlights relationships between four key groups within professional bureaucracies, and the ways in which information systems support these groups, depending upon the prevailing organisation culture. As well as helping us to understand these relationships, the model demonstrates diagnostic power. Examples drawn from schools support the hypotheses suggested by the PACT model.

We believe that further study is required of the interaction between organisational culture and information systems. Such study should seek to further validate the PACT model in a wider survey of professional bureaucracies. The generalisability of the model to other organisational types is also worthy of consideration, as part of the ongoing quest to understand the principles that direct best practice in information systems management.

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