

**HOSPITAL MANAGEMENT ACCOUNTING AND CONTROL SYSTEMS:
A CROSS-SECTIONAL SURVEY OF CANADIAN HOSPITALS**

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ABSTRACT

This paper reports the results of a cross-sectional research study of management accounting and control systems in 82 hospitals across Canada. The research aimed to investigate the relationship of budgeting systems and a cost conscious climate to environment, CEO roles, performance, and tactical initiatives. The results indicate that hospital administrators are using these control systems as important management tools and that they are positively associated with hospital performance and for motivating actions designed to improve performance. The results also suggest that medical personnel - physicians and nurses - are gaining familiarity with hospital management accounting and control systems. Surprisingly, the environmental variable - crisis - was not associated with these systems. However, the study did not investigate, nor is cross-sectional methodology suitable for investigating the extent to which manipulation of accounting data and other kinds of goal incongruent behavior, as reported by researchers in other countries, takes place in Canada. Further research, including field studies, is needed to round out the picture in Canadian hospitals.

KEY WORDS

Hospital management accounting and control systems, cost conscious climate, performance, tactical initiatives, managerial roles, environmental crisis, manipulation of information, goal incongruent behavior.

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INTRODUCTION

In the past decade government bodies in Canada, as in advanced industrial countries around the globe, have initiated fiscal restraints and funding cutbacks in the public sector. Hospitals have been part of these campaigns and so have been under pressure for some time now to reduce the costs and improve the quality of medical services. In consequence, hospital administrators and government agencies across Canada have responded by becoming more aware of the need for management techniques and administrative tools to cope with these pressures [Jacobs et al., 1994]. Management accounting and control systems are one important example of this trend. In previous eras accounting systems were used mainly as a planning allocation tool and for annual reports to boards of directors while physicians paid little attention to them [Abernethy, 1996]. Today, as has been the case historically in the private sector, management accounting and control systems are also being used for monitoring, motivation, performance evaluation, and integration as well as for strategic purposes.

This significant change in the use of these systems represents a unique opportunity to study accounting in its organizational context. As Evans [1998: 79] states, "Healthcare organizations today face a myriad of challenges as they adapt to demands for improved quality and reduced costs. Their response to these pressures provide accounting, behavior and organization [ABO] researchers an excellent laboratory in which to examine changes that also confront many other service organizations." Along these lines, this paper reports the results of a research project that collected data from 82 hospital CEOs across Canada to investigate the organizational impact of this important shift in use of management accounting and control systems. The study followed an organizational theory approach to investigate the association of environmental, organizational, management accounting and control systems, and output variables, as in Figure 1.

-- Figure 1 about here --

PREVIOUS RESEARCH

There has been a notable increase recently in the number of published research studies investigating the impact and consequences of the interest in management accounting systems by hospital personnel and funding bodies. This research has included a variety of approaches including: ethnographic field studies; cross sectional surveys at the departmental and the overall hospital levels; institutional investigations at the national level; and theoretical pieces relying on critical social theory, institutional theory, and sociotechnical network theory.

At the national level, for example, Broadbent et al. [1991] in their study of UK Department of Health policy documents concluded that the changes initiated by the Thatcher government in the 1980s was an attempt to "colonize" the life world of the National Health System by means of the discourse of the private sector. This initiative, they concluded, had more to do with power struggles than with efficiency and cost savings in the health sector. A study by Preston et al. [1992] concluded that the introduction in the 1980's of a new budgeting system into the National Health Service in the UK carried the discourse of economics and decision making into the hospitals and clinics where it was met initially with resistance and skepticism but these feelings were mitigated later on by refabricating accounting in terms of "resource management". Preston [1992] researched the emergence and impact of new costing systems for hospitals in the USA tracing the changes in the nature of and the way accounting systems function in hospitals over the last 100 years. He concluded that the recent discourse of privileged health care, prospective payment schemes, the logic of economic incentives and rational behavior has penetrated and re-constituted the political, social, and organizational domains in hospitals across the

nation. Chua & Degeling [1993] also investigated the effects of accounting-based interventions in the USA health-care industry in terms of their instrumental, moral, and aesthetic impact and concluded that "Accounting struggles as an instrumental technology but enables action by providing a way out of moral dilemmas and in so doing enacts substantive power effects upon human bodies, both individually and collectively" [:291]. While Macintosh [1991] speculated that as new costing and budgeting systems are introduced into hospitals, medical practitioners and administrators will begin to realize that these systems bring with them the inherently problematic and still unresolved debates and dilemmas that continue to plague accounting theory and practice in general, such as: the incremental versus full costing controversy; the subjective and arbitrary nature of transfer pricing; the atheoretical and arbitrary nature of cost allocation; and the historical versus current cost debate. The above studies identify some of the unintended dysfunctional consequences of the increased use of management accounting and control systems in the health care sector.

In contrast, research carried out at the subunit [department, clinic, program, etc.] level in hospitals tends to see this development as a positive initiative. Abernethy & Stoelwinder [1991], for example, surveyed 192 subunit managers in four Australian hospitals and found that the subunits performed more effectively if their use of budget performance information [such as variance analysis and reporting] matched the subunit's degree of task uncertainty and its system goal orientation. In another survey of 91 physicians and nursing subunit managers in one large Australian hospital, they found that the inherent role conflict between the managers' professional orientation and their bureaucratic orientation is reduced when output controls are not dominant [Abernethy & Stoelwinder, 1995].

Other researchers have conducted ethnographic studies of health care accounting systems in order to investigate them in action in the field. Charpentier & Samuelson [1996], for example, interviewed 36 managers and doctors in their Swedish field study of the introduction of a Diagnostic Related Group [DRG] costing system in hospitals as a basis for funding. They found, on the one hand, that productivity improved and more patients were treated with fewer resources. On the other hand, they uncovered a host of dysfunctional effects including: increased administration costs for the new system; a tendency to neglect quality in treating patients [ironically resulting in a new government control system to monitor quality]; a general distrust of DRG data and skepticism regarding its value for funding purposes; "gaming" the system by shifting patients into higher payoff treatments such as intensive care units when normal treatment was all that was required; deliberately over treating some patients; and even "fudging" the DRG reports. Along similar lines, Lapsley [1993:387] reported that in Scotland, "NHS finance officers have operated financial management by stealth, often using crude techniques [accelerating or slowing down payments, building up or running down stocks, delaying the replacement of vacancies] to balance the books." Furthermore, medical practitioners inappropriately admitted already healthy patients, rejected the chronically sick, delayed referral of patients until they were emergency cases, and wrongly prescribed surgery instead of medicines and vice-versa. Other researchers have reported similar "tampering" or "income smoothing" behaviors in the USA [Mensah, Considine and Oakes, 1994a, 1994b; Eldenburg & Soderstrom, 1996; Eldenburg & Kallapur, 1997].² While Doolin (1999) used sociotechnical Latourian network theory for a field study in a New Zealand hospital of a new executive information system. The system ultimately failed, he reported, due to the executives' distrust of the credibility of the information along with competition from the traditional operating budget information.

In another field study, Kurunämski [1999] documented the radical shift from the traditional central government planned system with funding based on actual costs to a quasi-market-based, economically rational system [including profit centering within hospitals] that funded hospitals on a per capita basis. While participants throughout the system became highly "cost-conscious", the reform did not, as hoped "result in a radical redistribution of resources between existing health providers", nor did it, "reveal unambiguous differences in health service providers' cost efficiency or quality" [:122]. Abernethy & Chua [1996] drew on institutional theory [see DiMaggio & Powell, 1983; Scott, 1983; Zucker, 1987;

² As Lapsley [1993] points out, such practices come at the expense of increased costs to government agencies for increased monitoring and regulation; costs which tend to be ignored in calculating hospital costs and cost savings.

Powell & DiMaggio, 1991] to guide their longitudinal study of one large hospital in Australia. They reported that the CEOs "chose to mimic innovatively, practices in other organizational fields -- the private sector and certain hospitals in the United States. This 'choosing to copy' mode of innovation appeared to have conferred 'second-mover advantage' " [:597] and was done in virtue of the CEOs' agency rather than merely mimetic acquiescence as might be postulated by institutional economics.³

These field studies suggest that by and large the new management accounting and control systems which have been part of large-scale experiments in health care provision in many countries have been a mixed blessing. Proponents of health care reform and the role of accounting systems in this, however, argue that the missing ingredient is the lack of accurate and detailed costing systems, which could and should be developed in the near future [Evans, 1999].

On balance, some studies indicate that management accounting and control systems have had a positive effect, some have reported negative and dysfunctional effects, and some have reported contradictory results. This is not surprising as the various studies relied on different research methods; focused on different levels of analysis [individual medical practitioners, nurses and administrators; departments, clinics and staff units; the entire hospital; and medical care at the national institutional level]; were carried out in different countries; and relied on a variety of methodologies including: traditional cross-sectional surveys; institutional theory; the conceptual tools of sociologists like Bourdieu, Foucault, and Latour; as well as atheoretical ethnographic studies.

Yet this may be all to the good. Different research designs investigate different aspects of these systems and it will take time to build up a solid body of knowledge about the nature and workings of hospital accounting and control systems. We hope to contribute to the growing corpus of findings by focusing on the use made of three particular control systems -- operating budgets, program budgets, and a cost conscious hospital climate -- in hospitals across Canada.

RESEARCH FRAMEWORK

The research framework shown in Figure 1 indicates the expected relationships amongst the environmental, organizational, management accounting and control systems, and output constructs. The pretested questionnaire items for these variables are shown in Appendix A.

Environmental variable.

We anticipated, as has been established for some time in organizational theory [e.g., Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Duncan, 1972; and Child, 1973] and in behavioral accounting [e.g., Bruns & Waterhouse, 1975; Hayes, 1977; Waterhouse & Tiessen, 1978; Otley, 1980; Gordon & Narayanaan, 1984; Govindarajan; 1984; Macintosh, 1985, 1994; Merchant, 1984; Evans, 1998] that environmental circumstances would have an important influence on the organizational and management accounting and control systems variables. We selected CRISIS as the environmental variable since hospitals across Canada [as discussed above] have been experiencing a crisis situation for almost a decade caused by pressure from politicians, governments and the public alike. CRISIS was suggested by Collins, Holzmann and Mendoza [1997] in their study of management accounting systems in Latin America. They define CRISIS as threats from governments and other institutions to the firm's survival and to the manager's job. We operationalized CRISIS using the five items in the Collins et al. study. A factor analysis yielded one factor with an alpha of .85.⁴

³ Institutional theory posits three general kinds of isomorphism -- *coercive* [pressure from other organizations in the institutional field on which the organization is dependent or from general cultural and societal expectations]; *mimetic* [self-felt pressure to improve by mimicking other successful organizations thus minimizing search costs]; and *normative* [pressure from professional and occupational bodies, to which the dominant professionals in the host organization belong, to follow generally accepted principles and practices as established by that particular profession]. Abernethy & Chua [1996] imply that the hospital in their study was motivated by all three types.

⁴ The study used an oblique rotation technique [direct OBLIMIN] for all factor analyses.

Organizational variables.

We selected managerial roles for the organizational variable since previous research indicated that they were associated with managers' informational practices and networks [Mintzberg, 1972, 1975] and with managers' budget related behaviour [Macintosh & Williams, 1992]. The roles were operationalized following McCall & Segrist [1978], Tsui [1984], and Macintosh & Williams [1992] who included managerial roles in their studies of leadership, reputation, and budget behaviour respectively. Managerial roles has also been used in management accounting studies by Covaleski & Dirsmith [1986] and Preston [1986]. Four managerial roles -- SPOKESPERSON, RESOURCE ALLOCATOR, LEADER, AND ENTREPRENEUR -- were included in the study.

The SPOKESPERSON role refers to the "significant web of relationships that a manager maintains with numerous individuals and groups outside the organization he leads" [Mintzberg, 1975: 65]. The RESOURCE ALLOCATOR role entails allocation of significant organizational resources including money, equipment and people to organizational units. Resource allocation, "is the heart of the organization's strategy-making system. For it is in the making of choices involving significant organizational resources that strategies are determined" [Mintzberg, 1973:85]. The LEADER role refers to activities involving subordinates such as evaluating their performance, alerting them to important problems, and resolving conflicts they have with their peers and subordinates. Finally, in the ENTREPRENEUR role the manager acts as initiator and designer of much of the controlled change within the organization and also scans the environment for opportunities and problems [Macintosh & Williams, 1992:29].

For the role variables we selected 13 items [see Appendix A] from questionnaires used by Tsui [1984] and Macintosh & Williams [1992] which seemed appropriate for the hospital setting. A factor analysis indicated four roles enacted by hospital CEOs -- SPOKESPERSON, RESOURCE ALLOCATOR, LEADER, AND ENTREPRENEUR -- with alpha levels of .79, .56, .64, and .62 respectively. We anticipated that these CEO roles would be associated with the management accounting and control variables.

Management accounting and control system variables.

The study included three management accounting and control systems variables; operating budget use, program budgeting use, and a cost conscious climate. Three operating budget aspects were considered important; EVALUATE, REWARD, and INTERACTIONS. EVALUATE refers to the use of the budget by the CEO to evaluate the budget performance of administrative, clinical, nursing, program and staff heads. REWARD refers to the use of budget performance for rewarding these people. And INTERACTION refers to the use of the operating budget by the CEO when interacting with department, clinic, and program heads in discussions about strategic decisions and changes in hospital operations. The alpha statistics for these variables were .82, .96, and .64, respectively.

A program planning and budgeting system collects information regarding actual and budgeted data according to types of patients treated in various programs [pediatrics, cancer, obstetrics, orthopedics, etc.] and frequently the hospital organization is structured around such programs. The PROGRAM BUDGETING USE variable measured the extent to which the CEO relied on the information in these reports for the traditional management accounting purposes including: planning, monitoring, measuring, reviewing, and allocating resources. A factor analysis of six questionnaire items yielded one factor with an alpha of .91.

A cost conscious climate is a form of what Weber [1947] defined as control by dint of tradition, the codes of which become imperatives for organizational participants. In its extreme form, it is known as "clan control" [Ouchi, 1979; Macintosh, 1994]. Organizations institutionalize a cost conscious tradition by means of rituals such as budget variance reporting and analysis; the use of myths like "Our survival is dependent on making cost savings in programs and services"; and legends such as stories which circulate about special large and important cost saving initiatives and the heroes who initiated them. The cost consciousness control construct included four variables; CLINICAL STAFF, ADMINISTRATIVE

STAFF, MEDICAL STAFF, AND NURSING STAFF. The factor analysis yielded four factors with alphas of .91, .88, .82, and .84, respectively.

Output variables.

The study included two output variables -- hospital performance and recent tactical initiatives taken to improve hospital operations. Researchers have argued for some time now that studies which are carried out at the organizational level of analysis should include performance [Sathe, 1975; Otley, 1980]. If performance is not included then researchers must make the assumption [usually implicitly] that successful organizations are those that have continued to adapt to their environmental circumstances and so successful organizations are those that have survived. Such an assumption, however, is tautological [i.e., true by definition] in that it cannot be confirmed or falsified since those organizations which did not survive cannot be sampled. Performance has also been seen as an important aspect of other types of hospital accounting studies [c.f. Eldenburg, 1994; Zeller, Stanko and Cleverly, 1996; Carter, Massa and Power, 1997]. In consequence, we included three performance variables in our sample--EFFECTIVENESS, EFFICIENCY and WIN RESOURCES. These were operationalized following Van de Ven & Ferry [1980], Williams, Macintosh & Moore [1990], and Macintosh & Williams [1992]. The questionnaire items were adapted to the hospital environment. The performance variables reflect the CEOs' judgment regarding their hospitals' performance as compared to other similar hospitals. Each of these was a one-item scale as in Appendix A.

The tactical initiatives variables included in our study were those revealed in previous hospital accounting studies such as Abernethy [1996]. The factor analysis of the questionnaire items indicated six variables which we labeled; BUSINESS-LIKE, IMPROVE RECORDS, PHYSICIAN, INVOLVEMENT, FAST DISCHARGE, MEDICAL CUTS, and SUPPORT CUTS. Some of the alpha scores [.68, .69, .48, .57, .57, and .42, respectively] are somewhat low suggesting that the results for these variables should be interpreted with caution.

RESULTS

A questionnaire was mailed to 315 medium to large size hospitals across Canada asking the hospital's CEO to respond personally. Hospitals were selected from a complete list of hospitals, clinics, and related health units in Canada. Smaller units and unique clinics were culled out as it was expected that they would not have, use, nor need sophisticated management accounting and control systems. Eighty-two usable questionnaires were received -- 19 from Western Canada, 43 from Ontario, 9 from Quebec, and 11 from the Atlantic provinces. The response rate seems satisfactory since hospitals across Canada were undergoing a great deal of change and turmoil at the time. Many hospitals replied that they could not complete the questionnaire because the CEO was too busy, or the CEO named was no longer with the hospital, or that the new CEO having only recently taken over, did not possess the expertise in these matters in that particular hospital to respond accurately. As well, the response from Quebec, which is a French speaking province, was proportionately low. The questionnaire was sent to them in English only. The hospitals in the final sample ranged in size from 121 to 1473 beds with an average size of 501 beds.

Pearson correlation analysis [see Table 1] was used to examine the expected relationships outlined in Figure 1.⁵ The descriptive statistics [means and standard deviations] are interesting in their own right. For example, the mean score for CRISIS was low [$\bar{x}=3.1$] indicating that the CEO's did not, contrary to our expectations, perceive their situation to be in a dire state. Moreover, CRISIS did not have as much impact as expected on the other variables in the study.

-- Table 1 about here --

⁵ More sophisticated statistical analyses such as LISREL and canonical correlation analysis were ruled out since the number of questionnaire items considerably reduced the number of degrees of freedom required for such analyses.

The CEO roles did seem to impact on the management accounting and control system, the performance, and the tactical initiatives variables. Specifically, three roles [RESOURCE ALLOCATOR, LEADER, and ENTREPRENEUR] were positively associated with INTERACTIONS [$r=.23$, $.24$, and $.34$, respectively] which in turn was associated with several of the performance and tactical initiatives variables while ENTREPRENEUR was associated with WIN RESOURCES [$r=.26$] [see Figures 2 and 5]. The CEO roles were also positively associated with PROGRAM BUDGETING [see Figure 3] and with two cost consciousness variables, NURSING STAFF and CLINICAL STAFF [see Figure 4].

-- Figures 2, 3, 4 and 5 here --

Several of the management accounting and control system variables were positively associated with the performance variables as in Figure 2. In the case of the operating budget variables, EVALUATE was associated with EFFECTIVENESS [$r=.26$] and with WIN RESOURCES [$r=.34$]. INTERACTIONS was associated with EFFICIENCY [$r=.21$] while REWARD was associated with WIN RESOURCES [$r=.22$]. All four cost consciousness variables were associated with WIN RESOURCES [see Figure 4] but none was associated with either EFFECTIVENESS or EFFICIENCY. The PROGRAM BUDGETING variable was not associated with any of the performance variables [see Figure 3].

The operating budget variables were also associated with the tactical initiatives output variables as in Figure 5. EVALUATE was correlated with three of these: BUSINESS-LIKE [$r=.30$], PHYSICIAN INVOLVEMENT [$r=.27$], and FAST DISCHARGE [$r=.40$]. REWARD was also correlated with PHYSICIAN INVOLVEMENT [$r=.26$] and with FAST DISCHARGE [$r=.24$]. INTERACTIONS was correlated with IMPROVE RECORDS [$r=.40$].

PROGRAM BUDGETING USE was associated with three tactical initiative variables; IMPROVE RECORDS [$r=.31$], PHYSICIAN INVOLVEMENT [$r=.22$], and with FAST DISCHARGE [$r=.31$] as in Figure 6. And the cost consciousness variables were associated with the tactical initiatives variables as in Figure 7. MEDICAL STAFF with PHYSICIAN INVOLVEMENT [$r=.32$], FAST DISCHARGE [$r=.25$], and SUPPORT CUTS [$r=.24$]; NURSING STAFF with PHYSICIAN INVOLVEMENT [$r=.27$] and FAST DISCHARGE [$r=.40$]; ADMINISTRATIVE STAFF with PHYSICIAN INVOLVEMENT [$r=.23$] and FAST DISCHARGE [$r=.24$]; and CLINICAL STAFF with PHYSICIAN INVOLVEMENT [$r=.37$] and FAST DISCHARGE [$r=.41$]. Overall, the management accounting and control system variables did seem to impact on the output variables in the framework.

--Figures 6 and 7 here --

DISCUSSION

The results of this study add to the corpus of knowledge about hospital accounting and control systems in several important ways. The most surprising finding was that in general the CEOs did not perceive that their hospitals were on the brink of closing down nor did they see that survival was a major concern. The mean score for CRISIS was not only low [$\bar{x}=3.1$] but CRISIS was not associated, as anticipated in Figure 1, with the other variables in the research framework.

What might be happening is that hospitals have been operating in very lean circumstances for such a long time that what might seem like a crisis to outsiders now appears normal to insiders. Hospital personnel just get on with the day-to-day business of taking patients in, treating them, and getting them out. Collins et al. [1997] also reported a low mean score for CRISIS [$\bar{x}=3.17$] and, as in our study, they found that it did not influence their budgetary usage variables as they had anticipated. For the managers of the Latin American companies in their study, political upheaval, currency fluctuations, and raw material shortages were the normal conditions. Collins et al. speculated "that the relatively moderate crisis level [3.17] is attributable to the relative Crisis feelings of our respondents ... though in North America [these] conditions would be judged to be more extreme than our Latin American subjects

responded"[:676].⁶ Similarly, private sector managers might have judged conditions in hospitals in Canada as more extreme than did their public sector counterparts who responded to our questionnaire.

Even more surprising was the significant *negative* correlation of CRISIS with the budget use variable EVALUATE [$r=-.33$] and with the performance variable WIN RESOURCES [$r=-.31$]. What might be happening is that those hospitals for which the outlook is bleak are also those that are performing poorly relative to similar hospitals and so they are perhaps earmarked for closure. In this case, they would not be able to win resources and there would be little use in looking at budget performance for evaluation purposes. That is to say, their "opportunity space", as Simons [1990] calls it, is extremely limited and the prospect of winning new resources is slight.

Several of our findings, however, are consistent with the expected relationships in Figure 1 and support findings reported in other studies. For example, it seems that hospitals across the country have, by-and-large, become very "cost-conscious". Thus, Canada seems to be part of the world-wide trend to adopt the "rationalistic, performativity, market-oriented" discourse of managerialism or what Preston et al. [1992: 561] call "bringing economic logic into hospital management" that has occurred in advanced, industrial, capitalist nations around the globe.⁷ Whether or not this is a positive or a negative eventuality will be addressed later.

Another finding we consider important is that hospital CEOs seem to be relying extensively on budgeting systems in carrying out their managerial duties. The results indicate that the CEOs find them to be useful tools for monitoring, measuring, reviewing performance, allocating resources, integrating actions within the hospitals, and for discussing financial and operational matters during interactions with department, clinical, and program heads. This finding supports Pettersen's [1995] position that the budgetary process serves as an important means of integration and communicative action. Similarly, Abernethy & Brownell [1999] found that the CEOs in their study used budgets for important interactions, discussions, debates, and questioning with department heads, especially regarding strategic matters. These findings suggest that CEOs in general are not using what Hopwood [1972] called a "non-accounting" style but rather a "budget constrained" or a "profit conscious" accounting style.

The results regarding the CEO role ENTREPRENEUR are particularly noteworthy. ENTREPRENEUR had a very high mean score [$\bar{x}=6.40$] and was associated with INTERACTIONS, PROGRAM BUDGETING, and with the performance variable WIN RESOURCES. This suggests that the CEOs are active in discussing budget matters with hospital personnel, using them to keep track of operations, and in searching for new ways of obtaining scarce resources and in responding positively to the prolonged period of severe resource constraints.

Our study also indicates that the physicians are getting more involved in and conversant with budgetary matters and considerations than in past decades when they had little to do with accounting data and budget reports. Similarly, Purdy [1993] reported that Ward Unit Managers [Sisters] did learn about financial management accounting data and were capable of taking a financial role. Abernethy & Chua [1996] and Eldenburg [1994] report similar findings. Thus, the gap between and the role conflict caused by the professional medical orientation of the physicians versus the bureaucratic orientation of hospital administrators [see Abernethy & Stoelwinder, 1995; Lapsley, 1993; and Pettersen, 1995] may be diminishing and might be further mitigated, as Lambert & Larcker [1995] conclude, by means of a change in reward systems such as bonuses for budget performance.

In contrast, Covaleski, Dirsmith & Michelman [1993], coming from an institutional theory perspective, put a somewhat richer slant on the issue of physician involvement. They see the

⁶ Collins et al. draw on McClelland, Atkinson, Clark & Lowell's [1953] expectation/adaptation cognitive response theory to explain the low Crisis score. "The Latin Americans compare Crisis [incoming stimuli] with the level of Crisis they consider "normal" [adaptation level] and, since they are accustomed to a more threatening and turbulent Latin America, they report more moderate current Crisis state than one expects [from a North American's perspective]"[:676].

⁷ See, for instance, Australia [Chua & Degeling, 1993; Abernethy & Brownell, 1999]; Finland [Kurunmäki, 1999]; Norway [Pettersen, 1995]; Sweden [Charpentier & Samuelson, 1996]; United Kingdom [Lapsley, 1993; Purdy, 1993; Jones, 1999]; and the USA [Lambert & Larcker, 1995; Eldenburg & Soderstrom, 1996].

institutionalization of management accounting and control systems within hospitals as being "profoundly political and potentially complicit in a shift in the balance of power from the practitioner to the administrative component" [:77]. What might be happening is that the medical professionals are beginning to realize that they must become knowledgeable in the technical and behavioral aspects of management accounting systems in order to hold off the administrators in this struggle over power and influence. If this is the case, the role conflict has not abated but shifted to a different level of sophistication in which accounting and control systems become the turf for the inherent role conflict between professionals and administrators. In support of this, Llewellyn [1998, 1999] reports that hospital managers in her field studies were assigned to persuade the medical doctors (clinicians) to become more familiar with budgets and management accounting reports; but the doctors' professional reputation and age were strong impediments to having them assume managerial roles and budgetary responsibility.

Our finding that the use made of operating budgets by the CEOs and a cost conscious climate were positively associated with hospital performance supports previous research. For example, Abernethy & Brownell [1999] found, in their study of 63 Australian hospitals, that the interaction between budget use by CEOs and strategic action had a positive effect on performance. Eldenburg [1994] found that hospitals in Washington State which provided physicians with their own case costs and comparison information had significantly lower average billing charges than did those physicians without such information. Lambert & Larcker [1995] uncovered evidence that in hospitals across the USA, the relatively inefficient hospitals combined with the use of a prospective regulatory accounting system for reimbursing hospitals, motivated administrators to improve operating efficiency. And Purdy [1993] found that managers in UK hospitals who did not have any input into budget setting nor any influence over expenditures designed their own "black book" informal budgeting information systems in order to improve performance. Such findings indicate that management accounting and control systems can be useful for improving hospital performance.

The results also suggest that operating and program budget systems and a cost conscious climate are influential in motivating and aiding in decisions involving tactical initiatives [see Figures 5,6, and 7]. The most frequent of these are: improvements to records [thus supporting Caltrider et al., 1995 and Charpentier & Samuelson, 1996]; quick discharge of patients; and support cuts. Our results regarding PHYSICIAN INVOLVEMENT ($\bar{x}=4.6$) also support Eldenburg's [1994] conclusion that physicians are getting involved in understanding and using these systems more than they did in the past. This is an important finding as today physicians control nearly 80 percent of total hospital expenditure [Abernethy, 1996]. This must be tempered, however, by the findings of Covalski et al. [1993] and Llewellyn [1998, 1999] discussed above.

Our finding that the use of budgets and the association of the accounting and control variables are associated with performance and positive tactical initiatives, however, must be interpreted with caution. Other studies, such as Borden [1988], found that hospital costing systems did not lead to the hoped for improvements in hospital efficiency. And many studies report that hospital administrators and physicians alike, as with private sector managers and executives, are prone to tinker with the information and data in management accounting and control systems in order to "doctor" performance indicators. In fact, a certain level of such "monkey business" seems endemic. Blanchard, Chow & Noreen [1986], for example, found that when Medicare reimbursed US hospitals on the basis of self-reported costs of outpatient services, hospitals began to allocate more of their costs to these services. Soderstrom [1993] reported that hospitals in the USA with high marginal costs and in poor financial condition made many more reporting errors than did those hospitals in good financial condition. Mensah et al. [1994a, 1994b] uncovered evidence that financially weak USA health care organizations [HMOs] tended to understate their losses when reporting to funding agencies; while highly profitable HMOs adopted overly conservative accounting practices to hide profits. Eldenburg & Soderstrom [1996] found that hospitals operating in a regulatory environment in the State of Washington systematically manipulated budgeted patient variable costs and patient volumes data and also shifted costs around in order to increase their revenue from the state. While Covalski et al. [1991] concluded that when accounting and control systems become institutionalized within individual hospitals, they will be used by hospital

administrators, “to advocate for the hospital and to help generate resources” [76]. Charpentier & Samuelson [1996] and Lapsley 1993], as discussed earlier, also uncovered evidence that health care administrators in their studies engaged in duplicitous activities. Manipulating accounting systems and taking goal incongruent actions to make the numbers on the score card look better and to obtain more resources seems to be part of the hospital management milieu, as it is in the private sector.

Thus, it seems likely that these practices might be occurring in Canadian hospitals as well. If this is the case, then the relation between budgetary uses and performance as indicated in our study must be taken with caution. In other words, performance as reported could be, to some extent, a consequence of such tampering and tinkering as well as from control systems pinpointing areas for improvement and subsequent tactical actions. While cross-sectional studies such as ours are not suitable for identifying such practices, it seems reasonable to assume that they also occur in Canadian hospitals. Our findings should be read with this caveat in mind.

Another aspect of the use of management accounting and control systems that could confound our results is that hospital administrators, nurses and physicians use accounting systems to "posture" as believers in rational decisions and objective accountability. As Covaleski et al. [1993: 65] put it, new management accounting systems "reflect as much the need to conform to societal expectations of acceptable practice as the technical imperative of fostering rationality." While Abernethy & Chua [1996] reveal that they can do this by "showcasing" them. And Chua & Degeling [1993] report that hospital participants also use these systems strategically to obtain more resources. Along similar lines, Pettersen [1995:216] found that one of the "most important output of the budgets is the external *legitimation* of the hospital's existence; a symbol of adherence to the governmental rules ... management control through budgets in hospitals to a large extent act as *rationalized myths*" [italics in the original].

Management accounting and control systems in the hospital sector, it seems, are used for strategic posturing and symbolic purposes as much as they are in the private sector. Since these strategic actions also impact on performance, our findings regarding the positive association of accounting and control systems with the performance variables must be read with these considerations in mind. Either way, however, Covaleski et al.'s [1993] prediction that the introduction of new management accounting and control systems along with new ways of using old ones have the potential to penetrate and alter the internal operating processes of hospitals seems to have come to pass in Canada.

CONCLUSION

The research reported here investigated the association of environmental, organizational, accounting and control, and output variables in hospitals with a focus on budgeting systems and a cost conscious climate. The results indicate that Canadian hospitals, in common with those in other countries, now operate under a cost conscious organizational climate. They also suggest that an important shift has occurred in the use of management accounting and control systems from their traditional functions of reporting to hospital boards and funding of actual costs, to being used and relied on by CEOs and others as an important management tool. These systems seem to be influential in a positive way for hospital performance and for motivating actions that lead to improvements in performance. As well, administrators and physicians are now getting more familiar with and using these systems more extensively than was previously the case. The study, however, did not investigate, nor is the cross-sectional methodology suitable for researching, the extent to which manipulation of accounting data and goal incongruent behaviour and strategic posturing with accounting systems takes place in hospital management. Further research, including extensive field studies, is needed to round out the picture in Canadian hospitals.

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APPENDIX A
QUESTIONNAIRE ITEMS
(all items are on a seven-point Likert scale)

- A. CRISIS (strongly agree=1, strongly disagree=7)
1. The future does not appear bright for this hospital
 2. This hospital is facing conditions that threaten its survival.
 3. This hospital has had its ups and downs, but this time we are facing a real crisis.
 4. Some of us will probably be looking for other jobs in the near future because of problems in this hospital.
 5. This hospital will not survive every threat.
- B. CEO ROLES
- a. SPOKESPERSON
 1. Develop contacts with important outside people.
 2. Serve on committees outside the hospital and represent the hospital to outside parties.
 3. Attend social functions with important outside people.
 4. Provide information about the hospital to outside parties.
 - b. LEADER
 1. Resolve conflicts among subordinates.
 2. Evaluate subordinates' performance.
 3. Alert subordinates to problems.
 - c. RESOURCE ALLOCATOR
 1. Decide which medical programs to fund.
 2. Distribute resources within the hospital.
 3. Initiate new ideas relating to on-going functioning of the hospital.
 4. Gather information about clients and competitors.
 - d. ENTREPRENEUR
 1. Scan environment for opportunities.
 2. Plan and implement change.
- C. OPERATING BUDGET USE (extent used; to no extent=1; to a great extent=7)
- a. EVALUATE BUDGET PERFORMANCE
To what extent is performance based on budget performance in
 1. administrative departments
 2. nursing units
 3. clinical (medical) programs
 - b. REWARD BUDGET PERFORMANCE
To what extent is budget performance used as a basis for rewarding performance in
 1. administrative departments
 2. nursing units
 3. clinical (medical) programs
 - c. INTERACTIONS

1. I often use budgeting information as a means of questioning and debating the ongoing decisions and actions of department/clinical units managers.
2. The budget process is continuous—it demands regular and frequent attention from managers at all levels.
3. There is a lot of interaction between top management and department/unit managers in the budget process.
4. I use the budget process to discuss with my peers and subordinates changes occurring in the hospital.

D. PROGRAM BUDGETING USE (extent used; to no extent=1; to a great extent=7)

1. Assist in planning of new services or development of existing services.
2. Monitoring overall hospital performance.
3. Measuring department/unit division performance.
4. Assessing the financial impact of changes in programs/services.
5. Reviewing programs/services.
6. Allocating resources to departments/units/divisions.

E. COST CONSCIOUS CLIMATE (strongly agree=1; strongly disagree=7)

a. CLINICAL STAFF

1. Unit staff have good knowledge of way budget is spent.
2. Staff are aware of the overall budget for units they work in.
3. Budget matters are discussed within the units regularly.
4. Staff are aware of costs associated with services provided.
5. Staff are extremely cost conscious of use of resources.

b. ADMINISTRATIVE STAFF

1. Unit staff have good knowledge of way budget is spent.
2. Staff are aware of the overall budget for units they work in.
3. Budget matters are discussed within the units regularly.
4. Staff are aware of costs associated with services provided.
5. Staff are extremely cost conscious of use of resources.

c. MEDICAL STAFF

1. Unit staff have good knowledge of way budget is spent.
2. Staff are aware of the overall budget for units they work in.
3. Budget matters are discussed within the units regularly.
4. Staff are aware of costs associated with services provided.
5. Staff are extremely cost conscious of use of resources.

d. NURSING STAFF

1. Unit staff have good knowledge of way budget is spent.
2. Staff are aware of the overall budget for units they work in.
3. Budget matters are discussed within the units regularly.
4. Staff are extremely cost conscious of use of resources.

F. PERFORMANCE (below average=1; above average=7)

a. EFFECTIVENESS

1. Quality of care.

b. EFFICIENCY

1. Comparative costs with other hospitals.

c. WIN RESOURCES

1. Ability to win resources.

G. TACTICAL INITIATIVES (to a little extent=1; to a great extent=7)

a. BUSINESS LIKE

1. Developed contracts with clinical unit managers based on agreed output targets.
2. Developed business units for your clinical areas.

b. IMPROVE RECORDS

1. Implemented systems to ensure all admissions are being counted.
2. Ensure all patient records are accurately coded.

c. PHYSICIAN INVOLVEMENT

1. Developed management education programs for physicians.
2. Increased involvement of physicians in management.

d. FAST DISCHARGE

1. Strengthened the discharge planning utilization review process.
2. Reduced inpatient length of stay.
3. Established more stringent criteria for detailed review of new technology and equipment.

e. MEDICAL CUTS

1. Reduced expenditure on medical salaries.
2. Reduced expenditures on nursing salaries.

f. SUPPORT CUTS

1. Reduced expenditure in non-medical support areas (e.g., laboratory, radiology, pharmacy, etc.)
2. Reduced expenditure in medical support areas (e.g., laboratory, radiology, pharmacy, etc.)

Figure 1. General research framework: expected relationships

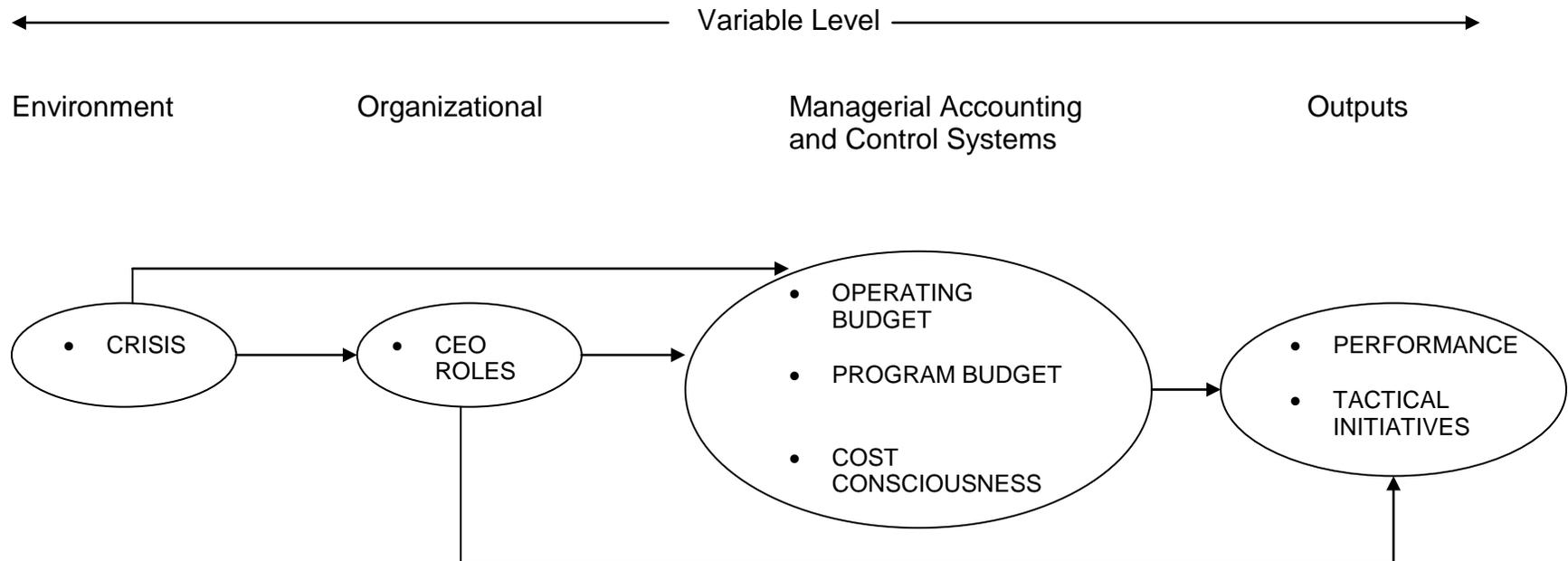
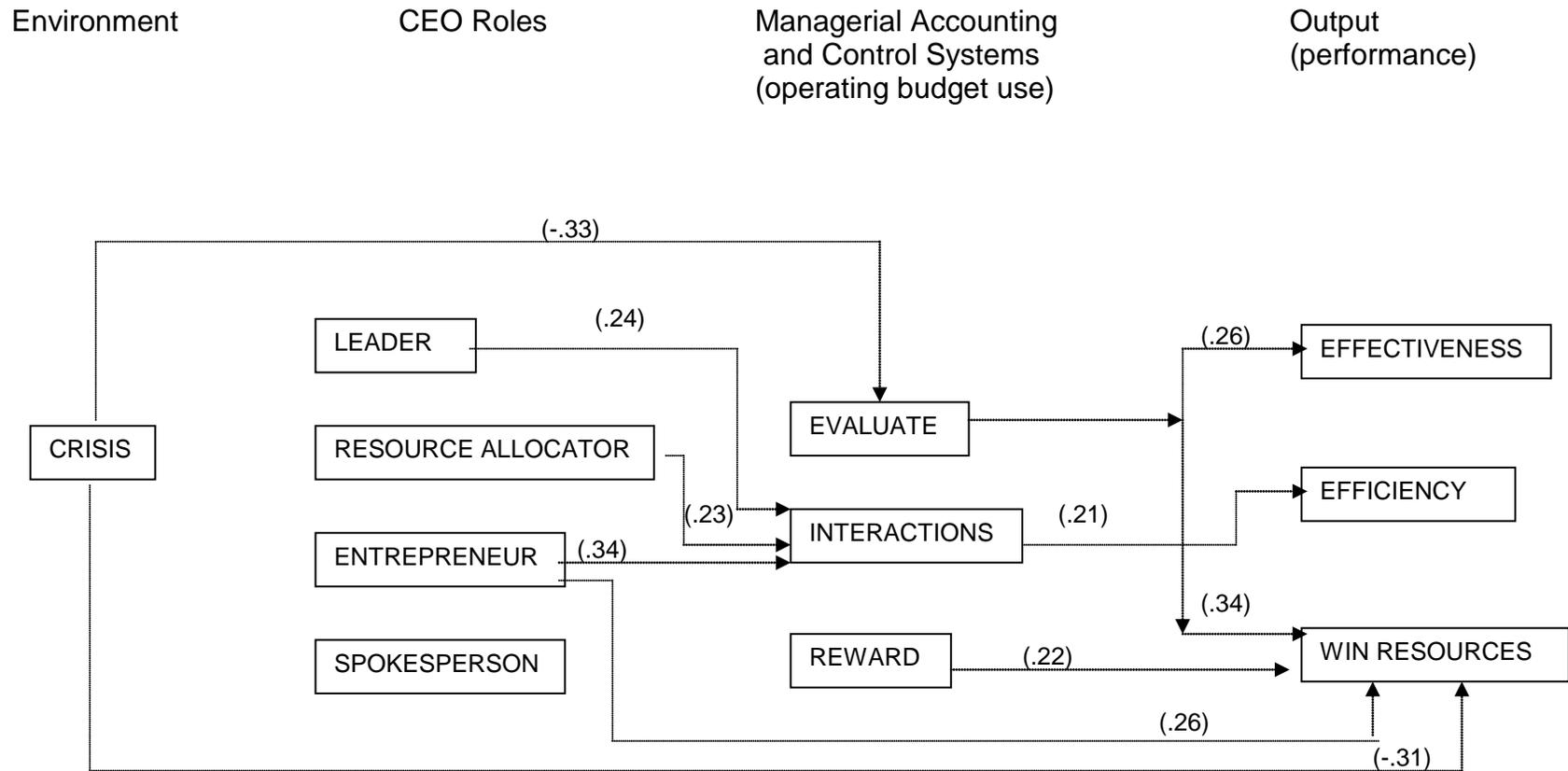
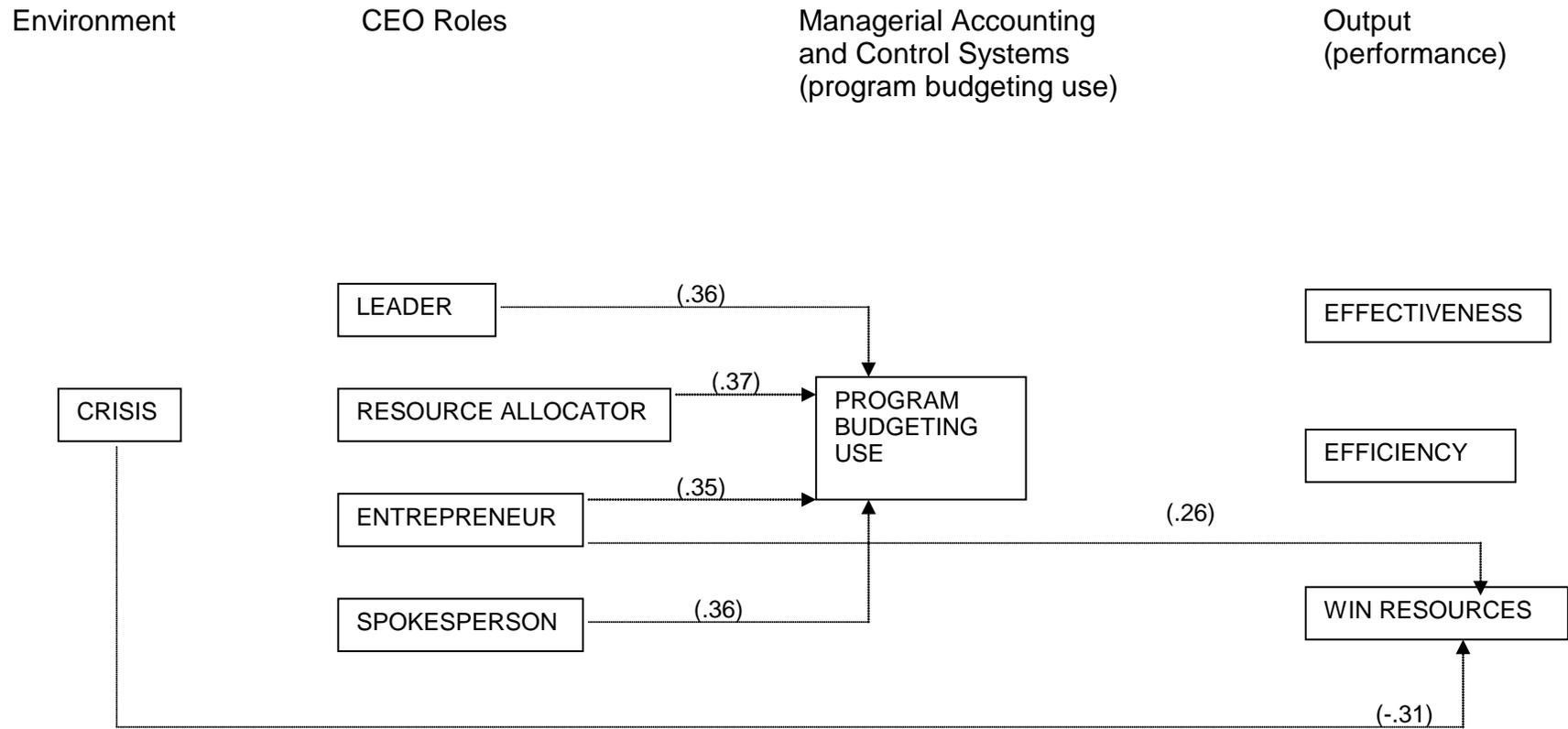


Figure 2. Operating budget relationships with performance variables¹



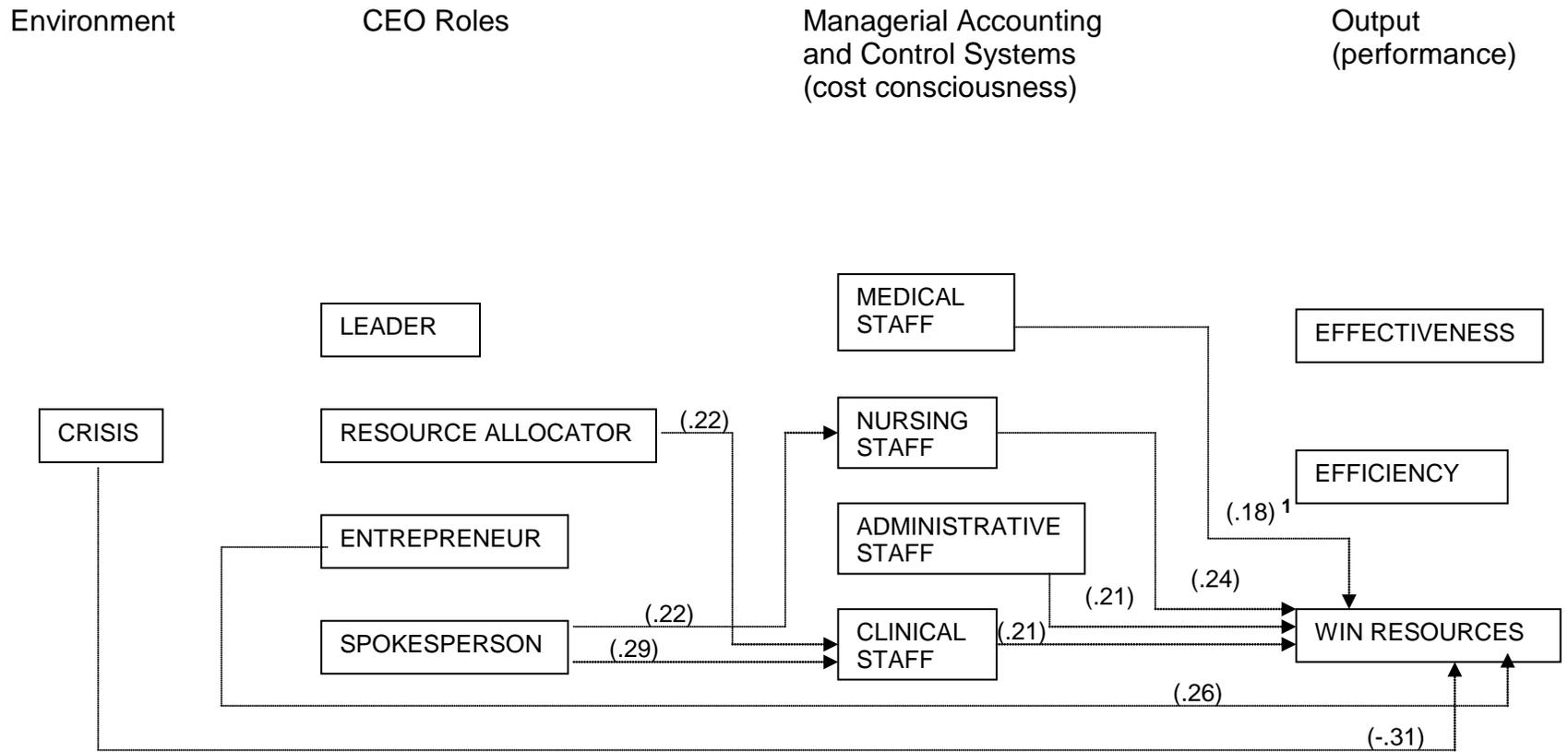
¹ Only significant relationships are shown.

Figure 3. Program budgeting relationship with performance variables¹



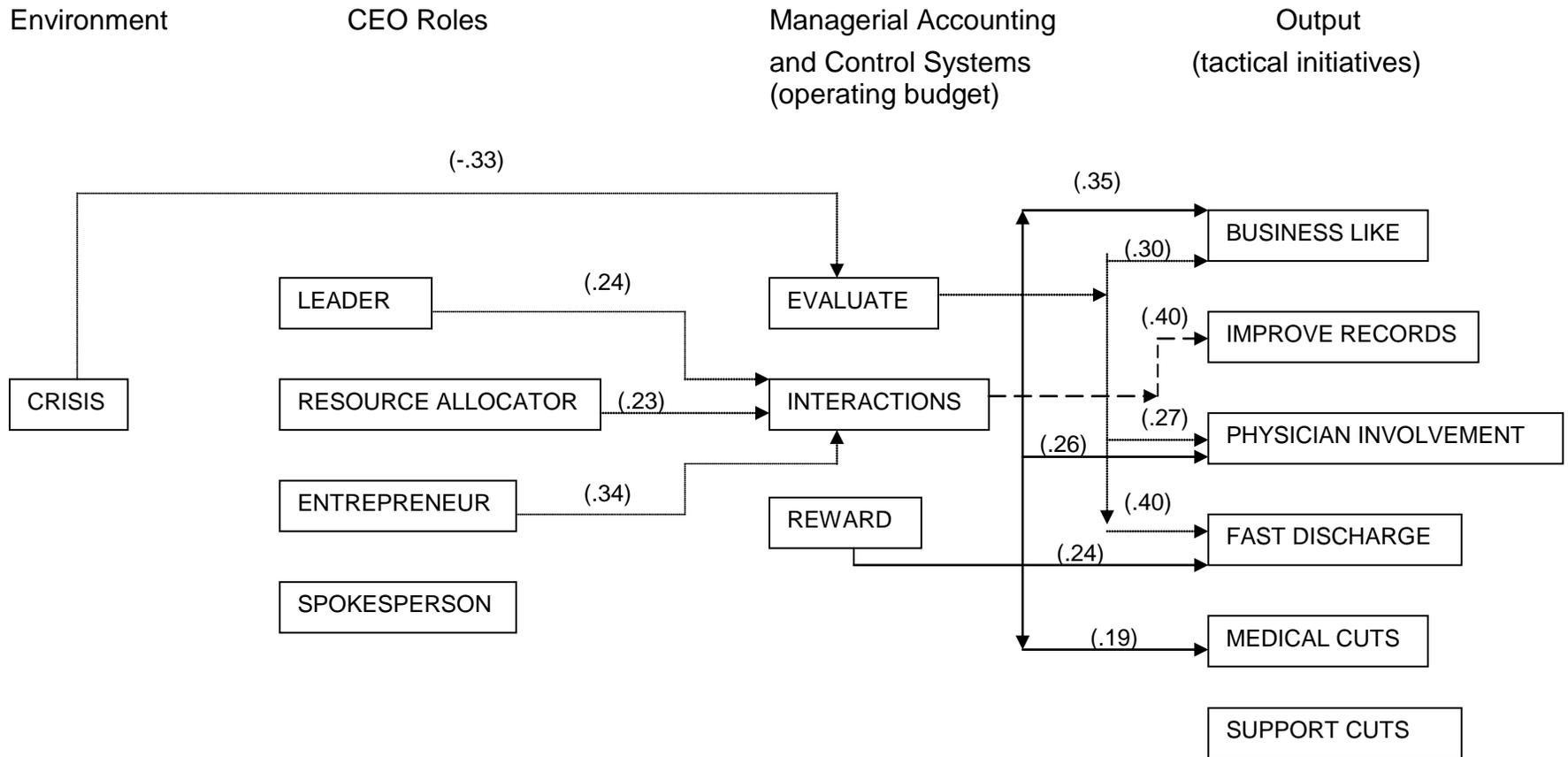
¹ Only significant relationships are shown.

Figure 4. Cost consciousness relationship with performance variables¹



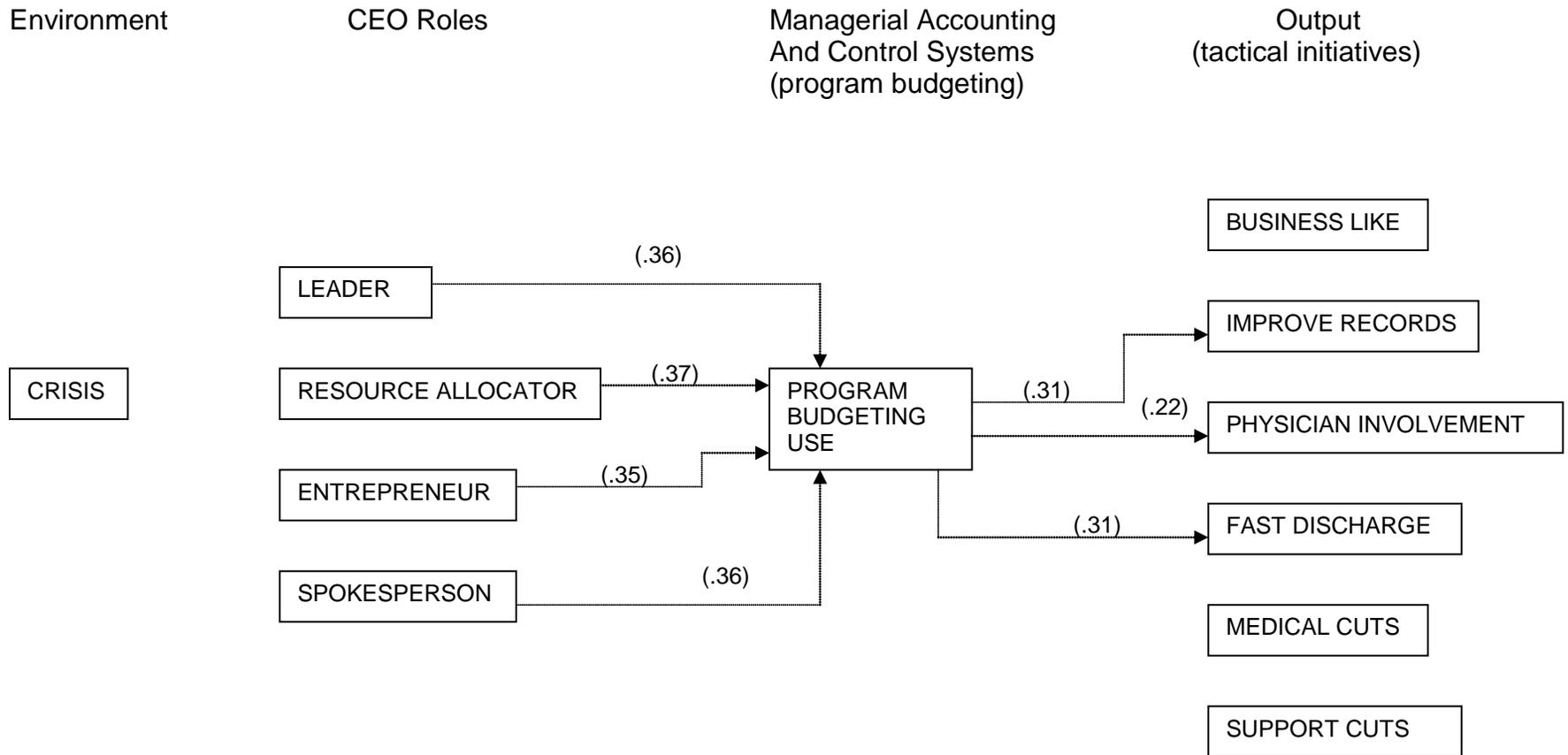
¹ This relationship was not statistically significant.

Figure 5. Operating budget relationships with the tactical initiatives¹



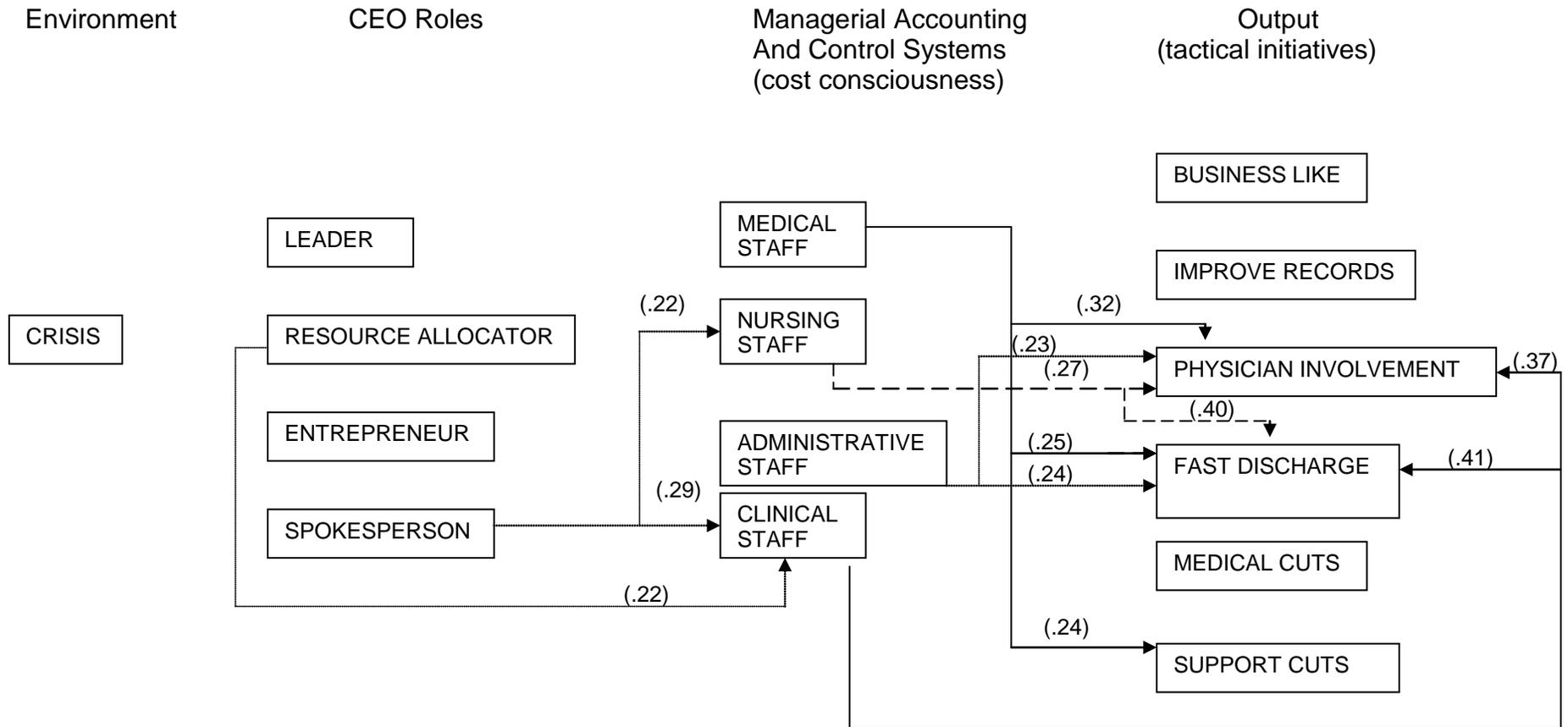
¹ Only significant relationships are shown.

Figure 6. Program budgeting use relationships with tactical initiatives¹



¹ Only significant relationships are shown.

Figure 7. Cost consciousness relationships with tactical initiatives¹



¹ Only significant relationships are shown.

Table 1. Correlation Matrix

	Mean	Std Dvn	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Crisis/Survival	1	3.10	1.60	1.00																					
Spokesperson	2	5.10	1.00	-0.17	1.00																				
Resource Allocator	3	5.40	0.90	-0.17	0.37***	1.00																			
Leader	4	5.30	0.90	-0.05	0.26***	0.27***	1.00																		
Entrepreneur	5	6.40	0.70	-0.06	0.35***	0.28***	-0.09	1.00																	
Evaluate	6	4.90	1.30	-0.33***	0.06	0.12	0.14	0.01	1.00																
Reward	7	2.50	1.60	-0.05	0.08	0.03	0.02	0.08	0.28***	1.00															
Interactions	8	4.80	1.60	0.10	0.15	0.23**	0.24**	0.34***	-0.05	0.03	1.00														
Program Budgeting	9	6.00	0.80	0.03	0.36***	0.37***	0.36***	0.35***	0.18	0.18	0.16	1.00													
Medical Staff	10	4.00	1.50	-0.10	0.02	0.11	0.00	0.11	0.38***	0.07	0.09	0.11	1.00												
Nursing Staff	11	6.40	1.00	-0.05	0.22**	0.14	0.05	0.00	0.36***	0.14	0.05	0.30***	0.33***	1.00											
Administrative Staff	12	6.20	0.90	-0.07	0.04	0.05	0.13	-0.01	0.30***	0.18	-0.10	0.19	0.29***	0.65***	1.00										
Clinical Staff	13	5.90	1.40	-0.15	0.29***	0.22**	0.05	0.14	0.47***	0.19*	0.08	0.25**	0.57***	0.67***	0.34***	1.00									
Effectiveness	14	5.90	1.10	-0.15	0.15	0.18	0.18	0.11	0.26**	0.04	0.08	0.12	0.07	0.07	0.10	0.14	1.00								
Efficiency	15	4.60	2.00	0.02	-0.03	0.00	0.06	0.09	-0.06	-0.15	0.21*	-0.11	0.16	-0.05	-0.07	0.03	0.33***	1.00							
Win Resources	16	4.90	1.30	-0.31**	0.05	0.15	-0.03	0.26**	0.34***	0.22*	0.10	0.07	0.18	0.24**	0.21*	0.21*	0.28**	-0.01	1.00						
Business-like	17	3.40	1.40	-0.09	0.10	-0.23	0.13	-0.03	0.30**	0.35***	-0.22*	0.10	0.12	0.12	0.16	0.08	0.00	-0.03	0.07	1.00					
Improve Records	18	5.50	1.50	0.07	0.13	0.30***	0.20	0.18	-0.15	-0.13	0.40***	0.31***	-0.05	0.12	0.07	0.08	0.07	0.00	0.12	-0.30**	1.00				
Physician Involvement	19	4.60	1.40	-0.09	0.20	0.03	0.11	0.24**	0.27**	0.26**	-0.03	0.22*	0.32***	0.27***	0.23**	0.37***	0.06	-0.02	0.09	0.11	0.10	1.00			
Fast Discharge	20	5.30	1.30	-0.10	0.16	0.08	0.02	0.14	0.40***	0.24**	0.00	0.31***	0.25**	0.40***	0.24**	0.41***	-0.02	-0.15	0.19	0.14	0.13	0.56***	1.00		
Support Cuts	21	5.30	1.60	0.12	-0.02	-0.07	-0.05	0.11	0.09	-0.11	-0.01	0.08	0.24**	-0.01	0.06	0.02	-0.03	-0.05	-0.10	0.20	0.19*	0.17	0.17	1.00	
Medical Cuts	22	2.90	1.60	0.14	-0.11	-0.12	0.02	-0.09	0.10	0.19*	0.02	-0.01	0.08	0.01	-0.04	0.13	-0.07	-0.06	0.01	0.41***	-0.02	0.02	0.17	0.21**	1.00

p<.01 = ***

p<.05 = **

p<.1 = *