

The Impacts of Competitive Strategy on the Demand for Management Accounting System Information Characteristics: The Intervening Effects of Decentralization and Environmental Uncertainty

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Abstract:

This study explored the direct relationship between competitive strategy and management accounting system (MAS) design. We collected data from 145 responses in a survey of 500 middle managers of publicly owned companies, and used the structural equation model (LISREL 8.0 for Windows) to test our hypotheses. The empirical evidence revealed the following:

1. Differentiation strategy and broad-scope accounting information have positive direct and indirect relationships through perceived environmental uncertainty (PEU) and decentralization.
2. Firms adopting a differentiation strategy have indirect demand on aggregated information through the perceived increase in environmental uncertainty and delegation levels.

However, the direct effect of differentiation strategy on aggregated management accounting information dose not exist.

Keywords: information characteristics, competitive strategy, decentralization, environmental uncertainty, structural equation model.

I. Introduction

Management accounting systems (MAS) have been identified as having decision-facilitating and decision-influencing functions (Gordon & Narayanan, 1984; Garrison & Noreen, 1998). In previous management accounting literature, several accounting studies have found a strong relationships between organizational strategy, structure, and control systems (Galbraith & Nathanson, 1979; Govindarajan & Gupta, 1985). Some factors will influence the management accounting system design.¹ These contextual factors include perceived environmental uncertainty (Gordon & Narayanan, 1984; Chenhall & Morris, 1986), organizational structure (Gul & Chia, 1994; Choe, 1998), personnel differences (Fisher, 1996), and functional differentiation (Mia & Chenhall, 1994). However, there has been little empirical research investigating the interaction of management accounting systems, organizational structure, and environment under different competitive strategies, with regards to enhancing organizational performance. In addition, Chenhall and Langfield-Smith (1998) suggest that clear strategic priorities may not be sufficient to achieve competitive advantage and ensure high performance. Competitive strategies should be supported by appropriate manufacturing management and information systems including management accounting information. The purpose of this research is to investigate the structural relationships between business strategy, organizational structure, and managerial accounting system designs. We propose that the management accounting information system should be designed according to the competitive strategy, environmental needs, and organizational structure of the firm in question.

II. Theoretical Development and Hypotheses

Porter (1985) distinguishes three generic strategies for creating competitive

¹ The MAS design is identified in terms of the MAS's information characteristics, such as scope, levels of the aggregation, timeliness, and integration (Gordon & Narayanan, 1984; Chenhall & Morris, 1986).

advantages: (1) differentiation of products from competitors' offerings through superior product quality, customer service, or image; (2) overall cost leadership; and (3) a focus on a particular buyer group and geographic product-market segment. Differentiation and cost leadership strategies are mutually incompatible, which means that viable firms may pursue one or the other, but not both, as their central strategy. However, clear strategic priorities may not be sufficient to achieve a competitive advantage and ensure high organizational performance. Strategic priorities should be supported by an effectively implemented manufacturing process and appropriate information system, including adequate accounting information (Johnson & Kaplan, 1987; Shank & Govindarajan, 1993). Organizational structure and cognition of environmental factors will influence the available resources and implementation strategy activities (Chenhall & Smith, 1998; Ward, Bickford, & Leong, 1996).

In this study, two information dimensions, scope and aggregation, were used to differentiate the characteristics of management accounting system. The scope is divided into broad and narrow. A system with the broad coverage includes external, non-financial and future-oriented information. A system with the narrow coverage includes information concerned with events within the organization, such as financial and historical information. The dimension of information aggregation is concerned about the difference in information collection and presentation levels within periods of time or areas of interest.² These two dimensions were developed by Chenhall and Morris (1986) and identified by accounting researchers (Mia, 1993; Gul & Chia, 1994; Mia & Chenhall, 1994; Chong, 1996; Choe, 1998) as MAS information characteristics.

2.1 Competitive Strategy and MAS Information Characteristics

Khandwalla (1972) and Porter (1985) suggested that those firms engaged in continual product development and searches for new market segments would become more differentiated and require elaborate control systems and planning abilities. To implement a differentiation strategy successfully, a manager might need broad-scope management accounting information, including external, non-financial, and future-orientated information, which would facilitate decision-making and initiate tactics. This broad-scope information would help the organization balance

² Aggregated information is a composite of temporal and functional summation (e. g., sales areas, cost centers, and R&D departments) and information produced specifically for formal decision models (such as discounting cash flow, linear programming, simulation, and profit-cost analysis).

tiate tactics. This broad-scope information would help the organization balance its focus on various differentiation strategy aspects. Those researchers that support differentiation strategy performance measuring techniques, such as balanced performance measures (Kaplan & Norton, 1992), employee-based measures (Preffer, 1994), and benchmarking (Mcnair & Leibfried, 1992; Elnathan, Lin, & Young, 1996), consistently emphasize the usefulness of broad-scope MAS information. Conversely, high-performing firms emphasizing low prices will focus primarily on ensuring a highly cost-efficient production process (Porter, 1985; Cooper, 1995). These firms perceive a more stable and invariable environment and prefer a centralized structure. To achieve cost efficiency, companies may focus on improving existing processes. These companies need historical and financial information to evaluate value-added activities (Chenhall & Smith, 1998). Adding more non-economical, non-financial information, greater forecast applications, and decision models may produce information overload.

To implement a differentiation strategy successfully, a manager might also need statistically processed information to detect and correct process variations that may influence product quality (Chenhall & Smith, 1998). The aggregated information includes analytical models and categorized information across various functional areas or periods that can aid managers who pursue innovation and differentiation in analyzing the possible outcome of promotional tactics or plans.

From the above discussion, we postulated the following hypotheses:

- H1: There is an indirect relationship between differentiation strategy and organization performance based on the extent that broad-scope MAS information is used.
- H2: There is an indirect relationship between differentiating strategy and organization performance based on the extent that aggregated MAS information is used.

2.2 Competitive Strategy, Environmental Uncertainty, and MAS Information Characteristics

Differentiation and innovation often involve new technologies, unforeseen customers, competitor reactions, and the influence of many unstructured marketing problems (Hofer & Schendel, 1978; Miller & Friesen, 1984). Differentiators have been shown to face unpredictable, dynamic environments (Miller, 1988). In addi-

tion, they must confront environmental complexity because of the various customer types and markets served by broad differentiators. If firms employ differentiation strategies to acquire a competitive competence, the managers might perceive high environmental uncertainty (PEU). A differentiation strategy drives managers to respond to a more uncertain environment.

Previous accounting researchers have confirmed the positive influence of broad-scope and aggregated MAS information on performance under conditions of high environmental uncertainty (Gordon & Narayanan, 1984; Chenhall & Morris, 1986; Gul, 1991; Mia & Chenhall, 1994; Chong & Chong, 1997). They concluded that as the managers' PEU increased, broad-scope MAS was needed to improve the accuracy of their decisions. Broad-scope information might serve managers through various methods in a complex and dynamic environment. The broad-scope information including future-oriented, external, non-financial MAS information would aid planning and control of uncertain situations by focusing information on the sources of uncertainty. This kind of information may alleviate the difficulties and ambiguity caused by PEU (Choe, 1998). Conversely, traditional, financial, and historical information is ineffective for evaluating activities that are particularly susceptible to environmental uncertainty. Furthermore, management requires internal, financial, and historical information when the environment is predictable and stable (Gordon & Narayanan, 1984; Chenhall & Morris, 1986; Mia, 1993; Gul & Chia, 1994; Chong & Chong, 1997).

A manager encountering uncertainty would benefit from aggregated MAS information that includes temporal and functional summation and information produced specifically for decision models. When managerial PEU is high, the formal models (discounted cash flow analysis, cost volume-profit analysis, and inventory analysis) and statistical techniques (linear programming, simulation, and sensitivity analysis) have consequences when analyzing, planning, and controlling uncertainty (Chenhall & Morris, 1986; Govindarajan, 1988; Chenhall & Smith, 1998). We propose that high PEU drives managers to use broad-scope and aggregated MAS information for control and to alleviate the damage of uncertainty on performance.

H3: There is an indirect relationship between a differentiation strategy and broad-scope MAS information through environmental uncertainty.

H4: There is an indirect relationship between a differentiation strategy and aggregated MAS information through environmental uncertainty.

2.3 Competitive strategy, decentralization, and MAS information characteristics

Porter (1985) illustrated that business strategies have an influence on firms' structures. The literature concerning innovation indicates that one method of managing the uncertainties of innovation is through organizational structure (Nielsen, Peters, & Hisrich, 1985; Russell & Russell, 1992). A decentralized structure supports the differentiator's need to remain close to a variety of customers and be aware of competitors' actions in different market segments (Miller, 1988; Ward, Bickford, & Leong, 1996). A relatively high degree of specialization and differentiation is needed to maintain product development and respond quickly to market change (Mintzberf, 1979; Miller, 1988; Ward, Bickford, & Leong, 1996). Additionally, with a decentralized structure, local managers have more autonomy and more control over resources (Russell & Russell, 1992), enabling managers to initiate and test a greater number of creative new ideas that can eventually result in inimitable competence. Therefore, firms that focus on a differentiation strategy would need more decentralized structures.

Broad-scope information provides future-oriented, non-financial information to serve the many decisions faced by decentralized managers (Chenhall & Morris, 1986; Gul & Chia, 1994; Choe, 1998). Broad-scope and aggregated information has attention directing and problem-solving information that might assist decentralized managers in areas such as pricing, marketing, inventory control, and localized environmental information. Decentralized managers are likely to prefer to be evaluated on performance measures aggregated in their areas of responsibility (Chenhall & Morris, 1986; Gul & Chia, 1994). That is, the firms employing a differentiation strategy would need a decentralized structure and broad-scope and aggregated MAS information to benefit managers in managing various delegated work. From the above discussion, we propose the following hypotheses:

H5: There is an indirect relationship between competitive strategy and broad-scope MAS information through decentralization.

H6: There is an indirect relationship between competitive strategy and aggregated MAS information through decentralization.

III. Sampling Data and Variable Measurements

3.1 Data accumulation and sampling

This study used a questionnaire to collect empirical data (see Appendix A). The measurement instruments for the variables in the questionnaire were developed from existing studies. The variables were related to the perceptions of individual respondents and measured using a Likert-type seven-point scale. The subsequent subsections discuss the method for accumulating data and the various instruments.

The questionnaire was administered to a sample of 500 sub-unit managers (middle managers who have accountability for production) from Taiwanese manufacturing companies.³ These companies were randomly selected from a list of publicly owned companies in Taiwan. Each manager was sent a questionnaire with a cover letter and a self-addressed prepaid envelope. In recognition of the sensitive nature of some of the information requested, the cover letter provided a statement ensuring the respondents' anonymity. Responses were received from 152 managers, yielding a response rate of 30%. Seven were excluded from the study because of incomplete responses. The study could therefore employ 145 usable responses. On average, the respondents had worked for their present employer for 8.5 years, and had been in their current position for 4.56 years. Based on this information, we believe that our respondents are familiar with their firms' objectives and their work and responsibilities.

We used Cronbach's coefficient to present the reliability of each construct. Principal component analysis was used to test the construct validity of each construct. Furthermore, after principal component analysis, we could confirm that the measured variables belonging to each latent variable were unidimensional (Hair, Anderson, Tatham, & Black, 1997).

3.2 Variable Measurement

3.2.1 Competitive Strategy

Competitive strategy was used as a continual variable in this study. An instrument based on the conceptual discussion of low-cost leadership and differenti-

³ See Appendix B.

ating strategies by Porter (1985) was used. The unit managers were asked to indicate the percentage of product unit current sales dollars accounted for by products represented by each of the two strategies. The competitive strategy measurement was derived as follows: A value of +1 was attached to the differentiation strategy and -1 to the cost leadership strategy. The percentage provided by the managers was used to derive a weighted average index for the competitive strategy. If the competitive strategy value exceeded zero, the firm focused on a differentiation strategy.

We also asked the managers to indicate the strategy mission. If an organization emphasized a differentiation strategy, they had the will to pursue sales growth and market share increases even at the risk of losing short-term profit. Cost leadership firms emphasized profitability and cash flow. In our sample, the related coefficient between the competitive strategy index and sales growth and market increases was significantly positive ($r = 0.76$), and negative with cash flow and current profitability ($r = -0.68$). This finding proved that the scale had acceptable validity.

3.2.2 MAS Information Characteristics

The instrument for measuring the MAS information characteristics, broad-scope and aggregated information, were adapted from the instrument developed by Chenhall and Morris (1986). They used this instrument to measure the perceived usefulness of MAS information as the design of MAS. Gul and Chia (1994) used the instrument for measuring respondent perceptions regarding the availability of MAS information. We used this instrument to measure the importance of MAS information characteristics on performance and used the Likert-seven-point scale from 1 = "not important at all" to 7 = "very important." Broad-scope and aggregated MAS include five and six questions, respectively. The principal factors were analyzed using two dimensions with respect to one factor with an eigen value greater than 1. These questions had 89% and 83% accumulated explained variance, and acceptable Cronbach's alpha coefficients (0.81, 0.78), respectively.

3.2.3 Environmental Uncertainty

We considered environmental uncertainty to be the subjective interpretation of

the critical decision-maker, which is consistent with Downey, Hellriegel, and Slocum (1975); and Gordon and Narayanan (1984). The structuring actions that firms take to respond to the environment are more consistent with the perceived environment rather than the objective indicators of the environment. A Likert-seven-point scale measured perceived environmental uncertainty (PEU). It included seven questions designed to tap the managers' perceptions about the predictability and stability of various aspects of their organizations' industrial, economical, technological, competitive, and customer environment. This instrument has been popularly used in behavior accounting research (Gordon & Narayanan, 1984; Chenhall & Morris, 1986; Mia, 1993; Gul & Chia, 1994; Chong & Chong, 1997; Choe, 1998). We excluded two questions (6 and 7), because of the small factor load (0.32 and 0.24, respectively). The explained variance and reliability of the scale were 0.87 and 0.79, respectively.

3.2.4 Decentralization

Decentralization was measured using a series of standard decisions and identified whether managers had decision autonomy. The decision-making classes were the development of new products or services, hiring or firing of personnel, investment selections, budget allocations, and pricing decisions. This instrument has been popularly used in behavior accounting research as a dimension of organizational structures (Gordon & Narayanan, 1984; Govindarajan, 1986; Gul & Chia, 1994; Choe, 1998). A factor analysis of this scale revealed only one factor with an eigen value greater than 1, which explains 82% of the total variance. The reliability coefficient computed for this scale is 0.81.

3.2.5 Performance

Employing an instrument developed by Govindarajan and Gupta (1985), organizational performance was measured using a self-rated scale. The managers were required to rate each of the 10 dimensions of performance as compared with their critical competitor from 1 "not satisfactory at all" to "outstanding." The 10 dimensions included sales growth rate, market share, new product development, market development, personnel development, operation profits, profit-to-sales ratio, cash flow from operations, return on investment, and cost savings. We also asked managers for an overall rating scale. The relationships in our sample between the

10 dimensions and overall performance rating were significantly positive. This evidence confirmed the validity of this instrument. After the factor analysis, these dimensions separately belonged to two factors, long-run performance (sales growth rate, market share, new product development, market development, personnel development) and short-run performance (operation profits, profit-to-sales ratio, cash flow from operations, return on investment, cost saving). We used these two factors as the measure of performance. The Cronbach's alpha coefficient was 0.72.

3.3 Model development

We used a structural equation model to test our hypotheses. Figure 1 depicts the structural model tested. The index "i" represents the MAS information characteristics. For $i = 1$ ($i = 2$) representing model 1 (model 2) the structural relationship between strategy, PEU, decentralization, and broad-scope (aggregated) MAS information and performance was tested. Based on hypotheses 1 and 2, we tested the indirect path between competitive strategy and performance through MAS information. Based on hypotheses 3 and 4, we tested the indirect path between competitive strategy and MAS information through PEU. Finally, based on hypotheses 5 and 6, we tested the indirect relationship between competitive strategy and MAS information through decentralization.

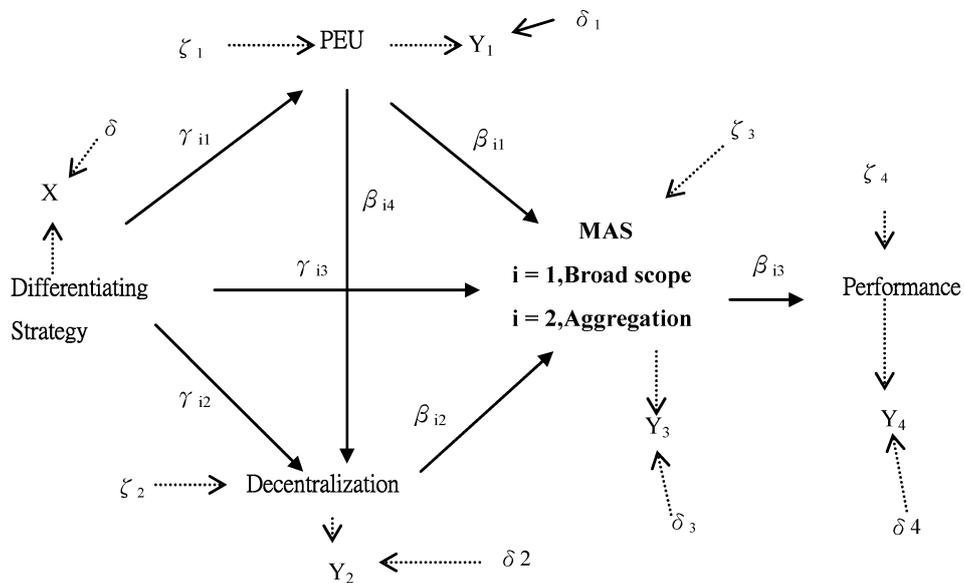


Figure 1. Structural mode

IV. Analysis and Results

Table 1 presents descriptive statistics for all of the observed variables. Some positive relationships existed between a differentiation strategy, decentralization, PEU, and MAS information characteristics that were tentatively consistent with our expectations.

Table 1 Descriptive Statistics for All Observed Variables

Variable	Diff.	PEU	Decentr.	Perform.	Broad-scope	Aggreg.	Range	α Coeff.
Diff.	0.21 (0.29)						-1 – 1	
PEU	0.53 (3.12)	21.3					8 – 35	0.79
Decentr.	0.42	0.35	20.7 (2.03)				7 – 35	0.81
Perform.	0.13	0.09	0.11	11.5 (1.83)			9.5 – 14	0.72
Broad-scope	0.29	0.45	0.32	0.22	19.1 (2.39)		9 – 35	0.81
Aggreg.	0.25	0.32	0.28	0.1	0.35	25.2 (2.65)	10 – 41	0.78

Note. The diagonal displays means and standard deviations. The correlation is under the diagonal. Diff. = differentiating; PEU = perceived environmental uncertainty; Decentr. = decentralization; Perform. = performance; Aggreg. = aggregation; α Coeff. = α coefficient.

4.1 Absolute fit measures

From the LISREL model 1 and model 2 results, the χ^2 value shows acceptable fit ($\chi^2 = 187$ and 199 , $P > 0.05$, respectively). Low χ^2 values, which result in a significance level greater than 0.05 , indicate that the actual and predicted input matrices are not significantly different. This is indicative of acceptable fit. However, the χ^2 test becomes more sensitive as the number of indicators rises. With this in mind, other measures were examined. The goodness of fit (GFI) values of 0.93 and 0.91 for model 1 and model 2, respectively, were at the acceptable level (greater than the recommended level of 0.9) (Hair, Anderson, Tatham, & Black, 1997). The root mean squared residual (RMSR) indicates that the average residual correlations

were 0.042 and 0.064 for model 1 and model 2, respectively, which is less than or close to the recommended level of 0.05, and deemed acceptable. Normed fit index (NFI) assessment of the incremental fit of the model compared to a null model is presented. In this case, the null model was hypothesized as construct independent with no measurement error. The NFI for both models exceeded level 0.9. Furthermore, the adjusted goodness of fit (AGFI) assessment of the numbers of estimated coefficients needed to achieve the level of fit were close to the acceptable level (> 0.9). In other words, the above structural equation models, constructed to test our hypotheses, have adequate measures of fit. Thus, the cause-effect relationships in these models are statistically acceptable.

Table 2 Results of LISREL Analysis

	χ^2	RMSR	NFI	GFI	AGFI
Model 1 ^a	187	0.042	0.92	0.93	0.90
Model 2 ^a	199	0.064	0.89	0.91	0.89

Note. RMSR = root mean squared residual; NFI = normed fit index; GFI = goodness of fit index; AGFI = adjusted goodness of fit.

^aModel 1(2): The structural relationship between competitive strategy, decentralization, environmental uncertainty, broad-scope (aggregated) MAS information, and performance.

4.2 Test Hypotheses

H1 and H2 proposed the direct relationship between the differentiation strategy and MAS information. As shown in Table 3, we found that H1 is supported ($\gamma_{13}^4 = 0.49, p < 0.05$). However, H2 is not supported ($\gamma_{23} = 0.24, p > 0.05$). In other words, these results reveal that there is a direct relationship between the differentiation strategy and broad-scope MAS information but not between the differentiation strategy and aggregated MAS information.

4.2.1 The mediating role of PEU

From Table 3, we found that the path coefficients supported hypothesis H3, which examines the relationship between a differentiation strategy, PEU, and

⁴ For γ_{ij} , $i = 1(2)$ presents broad-scope (aggregated) MAS, j presents PEU, decentralization.

broad-scope MAS information. The path coefficients between the strategy and PEU and between the PEU and broad-scope information are significantly positive ($\gamma_{11} = 0.72$, $t = 3.4$; $\beta_{11} = 0.57$; $t = 3.84$, $P < 0.05$). Furthermore, the path coefficients between the differentiation strategy and PEU and between the PEU and aggregated information were also positive ($\gamma_{21} = 0.71$, $\beta_{21} = 0.64$, $P < 0.05$). This evidence confirms the existence of H3 and H4. Based on the analytical results from the LISREL models, it has been shown that the manager perceived environmental uncertainty is high when the firm pursues a differentiation strategy to obtain a competitive advantage. At the same time, broad-scope and aggregated MAS information is needed to eliminate or counter the damage from environmental uncertainty.

4.2.2 The mediating role of decentralization

Hypotheses H5 and H6 were constructed to test the mediating role of decentralization in the relationship between structure and MAS information characteristics. As shown in Table 3, these hypotheses were all proven. The path coefficients between differentiation strategy and decentralization and between decentralization and broad-scope information were significantly positive ($\gamma_{12} = 0.62$; $\beta_{12} = 0.43$; $P < 0.05$). Furthermore, the path coefficients between differentiation strategy and decentralization and between decentralization and aggregated information were also positive ($\gamma_{22} = 0.53$; $\beta_{22} = 0.51$, $P < 0.05$). This finding means that the level of delegation will be high when a firm implements a differentiation strategy and more aggregated and broad-scope information will be needed to deal with cooperation and various decentralization projects.

4.2.3 Other test

We also wanted to know the relationship between PEU and decentralization. In the organizational behavior research literature, the greater the environmental uncertainty encountered, the greater the amount of autonomy delegated to managers (Gordon, 1984; Chenhall & Morris, 1986). As illustrated in Table 3, the β_{14} for both models 1 and 2 were positive and statistically significant. This result is consistent with our prediction.

Table 3 Estimated Parameters for Causal Model

Parameters	Model 1	Parameters	Model 2
γ_{11} (differentiation strategy-PEU)	0.72*	γ_{21} (differentiation strategy-PEU)	0.71*
γ_{12} (differentiation strategy-decentralization)	0.62*	γ_{22} (differentiation strategy-decentralization)	0.53*
γ_{13} (differentiation strategy-MAS)	0.49*	γ_{23} (differentiation strategy-MAS)	0.19
β_{11} (PEU-MAS)	0.57*	β_{21} (PEU-MAS)	0.64*
β_{12} (decentralization-MAS)	0.43*	β_{22} (decentralization-MAS)	0.51*
β_{13} (MAS-performance)	0.24**	β_{23} (MAS-performance)	0.31**
β_{14} (PEU-decentralization)	0.37*	β_{24} (PEU-decentralization)	0.32**
Parameters	Model 1	Parameters	Model 2
γ_{11} (differentiation strategy-PEU)	0.72*	γ_{21} (differentiation strategy-PEU)	0.71*
γ_{12} (differentiation strategy-decentralization)	0.62*	γ_{22} (differentiation strategy-decentralization)	0.53*
γ_{13} (differentiation strategy-MAS)	0.49*	γ_{23} (differentiation strategy-MAS)	0.19
β_{11} (PEU-MAS)	0.57*	β_{21} (PEU-MAS)	0.64*
β_{12} (decentralization-MAS)	0.43*	β_{22} (decentralization-MAS)	0.51*
β_{13} (MAS-performance)	0.24**	β_{23} (MAS-performance)	0.31**
β_{14} (PEU-decentralization)	0.37*	β_{24} (PEU-decentralization)	0.32**

*: $P < 0.05$; **: $P < 0.1$

V. Discussions and Conclusions

This study determined that various MAS information characteristics are systematically related to the organizational requirement for managing different levels of uncertainty, competitive strategy, and organizational structure. The potential benefit is the theoretical contribution to the literature and practice. These findings

indicate that differentiation, as a strategic priority, has an indirect relationship to various types of MAS information that operates via the perceived environmental uncertainty and decentralization. This also supports the argument that the need for an information-processing system stems from the organizational structure and environmental factors (Depablo, Deagar, Barturen, Nicolas, & Pineda, 1994; Nord & Nord, 1995).

Our results suggested that if managers perceive increased uncertainty and have greater autonomy, they would need more sophisticated MAS information including non-financial, future-oriented, external, and aggregated information to cope with the environmental uncertainty and variety of delegated works. This finding is in accordance with previous research studies on accounting, which suggest that the design of management accounting systems should be consistent with the organizational and environmental factors (Chenhall & Morris, 1986; Gul & Chia, 1994; Choe, 1998). Our study will add to the understanding of how competitive strategy influences the demand for MAS information and complement the limited studies on the strategy-MAS linkage.

Firms cannot acquire competitive competence solely by pursuing strategy priorities. They must have adequately processed MAS information. The MAS information facilitates and influences decision-making functions that will benefit the implementation of a different strategy. A manager's cognition of the environmental constructs and organizational structure will interfere with the relationship between the availability of MAS information and competitive strategies. For example, differentiators will perceive a higher degree of environmental uncertainty and prefer a decentralized structure rather than a low-cost strategy. They will then need more future-oriented information, aggregated by function and period. Conversely, traditional financial evaluation measures are ineffective for coping with uncertainty and evaluating boundary-spanning activities for decentralized managers.

Our study results provide the following implications for managers who are accountable for implementing competitive strategies:

1. Pursuing differentiation strategies increases the uncertainty in cognition about the environment; therefore, managers require MAS to provide sophisticated information to cope with uncertainty.
2. Differentiation strategies drive organizations to delegate greater autonomy to managers who then assume accountability for competitive strategies. This phenomenon results from coping with environmental uncertainty and dealing with various delegation projects.

3. Perceived environmental uncertainty and decentralization drive managers to prefer sophisticated MAS information including non-financial, external, future-oriented information aggregated by department and period. It is not enough for firms to pursue strategic priorities as their competitive competence. They must consider the consequent relationship between the structure and environmental uncertainty and the need for adequate MAS information.

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Appendix A

MAS Information Characteristics

Please indicate the importance of each characteristic of management accounting systems in your performance.

1. (S) Information relates to possible future events (for example, new legislation).
2. (A) Information in forms that enable you to conduct “what-if analyses.”
3. (A) Information that has been processed to show the influence of events on different functions, such as marketing or production, associated with particular activities or tasks.
4. (S) Non-financial information that relates to the following areas:
 - (a) Internally oriented information such as efficiency, output rates, employee absenteeism, etc.
 - (b) Market information such as market size, growth share.
5. (A) Information provided on the different sections of functional areas in your organization, such as marketing and production, or sales, cost, or profit centers.
6. (A) Information on the effect of events on particular time periods (month/quarter/annual summaries, trends, comparisons, etc.).
7. (A) Information on the effect of a different section’s activities on summary reports such as profit, cost, revenue reports for the following:
 - (a) Your particular department.
 - (b) The overall organization.
8. Information on formats suitable for input into decision models such as discounted cash flow analysis, incremental analysis, linear programming, statistic analysis, and simulation.
9. (S) Quantification of likelihood of future events occurring (e.g., probability estimates).
10. (S) Information on broad factors that are external to your organization, such as economic conditions, population growth, technological development, labor market, etc.
11. (S) Non-economic information, such as customer preferences, employee attitudes regarding government and consumer bodies, competitive threats, etc.

Decentralization

To what extent has authority been delegated to the appropriate senior managers for each of the following classes of decisions? (Please rate actual, rather than stated, authority.)

- a. Development of new products or services.
- b. The hiring and firing of managerial personnel.
- c. Selection of large investments.
- d. Budget allocations.
- e. Pricing decisions.

Perceived Environmental Uncertainty (PEU)

1. How intense is each of the following in your industry?
 - a. Bids for purchases or raw materials.
 - b. Competition for workers.
 - c. Price competition.
2. How many new products and/or services have been marketed during the past 5 years by your industry?
3. How stable/dynamic is the external environment (economic and technological) facing your firm? (stable or dynamic)
 - a. Economic.
 - b. Technological.
4. How would you classify the market activities of your competitors during the past 5 years (i.e., becoming more predictable or less predictable)?
5. During the past 5 years, the tastes and preferences of your customers have become much easier or harder to predict?
6. During the past 5 years, the legal, political, and economic constraints surrounding your firm have remained about the same or have proliferated greatly?
7. How often do new scientific discoveries emerge in your industry (seldom or frequently)?

Competitive Strategy

Please indicate the percentage of the current sales dollars that was accounted for by products represented by following two competitive strategies of concern.

Low Cost: The primary focus of this strategy is to achieve low cost relative to competitors. Cost leadership can be achieved through approaches such as economies of scale in production, learning curve effects, tighter cost controls, and cost minimization in areas such as research and development, service, sales force, or advertising.

Differentiation: The goal of this strategy is to differentiate the product offering of the business unit, thus creating something that is perceived by customers as unique. Approaches to differentiation include brand loyalty, superior customer service, dealer networks, product design and features, and product technology.

About the Author

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