

*Full Length Research Paper*

# **Broad scope management accounting system and managerial performance: The impact of role ambiguity and functional difference**

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**The purpose of this study was to examine whether role ambiguity mediates the relationship between broad scope management accounting system (MAS) and managerial performance. Further, this study also examined whether functional difference of activities moderates the association between broad scope MAS and role ambiguity, and between role ambiguity and managerial performance. The research subjects were marketing managers, production managers, and their supervisors of publicly-listed electronics manufacturing companies in Taiwan. Data were collected from a survey and analyzed using confirmatory factor analysis. The relations between research variables were examined using path analysis. Results indicated that broad scope MAS did not directly influence managerial performance but through mediation of role ambiguity. The full mediation of role ambiguity was particularly pronounced in a marketing-oriented context.**

**Key words:** Broad scope management accounting system (MAS), role ambiguity, managerial performance, functional difference.

## **INTRODUCTION**

Due to technological advancements and global competitions, corporate managers are working in a more and more complicated environment. To effectively manage in this setting requires the implementation of a sophisticated information system that provides them with sufficient and necessary business information (Bouwens and Abernethy, 2000). Management accounting system (MAS) is a kind of system that can help managers access and use management accounting information needed to accomplish work objectives and therefore enhance their managerial performance (Baines and Langfield-Smith, 2003; Chong and Chong, 1997). Managerial performance accounts for the manager's capability of planning, investigation, coordination, appraisal, supervision, employment, negotiation, and representation.

However, this simple and direct association between

MAS and managerial performance has been questioned (Chanhall and Brownell, 1988; Gul, 1991; Mia and Chenhall, 1994). There are two major views with regard to the relationship between MAS and managerial performance. One proposes that the relationship is moderated by certain environmental factors, such as environmental uncertainty (Gul and Chia, 1994) and task uncertainty (Chong, 1996). The other believes that the relationship is mediated by factors such as job-relevant information (Kren, 1992) and job stress (Shields et al., 2000). The paper is driven by a need to further clarify the relationship between MAS and managerial performance.

Management accounting system (MAS) provides information necessary for decision-making (Tiessen and Waterhouse, 1983). The information it provides can be classified into broad scope information and narrow scope information. The broad scope MAS information includes external (customer preference, competitor activity, and technology development), non-financial (yield, defect rate, and machine operating efficiency), and futuristic

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data (probability of a new legislation), while the narrow scope MAS information includes internal, financial, and historical data (production cost, transfer price) (Chenhall and Morris, 1986). In a constantly changing environment, broad scope management accounting information is particularly important for managers to make adequate decisions (Baines and Langfield-Smith, 2003). Management accounting information (for example, budget information) can reduce managers' role ambiguity (Kren, 1992) which is concerned about manager's cognition ambiguity toward their job characteristics, criteria of job performance evaluation etc. Therefore, this paper determination first explore how broad scope MAS influences managerial performance under the mediation of role ambiguity. In addition, this paper will observe the effect of functional difference of activities (that is, production-oriented context and marketing-oriented context) as a moderator on the relationship between broad scope MAS and managerial performance.

The expected contribution of this paper is twofold. Theoretically, this paper proposes a model of broad scope MAS and managerial performance that considers the effects of role ambiguity as a mediator and functional difference as a moderator. Practically, this paper provides suggestions on how to make use of broad scope MAS to enhance managerial performance for enterprises, particularly those which need to have different operations to react to the changes in the external environment.

## LITERATURE REVIEW AND HYPOTHESES

### Mediating effect of role ambiguity

According to Kren (1992), budgetary participation provides information that can reduce role ambiguity. Role ambiguity occurs when a manager lacks clear information about expectations associated with his or her role, methods for fulfilling the role, and consequences associated with role performance (Graen, 1976). Role ambiguity has some negative effects, such as increased job stress and reduced productivity (Van sell et al., 1981). From a broad scope MAS, managers can access broad scope information, including future events (for example, new legislation), external situations (for example, threat from competitors, economic conditions), and non-financial data (for example, market share and yield). With the broad scope MAS, they believe that they can obtain sufficient information for planning and executing task decisions and have a clear understanding of their roles (Chong, 1996). Therefore, this study argues that there is a negative relationship between broad scope MAS and role ambiguity, and set the below hypothesis:

**H<sub>1</sub>:** Broad scope management accounting system is negatively related to role ambiguity

With regard to the association between role ambiguity

and managerial performance, previous research has suggested that lack of information about the expectations, behaviors, and consequences associated with their roles may arouse role ambiguity (Tubre and Collins, 2000). While as the reduction of role ambiguity may increase job satisfaction and performance (Hall, 2008). Hence, this study proposes that there is a negative relationship between role ambiguity and managerial performance. This leads to the below hypothesis:

**H<sub>2</sub>:** Role ambiguity is negatively related to managerial performance.

As earlier discussed, this study conceives that role ambiguity plays an important mediating role in the relationship between broad scope MAS and managerial performance. It is a key determinant of whether broad scope MAS can effectively increase managerial performance or not. Thus, this study proposes hypothesis 3:

**H<sub>3</sub>:** Relationship between broad scope management accounting system and managerial performance is mediated by role ambiguity.

### Effects of functional difference on the relations between research variables

Corporate activities can be broken down into different functions, such as production, marketing, research and development (Thompson, 1967). Managers in charge of different activities (departments) of an organization may cope with different levels of task uncertainty (Mia and Chenhall, 1994). Generally, production is to make products that meet customer requirements following a specific process or procedure. Managers of production department usually cope with routine tasks with few exceptions. In contrast, marketing is to sell products in a constantly varying environment. Managers of marketing department must cope with volatile market situations and hard-to-predict competitor strategies and customer preferences, so their tasks are characterized by a higher level of complexity and irregularity.

Managers in charge of marketing activities need to understand customer preferences, potential threats posed by competitors, and non-financial, futuristic information about the external environment, all of which are collectively referred to as broad scope MAS information. Broad scope MAS is thus more essential for managers of marketing activities (Mia and Chenhall, 1994). This also implies that marketing activities involve a higher level of environmental uncertainty. As suggested by Kren (1992), in high environmental uncertainty situations, managers can obtain more job-relevant information through budgetary participation and therefore exhibit better managerial performance. Williams and

Seaman (2002) probed into the effects of management accounting and control system changes on departmental performance. They confirmed the mediating effect of management-relevant information and found that it becomes more pronounced when job uncertainty is high. Besides, role ambiguity has amplified negative effects on managers' job performance in a complicated job type (Tubre and Collins, 2000). It can be inferred that managers of the marketing department can exploit broad scope MAS to obtain sufficient MAS information for coping with tasks of high uncertainty and have a lower level of role ambiguity, and managers with a lower level of role ambiguity can achieve higher performance.

As mentioned earlier, managers of the production department are asked to follow a specific process or procedure to produce products that meet customer requirements. For them, broad scope MAS that provides non-financial and futuristic information about the company or the external environment is relatively less necessary (Chong and Chong, 1997). Their high level use of broad scope MAS may only cause information overload, divert task focuses, and incur an additional burden (Chong, 1996). It cannot help reduce role ambiguity or improve managerial performance at all.

In sum, given role ambiguity as a mediator, the model linking broad scope MAS and managerial performance is more applicable to managers of marketing activities. The relationship between broad scope MAS and role ambiguity, and that between role ambiguity and managerial performance are weaker among managers of production activities than among managers of marketing activities. It can be inferred that, if functional difference is considered, the negative relationship between broad scope MAS and role ambiguity, and that between role ambiguity and managerial performance are stronger in a marketing-oriented context than in a production-oriented context. This study further proposes the following hypotheses:

**H<sub>4</sub>:** Broad scope MAS is more negatively related to role ambiguity in a marketing-oriented context than in a production-oriented one

**H<sub>5</sub>:** Role ambiguity is more negatively related to managerial performance in a marketing-oriented context than in a production-oriented one

## RESEARCH METHODS

### Sample source and data collection

This study focused on publicly-listed electronics manufacturing companies in Taiwan. To test the effects of functional difference, data were collected from both marketing managers and production managers. The address of each selected firm was first consulted, so the questionnaires could be administered via mail. Before sending the questionnaires, the researcher telephoned the personnel department of each firm to acquire the names of the marketing manager, production manager, and their supervisor who were willing to participate in the survey. The questionnaire for

marketing managers and production managers consisted of questions about use of broad scope MAS and role ambiguity. The questionnaire for supervisors was intended to understand the managerial performance of each manager based on the perceptions of his or her manager's performance. Participants were asked to answer the questions in anonymity and directly mail back the questionnaire after it was completed. After the responses were returned, a pairing operation was carried out. A production (or marketing) manager's response was considered valid only when his or her supervisor also provided a valid response. A total of 500 firms were selected. Three questionnaires were mailed to each firm, one for the production manager, one for the marketing manager, and one for their supervisor. Of the returned responses, 161 responses were from marketing managers, 138 from production managers, and 147 from supervisors. The valid response rate was 29.7%. After the response pairing operation, 113 valid responses from marketing managers and 95 from production managers were obtained. Of the supervisors who provided a valid response, 68% were aged above 40, 60% had a duration of service in the current company longer than five years, and 94% held a college degree or above. Of the managers who provided a valid response, 77% were aged between 31 to 50, 52% had duration of service in the current company between 5 to 15 years, and 96% held a college degree or above.

### Measurement tools

#### *Broad scope management accounting system (MAS)*

The six-item questionnaire developed by Chenhall and Morris (1986) was employed to evaluate the extent to which each manager uses futuristic information, external information, and non-financial information provided by broad scope MAS (on a scale of 6 points, from 1-never to 6-frequently). Some of these items are as follows: "Quantification of the likelihood of future events occurring (for example, probability estimates)", "Information on broad factors external to your organization (for example, economic conditions, population growth, technological developments, labor market)", and "Non-financial information that relates to market information (for example, market size, growth in market share)". The Cronbach's alpha was 0.85.

#### *Role ambiguity*

Role ambiguity was measured using the questionnaire developed by Rizzo et al. (1970). This instrument consisting of six items evaluates the degree to which managers consider their roles are ambiguous in each aspect (from 1-very disagree to 6-very agree), including the power for their position, goals, allocation of time, duties, expectations, and job content. Because negative questions were used, all the obtained scores needed to be reversed. Some of these items are as follows: "Clear, planned goals and objectives for my job", "I know what my responsibilities are", and "Explanation is clear of what has to be done". The Cronbach's alpha was 0.90.

#### *Managerial performance*

Based on the questionnaire developed by Mahoney et al. (1965), eight items were used to evaluate eight dimensions of managerial performance, including planning, investigation, coordination, appraisal, supervision, employment, negotiation, and representation. Each manager's performance was evaluated by his or her direct supervisor (on a scale from 1-very poor to 6-very good). Some of these items are as follows: "Perceived performance on planning activities", "Perceived performance on coordinating activities", and "Perceived performance on staffing activities". The

**Table 1.** Results of confirmatory factor analysis.

Variable	Composite reliability	Average variance extracted
Broad scope MAS	0.86	0.51
Role ambiguity	0.90	0.59
Managerial performance	0.89	0.50

**Table 2.** Path analysis results.

Relations	Entire sample (n=208)		Marketing managers (n=113)		Production managers (n=95)	
	Estimated value	t value	Estimated value	t value	Estimated value	t value
Regression equation (1) RA /BSMAS	-0.307**	3.533	-0.331**	3.817	-0.131	1.207
Regression equation (2) MP/RA	-0.264*	2.273	-0.323**	3.712	-0.305**	3.478
MP /BSMAS	0.063	0.651	0.095	0.810	0.032	0.283
Regression equation (1) (BSMAS → RA)	Entire sample, R <sup>2</sup> =0.065, F =9.356**. Sample of marketing managers, R <sup>2</sup> =0.124, F =13.011**. Sample of production managers, R <sup>2</sup> =0.028, F =1.841.					
Regression equation (2) (RA, BSMAS → MP)	Entire sample, R <sup>2</sup> = 0.180, F =13.021**. Sample of marketing managers, R <sup>2</sup> =0.216, F =11.350**. Sample of production managers, R <sup>2</sup> =0.094, F =5.738*.					

\*\*p < 0.01, \*p < 0.05; RA: Role ambiguity; BSMAS: Broad scope MAS; MP: Managerial performance.

Cronbach's alpha was 0.88.

### Confirmatory factor analysis

To ensure the validity, reliability, and unidimensionality of research variables, this study performed confirmatory factor analysis of each variable. The measurement model for the variables was constructed, and LISREL was used as the analysis tool. Results showed that the goodness of fit of the proposed model was good ( $\chi^2 = 203.2$ , d.f. = 150,  $\chi^2/d.f. = 1.35$ , GFI = 0.91, CFI = 0.98, NNFI = 0.97, RMSEA = 0.04). All the items had a standardized factor loading above the level of significance in the t-test ( $p < 0.01$ ). Hence, convergent validity of each variable was ensured (Anderson and Gerbing, 1988). Discriminant validity was also established as the square root of average variance extracted value for each variable was greater than the correlation of that variable with other variables (Bagozzi et al. 1992). Besides, as shown in Table 1, all the variables had a composite reliability value greater than 0.7 and an average variance extracted value greater than 0.5, meaning that all the variables had an acceptable level of reliability. Through the above analysis, the unidimensionality of each variable was confirmed.

## EMPIRICAL RESULTS AND HYPOTHESES TESTING

### Mediating effect of role ambiguity

The path analysis results of the entire sample were shown in Table 2. The path coefficient between broad

scope MAS and role ambiguity, and that between role ambiguity and managerial performance were significant. However, the direct path between broad scope MAS and managerial performance was insignificant. Therefore, H<sub>1</sub> and H<sub>2</sub> were supported.

Besides, the correlation coefficient was broken down into direct effect, indirect effect or spurious effect as shown in Table 3. The decomposition results of entire sample showed the indirect effect was greater than the direct effect. According to Baron and Kenny (1986), all the three coefficients validated the mediating role of role ambiguity in the relationship between broad scope MAS and managerial performance. Moreover, the mediating effect was complete. Thus, H<sub>3</sub> was supported.

### Effects of functional difference on the relations between research variables

The path analysis results obtained from the sample of marketing managers and that of production managers were shown in Table 2. As found from the entire sample, the direct path between broad scope MAS and managerial performance was insignificant among both subgroups. This revealed that there was no direct association between broad scope MAS and managerial performance for either group of managers. As shown in

**Table 3.** Decomposition of the relations between variables.

Relations	Entire sample (n=208)			Marketing managers (n=113)			Production managers (n=95)		
	Total effect <sup>a</sup>	Direct effect <sup>b</sup>	Indirect <sup>c</sup> / spurious <sup>d</sup> effect	Total effect	Direct effect	Indirect / spurious effect	Total effect	Direct effect	Indirect / spurious effect
RA/BSMAS	-0.307**	-0.307**	-----	-0.331**	-0.331**	-----	-0.131	-0.131	-----
MP/BSMAS	0.144*	0.063	0.081 <sup>†</sup>	0.202*	0.095	0.107 <sup>†</sup>	0.072	0.032	0.040 <sup>†</sup>
MP/RA	-0.283**	-0.264*	-0.019 <sup>‡</sup>	-0.353**	-0.323**	-0.030 <sup>‡</sup>	-0.309**	-0.305**	-0.004 <sup>‡</sup>

<sup>a</sup>the value of total effect is equal to correlation coefficient. <sup>b</sup> the value of direct effect is equal to path coefficient. <sup>c</sup> indirect effect is caused by role ambiguity. <sup>d</sup> spurious effect is caused by the common antecedent variable of role ambiguity and managerial performance-broad scope MAS. <sup>†</sup> denotes indirect effect; <sup>‡</sup> denotes spurious effect. \*\*p < 0.01; \*p < 0.05.

Table 2, it could be found that the negative relationship between broad scope MAS and role ambiguity was stronger for marketing managers than that for production managers. Besides, further general linear test (Neter and Wasserman, 1974) showed that the relationship significantly varied across different managerial activities ( $F_{2,204} = 2.612 > F_{2,204,0.1} = 2.347$ ). Therefore,  $H_4$  was supported.

The path coefficient between role ambiguity and managerial performance among marketing managers was greater than that among production managers, but both coefficients reached the level of significance. Further general linear test suggested that the difference between the two coefficients was not significant ( $F_{3,202} = 0.738 < F_{3,202,0.1} = 2.130$ ). In other words, the negative relationship between role ambiguity and managerial performance was not necessary stronger for marketing managers, compared to production managers. Hence,  $H_5$  was not supported.

The decomposed results of each subgroup in Table 3 suggested that broad scope MAS affected managerial performance more indirectly than directly across both subgroups. Its indirect effect was higher among marketing managers than among production managers. Besides, the indirect effect of role ambiguity in marketing managers

played a completion mediation role between broad scope MAS and managerial performance.

It could be found from a comparison between entire sample and marketing managers sample in Table 2 that the path coefficient between broad scope MAS and role ambiguity, and that between role ambiguity and managerial performance obtained from marketing managers were all greater than the coefficients obtained from the entire sample. This finding indicated that the mediating effect of role ambiguity was more pronounced in a marketing-oriented context.

**DISCUSSION**

This paper empirically confirmed that role ambiguity mediates the relationship between broad scope MAS and managerial performance. This empirical finding was consistent with the findings of Kren (1992) and William and Seaman (2002) that the relationship between MAS and performance is mediated by job-relevant information or management-relevant information. Besides, the completely mediating effect of role ambiguity was more pronounced in a marketing-oriented context.

The theoretical implication of the research findings was that due to the consideration of role

ambiguity as a mediator and functional difference as a moderator, a more sophisticated model was built. This model could better explain the relationship between broad scope MAS and managerial performance. The empirical findings also provided practical implication that the benefits of broad scope MAS for improving managerial performance appeared only when managers' role ambiguity could be reduced, particularly for marketing managers. In other words, for managers of marketing activities, using broad scope MAS could lead to reduce role ambiguity, which could in turn improve their managerial performance; for managers of production activities, broad scope MAS was not necessary because it might only cause information overload and had no practical effect on reduction of role ambiguity or improvement of managerial performance. It should be noted that functional difference did not moderate the relationship between role ambiguity and managerial performance. Hence, managers, no matter in charge of marketing activities or production activities, should be dedicated to reduction of role ambiguity, as it was critical to improvement of managerial performance. The above findings and implications could all serve as a reference for enterprises in the utilization of broad scope MAS.

## REFERENCES

- Anderson JC, Gerbing DW (1988). Structural equation modeling in practice: a review and recommended two-step approach. *Psychol. Bull.*, 103(3): 411-423.
- Bagozzi RP, Yi Y, Phillips LW (1992). Assessing construct validity in organizational research, *Admin. Sci. Quart.*, 36(3): 421-458.
- Baines A, Langfield-Smith K (2003). Antecedents to management accounting change: a structural equation approach, *Account. Org. Soc.*, 28(7/8): 675-698.
- Baron RM, Kenny DA (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic and statistical considerations, *J. Pers. Soc. Psychol.*, 51(6): 1173-1182.
- Bouwens J, Abernethy MA (2000). The consequences of customization on management accounting system design, *Account. Org. Soc.*, 25(3): 221-241.
- Chenhall RH (2003). Management control systems design within its organizational context: findings from contingency-based research and directions for the future. *Account. Org. Soc.*, 28(2/3): 127-168.
- Chenhall RH, Brownell P (1988). The effects of participative budgeting on job satisfaction and performance: role ambiguity as an intervening variable. *Account. Org. Soc.*, 13(3): 225-233.
- Chenhall RH, Morris D (1986). The impact of structure, environment, and interdependence on the perceived usefulness of management accounting systems. *Account. Rev.*, 61(1): 16-35.
- Chong VK (1996). Management accounting systems, task uncertainty and managerial performance: A research note. *Account. Org. Soc.*, 21(5): 415-421.
- Chong VK, Chong KM (1997). Strategic choices, environmental uncertainty and SBU performance: a note on the intervening role of management accounting systems. *Account. Bus. Res.*, 27(4): 268-276.
- Graen G (1976). Role-making processes within complex organizations in Dunnette MD (Ed.). *Handbook of Industrial Organizational Psychology*. Skokie, IL: Rand McNally, pp. 1201-1245.
- Gul FA (1991). The effects of management accounting systems and environmental uncertainty on small business managers' performance, *Account. Bus. Res.*, 22(85): 57-61.
- Gul FA, Chia YM (1994). The effects of management accounting systems, perceived environmental uncertainty and decentralization on managerial performance: A test of three-way interaction. *Account. Org. Soc.*, 19(4/5): 413-426.
- Hall M (2008). The effect of comprehensive performance measurement systems on role clarity, psychological empowerment and managerial performance. *Account. Org. Soc.*, 33(2-3): 141-163.
- Kren L (1992). Budgetary participation and managerial performance: the impact of information and environmental volatility. *Account. Rev.*, 67(3): 511-526.
- Mahoney TA, Jerdee TH, Carroll SJ (1965). The job(s) of management. *Ind. Relat.*, 4(2): 97-110.
- Mia L, Chenhall RH (1994). The usefulness of management accounting systems, functional differentiation and managerial effectiveness, *Account. Org. Soc.*, 19(1): 1-13.
- Neter J, Wasserman W (1974). *Applied linear statistical models*. Homewood, IL: Richard D. Irwin, Inc.
- Rizzo JR, House RJ, Lirtzman SI (1970). Role conflict and ambiguity in complex organizations, *Admin. Sci. Quart.*, 15: 150-163.
- Shields M, Deng FJ, Kato Y (2000). The design and effects of control systems: tests of direct- and indirect-effects models, *Account. Org. Soc.*, 25(2): 185-202.
- Thompson JD (1967). *Organizations in action*. New York: McGraw Hill.
- Tiessen P, Waterhouse JH (1983). Towards a descriptive theory of management accounting, *Account. Org. Soc.*, 8(2/3): 251-267.
- Tubre TC, Collins JM (2000). Jackson and Schuler (1985) revisited: A meta-analysis of relationships between role ambiguity, role conflict, and job performance, *J. Manage.*, 26(1): 155-169.
- Van Sell M, Brief AP, Schuler RS (1981). Role conflict and role ambiguity: integration of the literature and directions for future research, *Hum. Relat.*, 34(1): 43-71.
- Williams JJ, Seaman AE (2002). Management accounting systems change and departmental performance: the influence of managerial information and task uncertainty, *Manage. Account. Res.*, 13(4): 419-445.