

Use of management control systems in university faculties: evidence of diagnostic versus interactive approaches by the upper echelons

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Abstract

Drawing on upper echelon theory and focusing on the context of higher education reforms in Australia within new public management in university faculties/colleges, this study investigates the diagnostic versus interactive uses of management control systems by Deans/Pro-Vice Chancellors of Faculties/Colleges (hereafter called Faculty PVCs). It seeks to identify how the professional and experiential characteristics of these senior academic executives and the structure of their Faculty, impact on their managerial and collegial orientation as reflected in their approach to using management controls. A mail survey of Faculty PVCs is conducted amongst a census of all Faculties/Colleges of all universities in Australia. Supplementing this survey are semi-structured interviews with the PVC of the business and science Faculty at a large Australian university. Results reveal that PVCs who have had a longer career in higher education tend to use MCSs more interactively (or collegially). There is also evidence that as PVCs hold their current position for longer periods, they tend to move from an early diagnostic use of MCSs to a subsequent interactive use. Further, the higher the complexity of a Faculty the more a PVC will adopt an interactive approach to MCS use. Other PVC and Faculty characteristics did not reveal patterns of significant influence on the interactive or diagnostic use of MCSs. A key revelation from interviews is that PVCs will give over-riding importance to meeting centrally-set diagnostically-focused KPI, but still take a collegial approach within their Faculty to the broader use of MCSs. The findings lend limited support to upper echelons theory, but provide a grounding for further research into the impact that a managerial versus a collegial approach by PVCs/Deans may have on their Faculty's growth in innovative capacities, teaching qualities or financial strength.

Key words: Management control systems, integrative, diagnostic, university faculties, Deans, managerialism, collegialism, upper echelons theory.

1. INTRODUCTION

This study examines the approach to using management control systems by Executive Deans/Pro-Vice Chancellors (i.e., the chief executive) of university faculties/colleges (i.e., the primary strategic operating divisions of their university). These faculties/colleges (hereafter referred to as Faculties) are typically complex multi-discipline teaching and research organizations characterized by dependence on both public and private sources of funding, local and international operations, high competition, and demanding compliance and performance reporting requirements. Their management control systems (MCSs) are perceived as broad-based systems that go beyond management accounting systems to embrace behavioural and cultural aspects of controls which, according to Kober et al. (2007), are more meaningful in the higher education sector. An upper echelon theoretical perspective will be applied to understand how the professional background (education and experience) of Executive Deans/PVCs (hereafter referred to as PVCs) influences their style of use of MCSs and, by inference, whether the chief executive seeks a more managerial or collegial orientation in their Faculty.

In the past quarter of a century, there have been major public sector reforms worldwide including the higher education sectors under the banner of new public management (NPM). NPM provides a context of managerialism to the application of MCSs. This managerialism ethos has evolved into forms that recognize the limitations of stark economic rationalism in managing the quality of service delivery. A broad-based framework for perceiving MCSs that has been widely recognised is Simons' (1995) *levers of control* schema. Within this schema, the concepts of diagnostic control systems and interactive control systems have been singled out for empirical study in prior research on publicly-funded enterprises. For example, Abernethy & Brownell (1999) adopt Simons' *interactive/diagnostic* classification of MCSs to capture how accounting can be used as a learning machine in the formulation and implementation of strategic change in public hospitals. In this study, the *interactive/diagnostic* classification of use of MCSs is adopted as a vehicle for upper management echelons to orient their Faculty towards a more collegial or managerial style of operation.

By invoking upper echelons theory, the premise of this paper is that the way PVCs choose to use MCSs, and therefore orient their Faculty in a more collegial or managerial direction, will be

influenced by their prior personal experiences as professionals and their disposition within the structural complexity of their Faculty. Upper echelons theory contends that executives' experiences and values greatly influence their interpretations of the situations they face and, in turn, affect their choices (Hambrick, 1984). The theory has two interconnected parts: "(1) executives act on the basis of their personalized interpretations of the strategic situations they face, and (2) these personalized construals are a function of the executives' experiences, values, and personalities." (Hambrick, 2007, p.334). Further, Hambrick (2007) states that "if we want to understand why organizations do the things they do, or why they perform the way they do, we must consider the dispositions of their most powerful actors—their top executives." (p.334)

This study seeks to make a contribution in the following ways:

- (1) provide evidence of the style of use of MCSs by Faculty PVCs by operationalizing the concepts from Simons (1995) framework of *interactive/diagnostic* levers of MCS control.
- (2) add to the debate in higher education administration literature about collegial versus managerial (or both) approaches to managing a large academic organization;
- (3) take, for the first time in a university faculty context, an upper echelons theoretical perspective to consider the drivers of a collegial versus managerial orientation activated by PVCs through their use of MCSs.

2. THE SETTING FOR UNIVERSITY MANAGEMENT

2.1 An NPM environment and Australian reforms in the higher education sector

Higher education institutions in many Western countries operate under considerable constraints and challenges. Some of these include reduced government funding, increased dependence on fee paying students, intensified competition for international students, pressure to improve the quality of teaching and research outputs, and demand for flexible and multiple delivery platforms (Biggs 2003). Tatikonda and Tatikonda (2001) highlight the need for universities to continually find ways to cut costs while keeping the quality of programs unaffected. Additionally, universities, particularly in Australia, face close scrutiny in terms of their discharge of accountabilities to a wide range of stakeholders including government departments and agencies, students, staff, employers of graduates, external research partners, professional associations and benefactors.

The above constraints and challenges have arisen from the continuing application of NPM doctrines to higher education institutes. NPM, also called 'new managerialism', or just 'managerialism', refers to public sector organisations' adoption of management practices, organisational forms, efficiency and accountability principles, and value for money concepts more commonly associated with private businesses (Deem 1998, 2004; McLaughlin et al. 2002; Davies and Thomas 2002). Doctrines of NPM referred to in the literature range from de-regulation, efficiency; accountability; transparency; external audits; shift from input focus to output focus; performance management; target-setting (Parker 2002); devolved budgeting; performance budgeting; cost centres; responsibility accounting; quantification (Lapsley 1999; Parker 2002); benchmarking (Parker 2002); competition; incentivization; managerial enterprise; economic rationality; marketisation; modernization (Broadbent and Guthrie 2008) reduced public funding (Parker 2002; Deem 2004); and corporatization (Parker 2002). In short, NPM doctrines can be described as a paradigm shift whereby output-based management operating under market forces determine the success or failure of a public sector organisation.

Over the past two decades, there have been heated debates as to whether private corporate style management is appropriate for the management of the university sector (Deem 2004; Lafferty and Fleming 2000; Davies and Thomas 2002; Roberts 2004; Deem 1998; Parker 2002; Pick 2006). Some scholars have argued that under new managerialism, universities are forced to become what they are not (Jones 1986). Although the pressure of the new managerialism regime is relentlessly to cut costs without compromising quality (Tatikonda and Tatikonda 2001), the traditional societal expectation of the role of universities continues to be promoted by government oversight bodies – namely, to contribute to the future of a society and play a leading role in a society's intellectual, economic, cultural and social developments (DEEWR 2007).

The reforms to Australian universities and their academic units during the decade of the 1990s, triggered by the Dawkins Reform of 1988, resulted in organizational restructuring (merged universities, more top management stratum and amalgamating of cognate disciplines into larger academic schools and faculties), the adoption of comprehensive performance measurement systems tied to government funding, the substantive erosion of academic staff tenure and an increasing emphasis on competitive marketing for international fee-paying students by universities (Lafferty and Fleming, 2000). The trend for Australian universities towards 'managerialism' and 'commercialization' has continued during the 2000s. The university sector has become Australia's third-largest export industry (Universities Australia, 2009). Between 1996

and 2008 the equivalent full-time student load in Australian higher education grew by 54.25%, whereas the full-time equivalent academic staff grew by 20.0% in the same period. Recently, the Bradley Review of Australian higher education (DEEWR, 2008) and the federal government's response by the Education Minister (Gillard, 2009) places further pressure on the management of universities in an environment of increased competitive markets and regulatory controls. Among the Bradley Review recommendations to be implemented by federal government are that the current cap on domestic student enrolments will be fully removed from 2012, leaving all universities to be funded for government supported places for all eligible domestic students on the basis of student demand for individual universities and programs. Concurrently, the federal government will establish a national regulatory and quality agency for higher education, to substantially strengthen existing arrangements for audits of standards and performance (DEEWR, 2009).

2.2 The unique nature of academic work, academic managers and their impact on management control

Despite reforms towards managerialism and commercialization, universities differ in many respects from industrial/commercial enterprises and some commentators have explained how it would be very challenging for accounting control system designers to accommodate external political pressures whilst implementing the changes which 'academic managers' are able and willing to accept and utilise (Jones 1986). The structural complexity of universities makes their setting different from commercial organisations (Pettersen and Solstad 2007). A typical university would have several types and levels of organisational units such as faculties, schools/departments, institutions, centres, administrative divisions and sections. It would provide different types of services (teaching, research, consultancy and community engagements); in many forms (academic programmes, courses, units, undergraduate, postgraduate, course based; research based; basic research; applied research; collaborative research, etc); in multiple modes; and locations. But the fundamental complexity relates to the measurement of outputs of universities. The quality of a student's learning experience, the value-adding achievements of a program or course, or the international impact of research activities are difficult (if not impossible) to objectively measure in a standardized way.

In relations to management control, the unique nature of academic work and academic managers can be summarised as follows:

- Performance evaluations are mainly conducted by parties outside the organisational units of employees. For example, teaching is evaluated by students (customers) and research is evaluated by publications and research income that are verifiable by external parties (usually peers). These are significant components of performance evaluation of individual academics, academic units, and the whole university;
- Academic managers (i.e. vice-chancellors, deans, heads of schools, research directors, teaching and learning directors, etc) are primarily academics with regards to their professional career. Most of these people continue their research career, some of them also continue with their teaching career, when they hold managerial positions;
- The relationship between academic managers and academics is unique. For example, a head of school and a professor in the school, might be working together in a research project. The research partner might be senior to the head of school. Their relationship cannot be described as normal supervisor-subordinate relationship. Hence the management control system will be theoretically quite different from other private as well as public sector organisations. The relationship can best be described as more of collegial rather than managerial notwithstanding the changes in the NPM era.

2.3 The study's contribution to the context and theoretical perspective of research on MCS use

There has been early empirical research on the diagnostic role that MCSs can play in shaping organizational change in manufacturing industry (Burchell et al., 1980) and later research on the interactive style of use of MCSs in the formulation and implementation of strategic change (Abernethy & Brownell, 1999) in the health services industry. The latter study draws on Simons' (1990) interactive and diagnostic uses of MCSs in their modelling of the relationship between strategic change, style of budget use and performance in public hospitals. By adopting the same diagnostic/interactive dimensions of MCSs use as it's central focus, how does this study go beyond a replication? First, this study's originality is that it addresses the antecedent variables that can determine whether managers of organisations use MCSs in a more diagnostic or interactive way, by drawing on an upper echelons theoretic perspective. Second, it applies Simon's diagnostic/interactive dimensions of MCSs use, not to manufacturing or health services, but to higher education. Chung et al. (2009), provide a detailed case of the similarities and differences between the management context of hospitals and universities. They point out that academic units in universities have similarities with clinical units in hospitals. Both are "service units with responsibility for service quality", both are "dominated by professionals who

have considerable control over the work they do and whose behavior is a key determinant of their units' success", and both have been subject to "financial and managerial reform and reduced government funding, resulting in increasing commercialization and responsibility for implementing strategies to meet both service (effectiveness) and financial (efficiency) objectives" (Chung et al., 2009, p.56). However, they articulate the following differences between hospitals and universities in Australia: first, "hospitals face greater cost and revenue uncertainties than universities"; second, there is a "greater degree of information asymmetry between hospital top management and clinical unit management, compared to that between university top management and academic unit management" (Chung et al., 2009 p.57). These differences are potentially relevant to the application of the diagnostic/interactive MCS use concept.

3. THEORETICAL PERSPECTIVES

3.1 Definitions of management control systems

Chenhall (2003) observes that the terms management accounting (MA), management accounting systems (MAS), management control systems (MCS), and organisational control (OC) are sometimes used interchangeably. This practice seems to continue to the present time. For example, Naranjo-Gil and Hartman (2006) use the term MAS in a study that covers broader issues than MAS. Simons (1987) uses the terms Accounting Control Systems and Control Systems interchangeably. Chenhall (2003, p. 129) describes MA as a collection of practices such as budgeting or product costing, while MAS refers to the systematic use of MA to achieve some goal. MCS is a wider concept that includes MAS and other controls such as personal and clan controls. The broader concept of MCS, rather than MAS, is more relevant to this study because universities are part of the knowledge-based, professional services-providing, non-traditional industries. Hence, the definition of control systems provided by Simons (1995, p. 5) is appropriate to this study:

Management control systems are the formal, information-based routines and procedures managers use to maintain or alter patterns in organisational activities.

Simons (1995) classifies the levers of control into beliefs systems, boundary systems, diagnostic control systems, and interactive control systems. Simons explains that beliefs systems are used to inspire and direct the search for new opportunities; boundary systems are used to set limits on opportunity-seeking behaviour. These two systems are used to "frame the strategic domain" (Bisbe and Otley 2004, p. 711). On the other hand, Simon's diagnostic control

systems are used to motivate, monitor, and reward achievement of specified goals; and interactive control systems are used to stimulate organisational learning and the emergence of new ideas and strategies (1995, p. 7). The diagnostic and interactive systems are used to “elaborate and implement strategy” (Bisbe and Otley 2004, p. 711). The current study does not directly investigate the strategy domain (formulation) of the faculties under consideration. It is rather focused on the classification of MCSs in a way that facilitates a managerial versus collegial managerial style in the process of implementing their intended or emerging strategies. Therefore, beliefs systems and boundary systems are not explored. Diagnostic control systems represent a proxy for managerialism, whereas interactive control systems represent a proxy for collegialism. This restriction to the diagnostic/interactive dimensions of MCS use is in line with other MCS studies that have employed Simons’ framework (e.g., Abernethy and Brownell 1999; Bisbe and Otley 2004; Henri 2006; Kober et al. 2003, 2007; Naranjo-Gil and Hartmann 2006). Ahrens and Chapman (2004) contend that a reason for many MCS studies not applying the belief and boundary “levers of control” is that the two concepts “...remained very general in Simons’ 1995 framework”, (p. 278).

3.2 Upper echelon theory

In the design and implementation of MCSs, the professional backgrounds of managers are critical elements. Prior MCS-professional background studies have analysed the relevance of the professional backgrounds of managers at individual (Abernethy and Brownell 1999) or team level (Naranjo-Gil and Hartmann 2006, 2007). Naranjo-Gil and Hartmann (2006) analyze the orientation of top management teams (TMT) in health services organizations. They classify TMTs as professional or administrative, based on the respondents years of educational and functional experience in either the professional (clinical) field or the administrative (general management) field. Their study employs the upper echelon perspective of Hambrick and Mason (1984). The theory states that organizational outcomes, strategic choices and performance levels are partially predicted by managerial background characteristics (p. 193). Diverse managerial background characteristics such as age, education, and length of employment have been analysed.

4. METHODOLOGY

4.1 Survey of Faculty PVCs

The data collection for this study is undertaken using a field survey design. It proceeds in three stages. The first stage is the distribution of a pilot questionnaire within two Australian

universities. This instrument was developed on the basis of website content analysis (for contextualization purposes) and in reference to scales of interactive/diagnostic dimensions of MCSs from instruments developed by Abernethy and Brownell (1999); Simons (1987) and Simons (1990). The purpose of this pilot study was to gain trustworthiness in the final questionnaire instrument developed to measure dimensions of MCS use and the relevant background characteristics of respondent PVCs and their Faculty.

The second phase entailed interviews conducted using semi-structured questions covering the areas of questioning in the pilot questionnaire. The intention was to gain a more grounded understanding of a PVC's knowledge and use of MCSs, as well as additional information about their own professional background and the operations of their Faculty.

The third phase of the study was the administration the final questionnaire. The questionnaire consisted of 11 questions on the demographic and professional background of the PVC, 7 questions on the profile of the Faculty, and 12 questions on the nature of the PVC's use of MCSs. It was mailed to all Faculty PVCs/Executive Deans in all Australian universities. The sample size was 200 Faculties in the 39 universities. After follow up reminder letters, there were 56 valid responses received, a response rate of 28%.

4.2 The research settings for interviews

The interview data is based on interviews of PVCs at two Faculties in a metropolitan-based Australian university. Interviewee 1 was the PVC of a Science Faculty incorporating the discipline fields of general science, engineering, computer science and health & medical sciences. It comprises ten academic schools, it has programs at apprenticeship, certificate, bachelor, masters and PhD levels, it employs close to 1,000 staff and it has approximately 20,000 students in onshore and offshore programs. Interviewee 2 was the PVC of a Business Faculty comprises six teaching schools, covering disciplines of management, economics, finance, marketing, logistics, information technology, accounting and law. It employs over 400 full-time staff and a large number of sessional staff, and has approximately 23,000 students in its onshore and offshore programs at levels of diploma, bachelor, masters and PhD.

4.3 Validity and reliability tests of the MCS scales

The main questionnaire contained a set of 12 questions under the heading 'use of management control systems'. The preamble to this set of questions stated that "management control systems embrace planning, monitoring and reporting systems..." The 12 questions (or items) were designed to capture the two separate concepts of interactive MCS use and diagnostic MCS use. Data analysis is first undertaken on these two multi-item concepts to test for their construct validity and reliability. The results are given in Table 1.

Table 1
Validity and Reliability Tests for Interactive and Diagnostic MCS Use

<i>Items in 'Use of MCS' instrument</i>	<i>Factor Loadings (eigenvalue)</i>	
	<i>Factor 1</i>	<i>Factor 2</i>
MCSINTER1 I often use MCS information as a means of questioning and debating the decisions and actions of heads of schools/departments and other managers in the Faculty.	.820	-.045
MCSINTER2 I use the MCS to stimulate dialogue with heads of schools/departments and other managers in the Faculty.	.895	.113
MCSINTER3 The information generated by the MCS becomes an important and recurring agenda item addressed by the highest level of management of the Faculty.	.891	.131
MCSINTER4 The MCS involves a lot of interactions with all levels of managers.	.902	.164
MCSINTER5 The MCS is designed to respond to new and unplanned circumstances (e.g., new opportunities) in a flexible way.	.834	.150
MCSINTER6 MCS information generated by the system is often interpreted and discussed in face-to-face meetings.	.887	.206
MCSDIAG2 I heavily rely on staff specialists (i.e., finance and other administrative staff) to monitor the achievement of goals and strategies.	.000	.791
MCSDIAG3 I mainly use MCS information reported through formal channels.	.094	.741
MCSDIAG4 I only get involved in the MCS process when actions or outcomes are not in accordance with plans.	-.452	.545
MCSDIAG5 The MCS is primarily used to regularly track progress towards goals.	.293	.770
MCSDIAG6 I give very high priority to accuracy and completeness of MCS information than its timeliness.	.325	.510
% Cumulative Variance Explained	45.164	67.429

Cronbach Alpha (reliability test)	.943	.693
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Note: The item MCSDIAG1 “The monitoring and accomplishment of predetermined critical performance goals is central to the use of the MCS” did not load onto factor 2 as expected. Instead it loaded onto factor 1 and has been removed from the MCSINTER variable because of lack of face validity.

Table 1 confirms that the items load onto two factors as expected, indicating that interactive use of MCSs and diagnostic use of MCSs are separate constructs. The reliability of these two constructs is satisfied by the Cronbach Alpha results.

5. RESULTS FROM QUESTIONNAIRE DATA

5.1 Descriptive Statistics

The background profile on the responding PVCs and their Faculties is given in Table 2. Highlights from this table are that the mean total career in academia of PVCs is 24.1 years, with the majority having 21-30 years in higher education. In terms of duration of experience in prior senior academic management positions, the majority (48%) had 4-10 years. At the same time, the majority (52%) had no experience at all in management positions outside of universities. Approximately two-thirds of PVCs are males and almost all are over the age of 54. The Faculties show a considerable range in complexity (29% had 3 or less Schools/Departments while 23% had 8 or more Schools/Departments). The size of Faculties is also diverse (15% had 1000 or less equivalent full-time undergraduate students while 21% had 5000 or more such students).

Table 2
Descriptive Statistics on PVC Respondents and their Faculty/College

<i>N</i> = 56	<i>Frequency</i>		<i>Mean</i>
	<i>Count (years)</i>	<i>Valid Percentage</i>	
Profile of PVCs:			
Experience in higher education (teaching, research, management, etc):			24.1
10 yrs or less	5	9	
11 – 20 yrs	15	27	
21 – 30 yrs	22	40	
31 – 40 yrs	11	20	
40 yrs or more	2	4	
Missing	1		
Current academic management position:			3.1
Less than 3 yrs	29	52	
3 – 5 yrs	27	30	
Greater than 5 yrs	10	18	
Missing	0		
Prior academic management positions:			6.62

	Less than 4 yrs	17	30	
	4 – 10 yrs	27	48	
	11 – 20 yrs	12	21	
	Missing	0		
Management/leadership positions in organisations other than universities:				3.5
	None	28	52	
	1-5 yrs	13	24	
	6 – 10 yrs	7	13	
	Greater than 10 yrs	6	11	
	Missing	2		
Gender:				
	Male	36	64	
	Female	20	36	
	Missing	0		
Age:				
	Below 35 yrs			
	35-44 yrs	0	0	
	45 – 54 yrs	3	5	
	55 – 64 yrs	23	41	
	Older than 65 yrs	28	50	
	Missing	2	4	
		0		
Profile of Faculty/College:				
Academic schools/departments in the Faculty/ College (number):				5.5
	3 and less	16	29	
	4 – 5	13	23	
	6 – 7	14	25	
	8 and more	13	23	
	Missing	0		
Undergraduate students in the Faculty/College (EFTSL):				3,447
	1,000 and less	8	15	
	1,001 – 2,000	12	22	
	2,001 – 3,000	11	21	
	3,001 – 5,000	11	21	
	Greater than 5,000	11	21	
	Missing	3		

5.2 Tests of Relationships

The relationships between the background characteristics of PVCs and their Faculties and the preference of PVCs for interactive relative to diagnostic use of MCSs is first analysed by a series of cross-tabulations. Table 3 reports findings for only those crosstabs that resulted in a significant Chi-square test result or, if not significant, resulted in an apparent observable difference in frequencies.

Note that the Table 3 refers to the variables ‘greater interactive use of MCS’ and ‘greater diagnostic use of MCS’. They were computed from the direction of the

difference between the mean score for 'interactive MCS use' and the mean score for 'diagnostic MCS use'.

The conclusions from Table 3 are as follows:

- (1) PVC's with lower longevity of experience in higher education (total years) tend to use MCSs in a more diagnostic way;
- (2) PVC's with higher longevity of experience in prior academic management positions (e.g. Deputy Dean, Dean) tend to use MCSs in a more interactive way.
- (3) PVC's with short duration in their current Faculty PVC position start using MCSs in a diagnostic way, but shift towards an interactive use of MCSs as their length of holding the PVC position increase.
- (4) PVCs based in a Faculty with higher complexity (no.of Schools/disciplines) tend to use MCSs in a more interactive way.

Table 3
Crosstabs of Links between Faculty Complexity, PVC's Longevity
and PVC's Disposition for Interactive/Diagnostic MCS use

<i>Characteristics of PVC or Faculty</i>	<i>Greater Interactive Use of MCS</i>		<i>Greater Diagnostic Use of MCS</i>		<i>Total</i>	
	Count	%	Count	%	Count	%
Faculty complexity (no.of Schools/disciplines): Low High (Pearson Chi-Sq Sig. = 075)	7 28	43.8 70.0	9 12	56.2 30.0	16 40	100 100
PVC's longevity of experience in higher educ (total years): Low High (Pearson Chi-Sq Sig. = 041)	2 24	14.3 58.5	12 17	85.7 41.5	14 41	100 100
PVC's longevity of experience in prior academic management positions (e.g. Deputy Dean, Dean): Low High (Pearson Chi-Sq Sig. = 292)	17 18	60.7 64.3	11 10	39.3 35.7	28 28	100 100
PVC's longevity of experience in current Faculty PVC/Dean position: Low High (Pearson Chi-Sq Sig. = 208)	9 16	32.1 57.1	19 12	67.9 42.9	28 28	100 100

A more rigorous test of bi-variate relationships is given in the Spearman correlations shown in Table 4. Correlations of various PVC and Faculty characteristics with interactive and diagnostic use of MCSs, respectively, reveal fairly disappointing levels of significance. Both the PVC's years of experience in higher education and the Faculty's complexity are weakly significantly positively related to the interactive use of MCSs by the PVC. These significant correlations are consistent with conclusion (2) and (4) given in the crosstab analysis.

Curiously, there is a positive relationship (sig.< .10) between the two types of use of MCSs by PVCs. The inference is that some PVCs will either use MCSs more extensively both in an interactive and a diagnostic way, while other PVCs will not make much use of MCSs at all.

Table 4
Correlations of PVC and Faculty Characteristics with the Extent of Interactive and Diagnostic MCS Use

	1. PVC's yrs experience in higher education	2. PVC's yrs prior academic manage- ment positions	3. PVC's manag't positions in non- university organisms	4. Faculty's complexity in number of schools/ depart- ments	5. Faculty's size in EFTSL of under- graduates	6. Extent of Interactive MCS use by PVC	7. Extent of Diagnostic MCS use by PVC
1. PVC's yrs experience in higher education	1						
2. PVC's yrs prior academic management position	.240 (.078)	1					
3. PVC's management positions in non-university organisations	-.392** (.003)	-.121 (.374)	1				
4. Faculty's complexity in number of schools/ departments	-.190 (.164)	-.237 (.078)	.115 (.400)	1			
5. Faculty's size in EFTSL for under- graduates	-.218 (.120)	-.184 (.188)	.004 (.980)	-.194 (.165)	1		
6. Extent of Interactive MCS use by PVC	.267* (.065)	-.127 (.352)	-.002 (.991)	.223* (.093)	.163 (.243)	1	

7. Extent of Diagnostic MCS use by PVC	-.156 (.286)	-.103 (.450)	.033 (.808)	.061 (.658)	.183 (.191)	.224* (.097)	1
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6. TEXTUAL ANALYSIS OF INTERVIEW TRANSCRIPTS

To unpack the conclusions from Tables 3 and 4, an interview was conducted with the PVC of a Science & Engineering and a Business Faculty, respectively. Both interviews lasted about 1.5 hours and were jointly undertaken by the two authors. A sketch background on these two Faculties is given in section 4.2. Both interviewees have had long careers in higher education, and head a faculty with a considerable number of disciplines, Schools and centres (i.e., high complexity). By contrast, the PVC of the Business Faculty has held her current position for a shorter period, but has higher-level and longer prior experience in academic leadership positions in other universities, than the PVC from the Engineering & Science Faculty. As a shorthand reference, interviewees will be designated the ‘Science PVC’ and ‘Business PVC’ in the analysis below.

The following themes were gleaned from the interview transcripts:

Theme 1: Choice between a diagnostic versus an interactive orientation is driven by a few clear and dominant criterion.

Firstly, a diagnostic orientation appears to stem from imposed centralized performance metrics. The Science PVC explained that “performance targets are set for the Faculty at the Vice-Chancellor level. We will have some discussion about the (centrally) formulated targets but it is not a collegial view where everybody gets their say. It’s the Faculty’s role to implement and monitor delivery of those targets.” However, the Science PVC reluctantly accepts the importance of the diagnostic orientation imposed by the need to meet centrally-set KPI. He states that the centralized financial and non-financial management data reporting system is “well established in the Faculty. (It is) designed to identify KPIs and to assist in delivering against those KPIs. The management data systems are not punitive; they’re ways to engage reports in delivering for the university. They’re not designed to be used in a way that “if you didn’t achieve this therefore you get a whack over the knuckles. It’s really about how to deliver for the benefit and advantage of the university.” By comparison, the Business PVC viewed centralized KPI as paramount to the orientation of the Faculty. When asked what measures of

teaching performance are important, she replied: “remember the federal government measures our teaching and funds us by it, so their CEQ is the most important”.

A second primary driver of a diagnostic orientation, as reflected in the recurring comments from the Business PVC, is the importance of money. Her statements included the following: “the Faculty’s research performance is (evaluated by) a management score which the government is imposing as it funds us. Within the Faculty I want (this score) disaggregated down to the disciplines and then down to the individual quite frankly”; “the operating budget allocated to the Faculty was way out of line, so has taken big negotiations for next year... it is critical to have a realistic operating budget to work with”; “I do believe in managing through the budgets ... you have to.”

The interviews indicate that the Business PVC, whose duration in the current position is shorter, takes a more diagnostic approach to the use of MCSs. This is consistent with the conclusion from Table 3. However, the interviews also highlight the fact that centralized performance metrics imposed on Faculties tend to keep PVCs mindful of a diagnostic use of MCSs at central university level. Further, the comments reveal that the Business PVC is more diagnostic than the Science PVC due to her particular focus on the use of budgets and financial information within the MCS, perhaps because of embedded norms from her professional education in the field of business.

Theme 2: An interactive use of MCSs is driven by the attention given to quality issues within the Faculty.

The Science PVC kept returning to the issue of quality, although he didn’t make explicit his definition of quality. He explained that “most of (the Faculty’s) performance is driven around three considerations, quality, viability and relevance”. He went on to stress his central mission was to maintain and enhance quality in various areas of the Faculty’s work. For example, he stated “it’s not much use having a really financially viable course that’s turned our rubbish graduates”; “I commission a review of a particular area (usually) around the quality of research or how to improve the teaching and learning quality”; “what do I use a commissioned review for? I use it to help manage the programs most effectively”. In response to a direct question on the way he uses MCSs, the Science PVC explained that “to me control systems are data that helps make sure you are going to achieve the predetermined (quantitative) targets that have been set,

whereas around teaching quality, for instance, you might not use the formal, standard data from the MCS as the mode to achieve this because quality is influenced by a lot of other factors.”

This discourse from the Science PVC infers a more interactive use of MCSs in which he seeks to identify and engage in the more behavioural and less precisely measurable ‘quality’ factors perceived to underpin quantitative targets. Consistent with Tables 3 and 4, his personal profile of longevity in prior academic management positions (although predominantly within his current university) and in his current PVC position, together with the high complexity (in terms of the wide range of Schools, disciplines and research units) of his Faculty, is consistent with a more interactive approach.

Theme 3: Interactive versus diagnostic use of MCS depends on whether the PVC was appointed as an insider or was an external recruit.

The Science PVC was appointed to the position as an internal promotion within the Faculty. He explained that he first came to the university as a lecturer and progressed through to Head of School in the Faculty, so over the years he has run research groups and teaching programs. He said “therefore, I understand the issues that academic staff face, and I can empathize with them in terms of what is realistic”. In response to the question of whether he uses MCSs more to monitor and control operational efficiencies or to stimulate continuous improvement, he replied: “It (an MCS) is really to stimulate and encourage and support the Schools because ultimately the core business of the university sits within the Schools. From a Faculty perspective, part of my role is to assist in the leadership and enhancing of the skill sets within the Schools. My role is not to say alright well I must know this or that because I’m in this position. Respect is not something I want to demand. You’ve got to work with people so they can respect what you’re doing. In a university where you’ve got diverse views and personalities and the like that you know, respect comes from effective leadership as opposed to a position.”

By comparison, the Business PVC was appointed to the position from a prior senior academic position held at another university. She has come as a new person with a high outside reputation. Her management approach has been to focus initially on negotiating change in some key aspect of the formal MCS, particularly the methodology used in formulating the Faculty’s operating budget, and in recruiting Deputy PVCs who are establishing/re-establishing formal structures, processes, databases and performance criteria within the Faculty. In explaining some of her early impressions, she states: “When I came here I found the university had driven

a lot of data collection on student survey results, staff survey results, there's the 'are you happy?' management stuff. The data may not all be accurate, but at least we are trying to measure all these things including whether programs have the right margin or not, so at least it's on the right track. More recently, research data has come that actually charts every single member of staff and how research-active they are. The data is not accurate yet, but it's the first time it's been done and it will be accurate and it will be powerful."

The interviews picked up another factor that had not been considered in the questionnaire. As the above theme suggests, the Science PVC is a long-term 'insider' in his Faculty, having progressed over the years from a lecturer through to the PVC. His leadership style suggests a participative Theory Y approach (McGregor, 1957), as characterized by a manager who assumes people under his management are imaginative and will accept and seek responsibility. This leadership style would have, in part, been learnt through his long experience as an 'insider' amongst staff in his faculty. The result is that he tends to use MCSs in an interactive way. By comparison, the Business PVC has been recently appointed from another university and is focused on "getting accurate data ... to measure all these things..." – that is, making strong diagnostic use of MCSs during her phase of familiarization with her newly adopted workplace.

6. CONCLUSIONS

The conclusion from quantitative analysis, based on questionnaire data with closed scales and informed by upper echelons theory, is that a more interactive use of MCSs, and by inference a greater orientation towards collegialism in the management of Faculties, will tend to occur when the incumbent PVC has had a relatively long career in higher education, has held the current PVC post for a longer period and leads a relatively complex Faculty. Alternatively, PVC's with lower longevity of experience in higher education tend to use MCSs in a more diagnostic way, reflecting a managerialist orientation. However, it may be simplistic to characterize PVCs as either diagnostic or interactive users of MCSs. A positive correlation between these two types of use of MCSs by PVCs suggests that PVCs could be characterized as either more extensive users of MCSs in both an interactive and a diagnostic way, or will make little use of MCSs at all.

The qualitative assessment, based on in-depth interviews with a PVC of Science and a PVC of Business, suggests that the choice of a diagnostic orientation is driven by centrally-imposed performance metrics and attention to money management. By comparison, the choice of an

interactive orientation is driven by a PVCs belief in the primary importance of his or her Faculty pursuing *quality* in both research and teaching. But coming back to upper echelons theory's premise about the influence of background characteristics of PVCs, it is revealed in the PVC interviews that when appointed to the current PVC position as an insider, the interactive approach to quality issues as well as meeting imposed performance metrics is prevalent. But when appointed as an external recruit, the PVC's diagnostic use of MCSs is prevalent. As a caution to the conclusions from these interviews, a sample of only two interviewees clearly cannot be generalized to the wider population of PVC's.

The practical implications of findings from this study are twofold. First, there are implications for university strategies regarding the appointment of the chief executive of their major operating divisions (i.e., their Faculty PVCs). If the university seeks greater managerialism (as reflected in diagnostic use of MCSs), then it should recruit new PVCs who do not have very long prior experience in higher education, and not allow long-term tenure in the position of PVC. Second, there are implications for the design of MCSs in universities. If the faculty is complex (i.e., a high number of different academic disciplines and diversity of programs and projects), it needs to design an MCS that enables the PVC to best use it interactively, while providing sufficient underlying diagnostics of the complexity. Otherwise the PVC would tend to become a low user of the formal MCS.

The study has limitations. The concept of an MCS can be ambiguous to respondents. Further, the classification of dimensions of MCS is drawn from Simon's (1995) model, originally developed in the context of the private sector. There are additional dimensions of MCSs (e.g., belief systems and boundary systems) not considered in this study. And there are competing classification schemes for MCS use. The usual limitations associated with a mail questionnaire method of data collection, such as respondent acquiescence, halo-effect and partitioning biases, are also acknowledged.

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