

# Strategic Information Content And Performance: The Impact Of Management Accounting And Control System Changes

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## ABSTRACT

*Research has revealed that different strategy content requires different planning and control systems to supply the requisite information. Strategic typologies potentially allow managers to understand the mix of information systems needed to enhance firm performance. This paper investigates the relationship between changes to the firm's management accounting and control system and performance under different scenarios of strategic content using the Miles and Snow (1978) framework. Data from Singapore companies is used to assess this relationship. Results indicate a positive relationship for the three strategic types analyzed and, further, each type reveals a different configuration of components changes that comprise the management accounting and control system.*

## INTRODUCTION

The phenomenon of change in management accounting and control systems has attracted increasing attention among accounting researchers. Some of this effort has been directed to studying single systems, such as ABC, while other work has concentrated on studying multiple components that overarch what is commonly referred to as the firm's formal management accounting system. The latter has tended to search for determinants of management accounting systems changes (MACSs), comparative differences across national boundaries, or configurations of MACSs change under different contextual arrangements. Missing from this empirical literature is the study of MACSs change within the context of strategic content, such as the strategy types identified by Miles and Snow (1978). The present study is intended to investigate the relationship between MACSs change and organization performance within the context of strategy content. The next section briefly describes the background and hypotheses development followed by sections on methodology, results and discussion.

## BACKGROUND AND HYPOTHESES DEVELOPMENT

### Macss Change And Performance

Libby and Waterhouse (1996) examined organizational capacity for change, size, intensity of competition and decentralization as determinants impacting five sub-components of MACSs change. Only capacity for change was significant for the total sample, based on Canadian manufacturing firms. Williams and Seaman (2001) replicated their model for a sample of Singaporean firms from various industry sectors. Centralization was the major determinant of MACSs change for manufacturing and industrial firms but not for service organizations. Importantly, performance was not examined in either of these two studies.

Williams and Seaman (2002) explored the indirect effect of MACSs change on departmental performance for a cross sectional sample of 232 medium-sized Singaporean firms. MACSs change impacted managerial-relevant information (MRJ), which in turn enhanced performance. The results support the premise of normative definitions of management accounting whereby increases in MACSs change provide value added information for managerial decision making and control activity, which then facilitates the achievement of operating departments' objectives. However, the strategic level relationship of MACSs change and performance was not examined, leaving open the

question of whether MACSs change and performance constitute a significant relationship at the organizational level.

### **Strategy Content**

Miles and Snow (1978), in their dynamic, adaptive cycle model, portrayed the nature and interrelationships of key problems that organizations must solve in order to achieve an effective position within their chosen environment. Furthermore, they identified four strategic types of organization, with each one having its own unique strategy for responding to the environment, and each one having a particular configuration of technology, structure, and process that is consistent with its strategy. They categorized these organization types as Prospectors, Analyzers, Defenders, and Reactors.

Prospectors are organizations that are technologically innovative, continually searching for market opportunities. They regularly lead change in their industries by launching new products and experimenting with potential responses to emerging environmental trends in the search for new market opportunities. Thus, these organizations are expected to thrive in uncertain, volatile environments characterized by technological change (Walker et al. 2003). However, it is these very characteristics which usually cause these organizations to be inefficient.

Defenders tend to focus on securing and maintaining a narrow product-market niche. As a result of this narrow focus amidst relatively stable markets, these organizations seldom need to make major adjustments in their technology, structure, or methods of operation. These organizations develop expertise in their limited area of operation, tending not to search for new opportunities or markets. Instead, they devote primary attention to improving resource efficiency and processes, which results in improved manufacturing costs.

Analyzers are organizations that share characteristics relating to both prospectors and defenders. They operate in two types of product-market domains, one relatively stable and the other changing. In the stable areas, these organizations operate routinely and efficiently through the use of formalized structures and processes. In the more turbulent areas, they may move on a selective basis to rapidly adopt the most promising products or market developments. These organizations are more likely to follow a second-but-better approach to strategy (Desarbo et al., 2005).

Reactors are organizations that lack consistency in their strategic approach. Strategic responses to environmental pressures are usually inappropriate for them. As a result of shifting strategic responses in reaction to external pressures, they are most often at a disadvantage as compared to those firms operating from an established strategic position. Since reactors lack consistency by definition, they are excluded from the formal analyses in the present paper since *a priori* predictions cannot be made with respect to their behavior.

The conceptual classification of businesses based on their patterns of decisions inherently gives rise to strategic capabilities (Day, 1990). These complex skill bundles and knowledge accumulation provide enabling capabilities with which firms coordinate activities and use resources to create and sustain economic value and competitive advantage. Strategic capabilities include technological, manufacturing, logistics, research, and marketing expertise (Day, 1994). In support of strategic capabilities, management-related capabilities include planning, financial management and human resource management (Desarbo, 2005).

Of particular interest to this study are the strategic capabilities that provide market sensing, customer linkage and technology monitoring. These enable management to respond to customer and market demands (Day, 1994). In addition, information capabilities help management disperse information effectively to all functional areas of the organization.

Miles and Snow (1978) indicated that strategies incorporate three domains. An entrepreneurial domain establishes market orientation. The administrative domain explains how the organization attempts to coordinate and implement their chosen strategy. Finally, the technical domain refers to the technology and processes the firm enacts to get its products and services to market. The management accounting and control system, as a component of the

administrative domain, gathers, processes and disseminates information throughout the organization thus facilitating coordination, communication and functional integration as strategic implementation and revision progress.

The strategic management literature and accounting literature have both presented studies that successfully utilize the Miles and Snow strategy types vis-à-vis other contextual and structural variables. However, strategic content has not been examined with respect to systems change relating to accounting control systems. Findings, in general, appear to indicate that different strategy types are associated with different structural/performance relations. Moreover, the nature of the latter relationship appears to differ given a specific strategy type. Since each strategic type exhibits different capabilities that require different information sets, it is expected that management accounting systems would require different MACS to address the changing information needs of the organization. Therefore, three hypotheses stated in the null form are examined in the present study at the firm level:

**H1:** There is no significant relationship between MACSs change and performance for Defenders.

**H2:** There is no significant relationship between MACSs change and performance for Analyzers.

**H3:** There is no significant relationship between MACSs change and performance for Prospectors.

## **METHOD**

### **Sample**

The original sample consisted of 438 Singaporean firms that constituted part of a larger Asian study conducted from July 1995 to September 1997, before any adverse economic effects emerged from the onslaught of the Thai currency devaluation in July 1997. Firms were randomly sampled from a list of local companies published in *Kompass* (1995) that spanned the manufacturing, industrial, and service sectors. A number of cases were dropped due to missing data, inadequate responses to survey questions or inability to make *a priori* predictions, thus reducing the sample size to 347 firms. The key individuals targeted in the survey were controllers or assistant controllers because they are: (1) recognized as the official experts on the extent and functioning of existing accounting information systems in the organization; (2) empowered to advise top management of needed changes including the administration of implementing new management accounting systems; (3) most likely to be knowledgeable on the various uncertainties confronting the operating departments throughout the organization, particularly in the more centralized organization structures featured in the Singaporean culture and (4) positioned at a level of authority commensurate with variables modeled in this study.

### **Measures**

Firms were categorized into strategic types after evaluating their strategy structure relationships. Out of 410 firms, 82 firms identified themselves as Defenders, 86 as Prospectors, 197 as Analyzers, and 45 as reactors. The independent variable, MACSs change was measured as the sum of the reported number of managerial accounting system changes during the period January 1995 to the end of June 1997. Respondents were asked to identify changes from a list of 23 different accounting systems, which is identical to the list developed by Libby and Waterhouse (1996) and the one used by Williams and Seaman (2001, 2002) that were partitioned into five categories covering: planning, controlling, costing, directing, and decision making (see Appendix A). The time period was chosen to minimize two confounding factors. On the one hand, the cut off date in 1997 lowered the risk of mixing an economic growth cycle with the potential dampening effects arising from the emergence of the Asian financial crisis. On the other hand, an earlier commencement date would have decreased the quality of respondents recall capabilities on the variables under study.

A seven item scale developed by Van de Ven and Ferry (1980) measured the dependent variable, that is, firm performance. This scale is a part of the Van de Ven and Ferry's Organizational Assessment Instrument that was developed, revised, and improved in four successive versions through seven years of extensive research. As in previous research, the seven items were one-dimensional, with a Cronbach alpha of .76. The seven items were summed and divided by seven to create the overall performance variable.

**Analysis of Data**

Data was analyzed for each strategic type utilizing ordinary least-squares regression. For each of the three strategy types, a regression of the type shown in equation (1) was run:  $PERF = b_0 + b_1PLANCHG + b_2CONCHG + b_3COSTCHG + b_4DIRCHG + b_5DCHG + e$  (1)

**RESULTS**

**Descriptive Statistics**

The means, standard deviations, actual and theoretical ranges for each variable are presented in Table 1. The actual ranges match the theoretical ranges satisfactorily for each variable. Excluding the MACS changes variables, the mean of the performance variable was approximately at the middle of its respective range. Table 2 contains a Pearson correlation matrix for the measured variables. There is a positive correlation between many of the MACS changes independent variables as expected. The variance inflation factor (VIF) for each of the independent variables was assessed for each regression. The VIF's were well within acceptable limits.

**Regression Results**

Results of the three regressions are shown in Table 3. Defenders ( $F = 2.287; p < 0.05$ ), Analyzers ( $F = 2.769; p < 0.05$ ), and Prospectors ( $F = 3.054; p < 0.05$ ) indicate significant relationships. Therefore, hypotheses H1, H2, and H3, respectively, must be rejected in their null form. These findings support the notion that there is a relationship between performance and strategy under each strategy condition. In addition, standard errors associated with the regression equation results suggest that multicollinearity is not a problem. This conclusion is also supported by the variance inflation factors VIF values as well as values in the correlation matrix.

**TABLE 1**  
Descriptive Statistics (n = 347)

Variable	Mean	S.D.	Actual Range	Theoretical Range
PERF	3.577	0.442	2.29 – 4.71	1-5
PLANCHG	1.320	1.602	0-5	0-5
CONCHG	1.369	1.678	0-5	0-5
COSTCHG	0.793	1.391	0-5	0-5
DIRCHG	0.968	1.176	0-3	0-3
DCHG	1.389	1.700	0-5	0-5

Variable Definitions: Perf = Departmental Effectiveness; Planchg = Planning Systems Changes; Conchg = Controlling Systems Changes; Costchg = Costing Systems Changes; Dirchg = Directing Systems Changes; Dchg = Directing Systems Changes.

**TABLE 2**  
Pearson Correlation Matrix (n = 347)

Variable	1	2	3	4	5	6
PERF						
PLANCHG	-0.035					
CONCHG	-0.039	0.504**				
COSTCHG	-0.164**	0.411**	0.406**			
DIRCHG	0.057	0.357**	0.558**	0.298**		
DCHG	0.065	0.434**	0.447**	0.275**	0.422**	

Variable definitions: PERF = departmental effectiveness; PLANCHG = planning systems changes; CONCHG = controlling systems changes; COSTCHG = costing systems changes; DIRCHG = directing systems changes; DCHG = directing systems changes. \*  $p < 0.05$ . \*\*  $p < 0.01$ .

TABLE 3  
Standardized Regression Results for Strategy Types

Variable	Defenders	Analyzers	Prospectors
PLANCHG	-0.065 (-0.517)	-0.119 (-1.227)	0.259 (1.982)**
CONCHG	0.076 (0.503)	-0.123 (-1.221)	0.221 (1.573)
COSTCHG	-0.367 (-2.897)***	-0.154 (-1.981)**	-0.478 (-3.450)***
DIRCHG	0.352 (2.048)**	0.175 (2.052)**	-0.206 (-1.590)
DCHG	-0.112 (-0.716)	0.077 (0.868)	0.230 (2.011)**
N	68	196	83
R <sup>2</sup>	0.156	0.068	0.166
Adj. R <sup>2</sup>	0.088	0.043	0.111
F	2.287**	2.769**	3.054**

Variable definitions: PERF = departmental effectiveness; PLANCHG = planning systems changes; CONCHG = controlling systems changes; COSTCHG = costing systems changes; DIRCHG = directing systems changes; DCHG = directing systems changes. \*p < 0.10. \*\*p < 0.05. \*\*\*p < 0.01.

**Discussion**

The significant relationship between MACSs and performance for defenders indicates that costing and directing changes are the important change variables for this strategic type. This finding is not surprising given that these types of firms would be expected to shore up their defensive control systems to maintain performance within their market niche. As suggested by Hambrick (1983), these types must offer higher quality products and services at lower prices. Consequently, resource efficiency along with cost cutting and improvements in their processes are critical to their success. The de-emphasis of costing system changes for higher performing organizations could be indicative of these firms being firmly entrenched in their niche environment. They are probably cost leaders and have competitive pricing issues well in control. The emphasis on directing systems changes would allow bonus and performance incentives to be designed to reward appropriate process or system changes. As their niche becomes more competitive, MACSs changes should keep their systems current and effective. This result would seem consistent with the nature of defenders in that MACS changes for planning wouldn't be as necessary due to defender entrenchment in their markets and the focus on main product and service competitiveness.

Results also show a significant relationship between MACSs change and performance for prospector firms. In particular, the planning, costing, and decision changes coefficients are all significant. Performance is enhanced by increasing changes to the planning systems component and the decisions systems component. Prospector firms must gather the information required to enhance communication and integration. Changing planning systems in order to meet the requirements of planning for new products and services would seem consistent with this search characteristic. To accommodate the complexity of the coordination and communication mechanism, information reporting frequency of both financial and non-financial information is necessary. The fact that higher performing firms change decision systems to meet the information demands is consistent with this requirement. However, the MACSs change/performance relationship is strengthened by reducing the importance of costing systems changes. This seems consistent with the behavior of prospectors searching for new products and markets and not necessarily costing efficiencies. Managers in Prospector firms are continuously trying to locate and exploit new product and market opportunities. Gathering and analyzing all relevant information is vital to their interests since managers in these firms need to determine and accurately plan markets/products they want to enter or develop. The positive effects of changes to planning and decision systems components support this informational role. The finding that planning is such a core activity means that less emphasis is devoted to costing systems changes and the negative coefficient confirms this effect.

Analyzer results show that changes made to costing and directing systems components are statistically significant. As discussed earlier, analyzer type firms are a hybrid and have characteristics that are a mix of defender and prospector type strategies. Managers in analyzer type firms try to locate and exploit new product and market opportunities while simultaneously maintaining a solid base of products and services in their existing markets. Therefore, managers in these firms have incentives to develop and imitate the most profitable ideas of Prospector type firms to enhance their array of core traditional products. Thus, finding a positive coefficient for directing systems is perfectly compatible with this behavior. Firm performance is enhanced, for example, by instituting more lucrative rewards for managers, which, in turn, induces these managers to develop the most profitable ideas. However, a negative coefficient for the costing systems component suggests that a de-emphasis on these changes is associated with higher performance. This finding confirms the mixed characteristics of Defender and Prospector type strategies for this component.

Mintzberg (1987) explains how planning can be unsystematic, with strategies that are emergent impacting the planning process. Management control systems are used for strategy implementation as well as strategy formation (Simons, 1990). The findings in this study are consistent with these ideas. Planning systems are changed to meet the information requirements of the constantly searching prospectors. Decision processes are supported with MACS changes supplying financial and other information as required. The MACS changes for niche strategies focus on incentives to ensure motivation that drives performance. MACS changes for the organizations sampled in this study seem to support the development of internal consistencies within the strategy types, that is prospectors will continue to behave as prospectors and defenders will behave as defenders (Hambrick, 1983). These types of behaviors clearly lead to higher performance and they appear to be supported by the required management accounting system changes.

## CONCLUSION

Overall, controlling for strategic content produces positive results in three of the four categories delineated in the Miles and Snow (1978) framework. This means that firms following different strategies package changes in MACSs differently. These findings suggest that strategy content may function in a more complex manner and, thus, future studies could consider the moderating effects of strategy content on the MACSs/performance relationship. Moreover, the five component sub-systems of MACSs change provide rather thick descriptions of the control systems related to firm performance. Differentiating the effects of say, the formal budgeting system versus capital budgeting, could refine the findings discovered in the present study. This would have significant practical benefits for firms considering various types of budgeting emphasis or change. At the same time, a much larger sample would be called for but researchers could then establish insights into the dynamics of these individual systems across strategy content. Finally, better measures of the MACSs change variable are desirable and future studies could address this shortcoming in dealing with the incremental effects on performance.

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## APPENDIX A

### Management Accounting and Control System Changes

#### MACS

##### *Planning Systems*

1. Budgeting
2. Operations planning (production)
3. Capital Budgeting
4. Strategic Planning
5. Other Planning Systems

##### *Controlling Systems*

6. Individual or team-based performance measurement
7. Organizational performance measurement
8. Measurement of performance in terms of quality
9. Measurement of performance in terms of customer satisfaction
10. Other performance measures

##### *Costing Systems*

11. Direct allocation of manufacturing overhead
12. Direct allocation of marketing cost
13. Direct allocation of other overhead
14. Internal (dept. or divisional) product transfers
15. Other costing measures

##### *Directing Systems*

16. Reward systems: bonuses
17. Reward systems: pay-for-performance plans
18. Other reward systems

##### *Decision-making Systems*

19. Information reported more frequently
20. Use of more non-financial measures
21. Information reported more broadly
22. Other changes to reporting system
23. Other changes to systems that do not appear on this list

**NOTES**