UNIVERSITY
OF WOLLONGONG
AUSTRALIA

University of Wollongong
Research Online

Faculty of Business - Accounting & Finance
Working Papers

Faculty of Business

1989

Interactive Effects of Evaluation Style and Organizational Structure Characteristics of Autonomy and Interdependence on Subunit Managerial Performance

H. Y. Teoh
University of Wollongong

R. Lam
University of Wollongong

Publication Details

This working paper was originally published as Teoh, HY and Lam, R, Interactive Effects of Evaluation Style and Organizational Structure Characteristics of Autonomy and Interdependence on Subunit Managerial Performance, Accounting & Finance Working Paper 89/10, School of Accounting & Finance, University of Wollongong, 1989.

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

UNIVERSITY OF WOLLONGONG

DEPARTMENT OF ACCOUNTANCY

INTERACTIVE EFFECTS OF EVALUATION STYLE AND ORGANIZATIONAL STRUCTURE CHARACTERISTICS OF AUTONOMY AND INTERDEPENDENCE ON SUBUNIT MANAGERIAL PERFORMANCE

by Hai Yap Teoh
and
Raymond Lam

April 1989

WORKING PAPER NO. 10

INTERACTIVE EFFECTS OF EVALUATION STYLE AND ORGANIZATIONAL STRUCTURE CHARACTERISTICS OF AUTONOMY AND INTERDEPENDENCE ON SUBUNIT MANAGERIAL PERFORMANCE.

by

Hai Yap Teoh
Associate Professor

and

Raymond Lam
Teaching Fellow

Department of Accounting & Legal Studies,
The University of Wollongong,
P.O.Box 1144 Wollongong,
New South Wales 2500, Australia.
Tel: (042)270625 or (042)270718.

Abstract

This study was designed to provide empirical evidence that subunit managerial performance is an interactive function of evaluation style and organization characteristics of autonomy and interdependence. Both autonomy and interdependence are believed crucial to the design of evaluation systems because the accounting literature has suggested that accounting performance measurement is more suitable for independent and autonomous organizational subunits.

Subjects were division managers of profit centers and investment centers from large manufacturing companies within the Metropolitan Sydney and Wollongong areas. Collection of data was based on interviews and pretested questionnaire. The statistical analysis involved formulation of two regression equations in which the focus of research interest was to find the significance of the regression coefficients in the cross-product terms representing, respectively, the interactive effects of evaluation style and autonomy, and evaluation style and interdependence.

The results showed a significant interaction between evaluation style and autonomy, indicating the importance of matching accounting-based evaluation style and high autonomy to induce higher subunit managerial performance. The lack of significant interaction between evaluation style and interdependence was consistent with prior studies which asserted that profit centers and investment centers are characterized by a low level of interdependence between subunits.

The appropriateness of various measures for evaluation of subunit manager performance has been a subject of considerable interest among researchers (Rappaport [1981]; Kudla [1980]; Hirst [1983]). Most of the studies utilised accounting (financial) measures of performance (Emmannuel and Otley [1985]; Hopwood [1972]; Hirst [1983]) although a company may also employ collegial review, professional review and personnel appraisal methods, the last one designed to measure the personality traits of managers. As Hayes [1977] put it succinctly:

> The managerial accounting tools of performance evaluation are restricted largely to financially quantifiable data. .... implicit within its use is the assumption that performance can be summarized and captured by a dollar number [p. 22].

Although accounting information has been widely used for performance evaluation its appropriateness for this purpose remains a controversial issue (see, for example, Ridgway [1956]; Tomkins [1973]; Vancil [1979]). The main thrust of criticism was that accounting information is an incomplete measure of managerial performance since it only captures quantifiable corporate goals and fails to consider the effects of authority structure and interdependence affecting performance but are uncontrollable by subunit managers.

LITERATURE REVIEW

Hopwood [1972] is among the earlier researchers to address this issue of appropriateness of accounting information for performance evaluation and its impact on subordinate behavior. Hopwood defined three performance evaluation styles: budget-constrained style, profit-conscious style and non-accounting style. Focusing his study on cost centers, he observed that managers evaluated under the budget-constrained style experienced high levels of job-related stress and tension, poor relationships with colleagues and superiors, and exhibited a tendency to manipulate the accounting information incorporated in the budget. He suggested that a profit-conscious style might be more appropriate for performance evaluation.

Otley [1978] replicated part of Hopwood's study using instead profit centers as the setting and found contradictory results. Performance evaluation strictly based on budget achievement was likely to produce higher performance. Otley [1978] attributed the apparently inconsistent results to differences in the degree of interdependence of organizational subunits used as the unit of analysis. The organizational units investigated by Otley were profit centers whereas those included in the Hopwood study were cost centers that were more interdependent. Otley pointed out that his findings were consistent with those by Baumler [1971] and Bruns and Waterhouse [1975]. These studies found that budgetary control was a more appropriate evaluation style when organizational units were independent than when they were interdependent. Interdependence as a dimension of organization structure is thus seen as an important factor interacting with evaluation style (accounting vs non-accounting) to induce higher performance by subunit managers.

In attempting to reconcile the different results by Hopwood [1972] and Otley [1978], Brownell [1982] introduced the 'budgetary participation' factor as a moderating variable. Like Hopwood, Brownell focused his study on cost centers and found a direct relationship between evaluation style and performance. But he also found that the impact of evaluation style on performance was moderated by budgetary participation. Brownell's finding was consistent with that by Cherrington and Cherrington [1973] who concluded that performance and job satisfaction were higher when a budget-based rewarding system was combined with high participation.

Another attempt to reconcile the Hopwood and Otley studies was by Hirst [1981, 1983]. Hirst [1981] developed a 'situational' approach to investigate the effect of accounting performance measure (APM) on subordinate behavior under task uncertainty. Hirst hypothesized that a medium to low reliance on APM would minimize the incidence of dysfunctional behavior in a situation of high task uncertainty. This hypothesis was confirmed in a later study by Hirst [1983] in which he found that the relationship between 'reliance on APM' and 'job-related tension' is dependent on task uncertainty.

In a similar study, Govindarajan [1984] investigated the relationship between environmental uncertainty, which is external to a business unit, and performance evaluation style. Govindarajan defined performance evaluation style as:

> the degree of reliance superiors place on formula vs subjective (non-formula) approaches towards the evaluation of the subordinate's rewards [p. 127].

He found that a more subjective performance evaluation style was used when business units were faced with greater environmental uncertainty resulting in higher business performance. A contingency approach to performance evaluation would seem to be suggested by these studies. The nature of the contingency approach was described by Otley [1980] as follows:

> The contingency approach to management accounting is based on the premise that there is no universally appropriate accounting system which applies equally to all organizations in all circumstances. Rather, it is suggested that particular features of an appropriate accounting system will depend upon the specific circumstances in which an organization finds itself. Thus a contingency theory must identify *specific aspects* of an accounting system which are associated with *defined circumstances* and demonstrate an *appropriate matching* [p.413] [emphasis added].

In performance evaluation studies, the *specific aspects* are the evaluation styles defined in each study. *Defined circumstances* in these previous research include 'budget participation' (Cherrington and Cherrington [1973]; Brownell [1982]), 'task uncertainty' (Hirst [1981,1983]), and 'environmental uncertainty' (Govindarajan [1984]). Lastly, to demonstrate *appropriate matching*, organizational effectiveness was investigated. Surrogate measures of organizational effectiveness were actual managerial performance (for example, Cherrington and Cherrington [1973]; Otley [1978]; Brownell [1982]; Govindarajan [1984]) or assessments of managerial motivation, job satisfaction, job tension or some other behavioral aspects (Cherrington and Cherrington [1973]; Otley [1978]; Hirst [1981,1983]).

In this study an interaction is proposed such that the interactive effect of organization structure and evaluation style is functionally related to performance. The two dimensions of organization structure investigated are autonomy (or degree of decentralization of decision-making authority) and interdependence (or the degree of task independence from other subunits). Similarly, following Govindarajan [1984] performance evaluation style is dichotomized into accounting versus non-accounting evaluation styles. Two reasons prompted this study. First, the potential impact on performance of 'interdependence' (one important dimension of organization structure) and evaluation style has been recognised from the studies by Hopwood [1972] and Otley [1978]. Secondly, the importance of organization structure in budgetary control and other accounting information systems design has already received much attention in the literature (see, for example, Bruns and Waterhouse [1975]; Gordon and Miller [1976]; Hayes [1977]; Otley [1980]; Merchant [1984].

DEVELOPMENT OF HYPOTHESES

Controllability Principle

Ronen and Livingstone [1975,p.680] defined controllability as "the ability to make decisions and execute them in the attempt to accomplish specified goals." It is a basic tenet of management accounting that managers are held responsible for aspects of performance over which they have control (Hayes [1977, p.36]; MacIntosh and Daft [1987, p.49]). Underpinning these performance evaluation studies, therefore, is the controllability concept. However, there are major factors which can impair the subordinates' controllability over performance (Ronen and Livingstone [1975, p.681; Hays [1977, p.22]). These are the interdependency and environmental factors which can distort the accuracy of accounting performance measures designed to evaluate a manager's skill, effort and ability in the operation of the manager's subunit. It has been suggested that circumstances such as a 'stable environment' and 'independent subunits' are conducive to the adoption of accounting measures for performance evaluation (Baumler [1971]; Hopwood [1972]; Bruns and Waterhouse [1975]; Otley [1978, 1980, 1985]; Scapen and Sale [1985]).

Organization Structure and Evaluation Style

Following from the controllability principle, this study investigated the interaction effects of organization structure (autonomy and interdependence) and evaluation style (accounting vs non-accounting measures) affecting managerial performance.

Dill [1959, p.410-412] defined autonomy as freedom from influence. He further distinguished between upward autonomy and horizontal autonomy which are analogous to 'delegation of authority' and 'interdependence' respectively, as these terms are more commonly used in the literature. In order that a subordinate will have control or freedom (i.e. autonomy) over his accountable activities, in accordance with the controllability principle, both dimensions of organization structure, interdependence (i.e. horizontal autonomy) and delegation of authority (i.e. upward autonomy) should be considered.

Delegation of Authority (Upward Autonomy)

Previous performance evaluation studies have investigated the 'interdependence' variable but have neglected the 'delegation of authority' variable. An implicit assumption in these studies is that subunit managers have full discretionary power (delegated by their superiors) over the activities that they are held responsible. However, Vancil [1979, p.382] suggested several situations in which a subordinate's decision power might be limited:

(1) the necessity of an action is initiated by others in the higher level;
(2) the action is initiated by the subordinate but:
  a. the decision is jointly made by subordinate and the superior after discussion;
  b. the decision is jointly made by subordinate, superior and other subunit managers involved;
  c. the action to take is decided at the corporate level.

The extent of delegation of authority or (upward) autonomy will have an effect on the appropriateness of use of accounting measures for performance evaluation in two ways. First, when a subordinate is assigned specific activities that form the basis of performance evaluation, the more 'complete' is the delegation of related discretionary power, the more controllability the subordinate will have over performance and, consequently, the more appropriate will be using accounting measures as the evaluation style. This is the rationale underlying the controllability principle.

Secondly, concomitant with a greater extent of delegation of authority is a higher degree of decentralization. The available empirical evidence shows that 'centralization' is negatively correlated with the degree to which activities are structured within a company (Blau and Schoenherr [1971]; Inkson, et.al. [1970]; Child [1972]). In other words, the activities within a company that have a greater extent of delegation of authority will also appear to be more structured. Bruns and Waterhouse [1975] believed that in a decentralized and structured company environment, the use of accounting control is more appropriate. The tenor of Bruns and Waterhouse argument is as follows:

> In a decentralized and structured organization, legitimate activities are clearly defined, areas of responsibility and authority are clearly delineated, and control is essentially impersonal. Since areas of authority are clearly defined, decision making can be delegated while organizational control is maintained. Individuals may feel they have a great degree of control within areas of defined authority. A decentralized and structural organization operating in a stable organizational environment seems particularly well suited to the use of budgetary control [p.179].

Interdependence (Horizontal Autonomy)

Thompson [1967] defined three types of interdependence: pooled, sequential and reciprocal. Pooled interdependence is the lowest form of interdependence and refers to the share of corporate resources (e.g. advertising, financial) by subunits from a common pool. Sequential interdependence involves the linkage of organizational departments in serial fashion. The output of one department becomes a direct input to the next department. Reciprocal interdependence is the highest form of interdependence and involves the movement of work back and forth among departments in reciprocal fashion.

The 'interdependence' variable is an important consideration in determining the extent of reliance on accounting performance measures. This is because when a subunit is highly interdependent with other units within an organization, performance of the subunit manager will be highly contingent upon the performance of other subunits. As Hopwood [1972] pointed out:

> ....even if the cost center head tries to improve his performance in terms of accounting indexes, the behaviour which is necessary to achieve this is not always clean if some of the reported costs are not under his control or if the standards are subject to error. His own efforts to improve the performance indexes may be overshadowed by the behaviour of other persons who are able to influence his reports [p.161].

Hypotheses

Following the controllability principle, discussed earlier, it is believed that organization structure characteristics can affect subunit managers' controllability over their performance and, *ipso facto*, the appropriateness of using accounting information for managerial performance appraisal. In this study it is hypothesized that differences in perceived subunit managerial performance can be explained by an interacting relationship between evaluation style and autonomy (i.e. greater decentralization of decision-making authority) and between evaluation style and interdependence (i.e. greater overall independence of other subunits). Formally stated in alternative form, the two hypotheses are as follows:

H_1 : Evaluation style and degree of autonomy will exhibit an interactive effect on subunit managerial performance.

H_2 : Evaluation style and extent of interdependence will exhibit an interactive effect on subunit managerial performance.

METHOD

Sample Selection and Interview

Subjects were selected based on three criteria. First, the subjects should be companies in the manufacturing industry. Secondly, these companies should have a divisionalized organization structure in which division managers could be identified and asked to respond to a pretested questionnaire. To ensure that a reasonable number of divisions exists, only companies with employee size exceeding 300 were selected. Thirdly, since participating companies would be visited so as to identify the subject division managers, they were restricted to those within the metropolitan Sydney and Wollongong areas. A total of 21 companies agreed to participate in this study.

Interviews were arranged with Managing Directors (or General Managers) of the participating companies. The purpose of the interview meeting was two-fold. First, the purpose of this study was fully explained. Secondly, the meeting provided the researchers with a basic understanding of each participating company's business background, organization structure and performance evaluation system characteristics. In this way the level of division managers for the purpose of this study was specified and the division managers identified. The choice of level of division managers resulted in the divisions selected being either profit centers or investment centers.

Measurement and Data Collection

Data were collected using two sets of questionnaire, one addressed to division managers (subordinates) and the other their immediate superiors. The purpose of the superior-questionnaire was to provide a cross-validation of the self-reported performance ratings by division managers. Each superior had control over an average of four divisions and, accordingly, was asked to complete four sets of performance ratings, one for each division manager.

Independent Variables

1. Performance Evaluation Style

The performance evaluation typology used by Hopwood [1972, 1974] was also adopted by Otley [1978] and Brownell [1982, 1985]. The validity of the measure however was criticized by Kahn [1972] who pointed out, *inter alia*, that the non-accounting method category emerged as a rather unsatisfactory residual type. Moreover, Otley [1978, p. 146] noted from the results of his study that an underlying continuum for style of budget use was more important than a dichotomy.

Following Otley's suggestion, Govindarajan [1984] measured evaluation style by asking respondents to indicate the percentage of their annual bonuses that was determined based on financial performance rather than superior's subjective judgement. This study adopted Govindarajan's approach and respondents were thus asked to indicate on a 7-point Likert scale to what extent they perceived their superiors were relying on their divisions' financial results to evaluate performance.

In order to test the reliability of this measure, two other questions were incorporated. Respondents were asked to indicate, also on 7-point Likert scales, the extent that (i) their divisions' favorable financial performance would lead to additional managerial rewards; and (ii) their divisions' unfavorable financial performance would lead to management penalties. A composite score obtained by aggregating the responses to these two questions was used to test the relationship between respondents' appraised performance (based on which rewards or penalties are determined) and divisional financial performance. The coefficient of correlation between the primary measure of evaluation style and this composite measure was .404 (p <.001).

2. Degree of Autonomy

To measure the degree of (upward) autonomy or decentralization of authority, the instrument developed by the Aston group (e.g. Pugh et.al.[1969]), Inkson et.al. [1970]) was adopted. This instrument was validated and employed in subsequent accounting studies (see, for example, Bruns and Waterhouse [1975]; Merchant [1981]; and Chenhall and Morris [1986]). Respondents were asked to indicate on a 5-point scale the extent of authority delegated to division managers for making each of twenty-three standard decisions. The theoretical range of this autonomy measure is 0 to 92 and the Cronbach alpha statistic for internal reliability 0.933.

3. Interdependence

Interdependence has been defined as the extent that departments depend on each other, and exchange information and resources to accomplish their respective tasks (see Van de Ven et.al. [1976]; McCann and Ferry [1979]; MacIntosh and Daft [1987]). In this study an instrument developed by Van de Ven et.al.[1976] was adapted to measure a division's 'overall interdependence'. This instrument contained three questions, each of which required respondents to estimate the percentage of their division's work flowing between divisions in a specific pattern following Thompson's [1963] typology of interdependence (pooled, sequential and reciprocal).

In this study, which was concerned with 'overall interdependence' of divisions, respondents were asked to indicate on a 7-point Likert scale the extent that they perceived their individual divisions' operations were independent of the activities of other subunits. To test the reliability of this measure, respondents were also asked to estimate the percentages that their divisions' input (e.g. materials, goods, services), as well as output (e.g. products, services) that were transferred from or to other subunits. A composite measure obtained by aggregating these two percentages was used to indicate the extent of interdependence of an individual division. The coefficient of correlation between the primary measure of interdependence and this composite measure was 0.486 ($p < .0001$).

Dependent Variable

The dependent variable is managerial performance measured using a 9-item instrument developed by Mahoney et. al. [1963]. This instrument was validated by Heneman [1974] and the use of self-rating based on the instrument was considered to have less leniency errors (high mean values), restrictions of range (small standard deviations) and halo errors (high intercorrelations between measurement items). Moreover, the Mahoney instrument has also been widely adopted in other studies (see, for example, Brownell [1982, 1985,1986]; Brownell & McInnes [1986]).

Division managers were asked how they would rate themselves on the extent to which they believed they have met superior's expectations in respect to eight sub-dimensions of management performance[1] identified by Mahoney et.al. The nineth item on the instrument measures the overall rating. Responses were on a 7-point scale, the ends of which were "greatest extent" and "least extent". The theoretical range of the measure is 8 to 56 and the Cronbach alpha statistic for reliability 0.818.

Response Results

A total of 81 subordinate- and 18 superior- questionnaires were received. Replies to three subordinate-questionnaires were incomplete and were excluded from the analysis, as well as another 10 in which the divisions were either revenue or cost centers. The remaining 68 useful subordinate-questionnaires gave a useable response rate of 62%. The response rate for the superior-questionnaires was 78%. The average number of employees in each division was 196. Forty-nine divisions were identified as investment centers and 19 as profit centers. The basis of divisionalization for a majority of the divisions was by geographical area (41) and the rest by products (10), market segments (7), administrative functions (7) and production process (3).

1 The eight sub-dimensions of performance are planning, investigating, co-ordinating, evaluating, supervising, staffing, negotiating and representing.

RESULTS AND ANALYSIS

To test the two hypotheses in this study, two regression equations were formulated. A general form of the two equations is as follows:

$$Y = a_{i1} + a_{i2}\, X_i + a_{i3}\, Z + a_{i4}\, X_i.Z + E$$

where Y = Managerial performance
Z = Performance evaluation style
X_i = When i=1 (i.e. H_{01}) X_1=Autonomy
When i=2 (i.e. H_{02}) X_2=Interdependence
X_iZ = Interaction factor X_i and Z

The utility of this regression equation is to investigate the significance and nature of the impact of interaction between evaluation style and autonomy and between evaluation style and interdependence on subunit managerial performance. With the regression equations specified in this way, the two hypotheses are supported if the regression coefficient (a_{i4}) of the interaction term (X_iZ) is significantly different from zero.

Degree of Autonomy

A regression analysis was run to test the first hypothesis of interactive effect between performance evaluation style and degree of autonomy in affecting subunit managerial performance (i.e. a_{14}=0). The results are reported below:

Table 1
Results of Regression to Test H_1

	Coefficient	Estimate	SE	t	p
Autonomy	a_{12}	.0028	.1259	.022	n.s.
Evaluation Style	a_{13}	.9336	.4617	2.022	<.05
Interaction	a_{14}	.9347	.3421	2.732	<.01

$R^2 = .209$, $F_{3,67} = 3.150$ $p < 0.05$

As shown, two regression coefficients a_{13} and a_{14} were significantly greater than zero. The coefficient of interaction term of interest in this study (a_{14}) was significant and positive, indicating that the first hypothesis (H_1) was supported. This means that an accounting-based evaluation style accompanied by high autonomy was associated with higher subunit managerial performance. Conversely, a non-accounting evaluation style would be more appropriate for low autonomy situations in order to elicit higher subunit managerial performance. Although the main effect for a_{13} must be interpreted with caution in the presence of a significant interaction effect, this result does indicate that evaluation style is an important factor to be considered in performance evaluation design.

Interdependence

Turning to the second hypothesis of interactive effect between performance evaluation style and subunit interdependence in affecting managerial performance, a second regression analysis was run with the independent variable, autonomy, replaced by interdependence. The results are presented below:

Table 2
Results of Regression to Test H_2

	Coefficient	Value	SE	t	p
Interdependence	a_{22}	-.1262	.1305	-.967	n.s.
Evaluation Style	a_{23}	-.0765	.1973	-.388	n.s.
Interaction	a_{24}	.0845	.1995	.424	n.s.

$R^2 = .020$, $F_{3,67} = .4387$ n.s.

Since a_{24} which is the coefficient of the interaction term was not significantly different from zero, the hypothesis (H_2) could not be supported. In other words, this study found no empirical evidence that performance evaluation style (accounting vs non-accounting) accompanied by lower (or higher) degree of interdependence would affect the level of performance of subunit managers.

In addition to the self-rating measure of managerial performance, further analyses were conducted using two other possible performance measures as the dependent variable. Thus superior-ratings and a composite measure obtained by averaging self- and superior-ratings were employed and analysed using the same regression model. The results confirmed earlier findings.

DISCUSSION

The results of this study supported the view that design of performance evaluation systems is contingent on the extent that decision-making authority is delegated to managers of organizational subunits, that is, the degree of autonomy received by these managers. The use of accounting evaluation style was found to be most appropriate in situations where organizational subunit managers have high autonomy, whereas a non-accounting evaluation style would be more appropriate in low autonomy situations.

A plausible explanation for these findings is that, the more autonomous is an organizational subunit, the more it is seen to operate like a group of separate companies, with each division manager having responsibilities akin to chief executives of independent companies. Thus, if a division manager has high autonomy (i.e. sufficiently delegated decision-making authority), it seems reasonable that the performance of the division manager should be evaluated in a similar manner as that for a chief executive. The latter is generally assigned responsibility for a company's financial performance and, consequently, appraisal of the chief executive's performance is largely based on the financial results reported to shareholders. Analogously, for high autonomy division managers, an accounting-based evaluation style does not appear to be inconsistent.

Empirical evidence of the interactive effect between interdependence and evaluation style provided additional support for the earlier observation by Otley [1980]. Otley [1980] has suggested that interdependence might be a potential factor in determining the appropriateness of accounting performance measures. Since the subunits investigated in this study were profit centers and investment centers they would have a high degree of independence from other divisional units within an organization. This is evidenced by the low mean values obtained for interdependence. While the theoretical range of the interdependence measure is from 1 to 7 (higher score signifying greater interdependence) the actual scores resulted in a mean value of only 2.07. Similarly, although the theoretical range for inter-division exchange of inputs and outputs is 0% to 200%, the mean percentage was only 49.4%. Considering the low interdependence of these divisions, the problem of interdependence affecting performance evaluation was probably not encountered or perceived by the division managers. Hence it is not unexpected to find a lack of significant interaction effect between evaluation style and interdependence affecting subunit managerial performance.

The finding of a low level of interdependence among the studied divisions can be explained by the manner in which these divisions were established within their companies. Forty-one out of sixty-eight divisions are established on a geographical basis. MacIntosh and Daft [1987] asserted that geographical divisions tend to have the lowest form of interdependence following the typology used by Thompson [1967]:

> Pooled is the lowest form of interdependence. Departments are relatively autonomous and little work flows between them. This occurs when departments are self-contained or when they provide services to *geographically distributed* clients. Branch banks and stores are examples of units that operate independently of each other........[p.50] [emphasis added].

To test for the interaction of interdependence and evaluation style on managerial performance, it would appear that organizational subunits should reflect a wider range of interdependence. This means that in future studies it may be useful to select research samples taking into account the different bases of divisionalization. Alternatively, the unit of analysis should be shifted to cost centers.

CONCLUSION

This study was designed to provide empirical evidence that higher (or lower) subunit managerial performance is an interactive function of evaluation style and organization characteristics of autonomy and interdependence. These are two dimensions of an organization's autonomy structure: vertical autonomy representing the degree of delegation of decision-making authority and horizontal autonomy representing the extent of interdependence between subunits. Both are believed crucial to the design of evaluation systems because the accounting literature has suggested that accounting performance measurement is more suitable for independent and autonomous organizational subunits.

The findings provided support for the first hypothesis. Thus, given the significant interaction between evaluation style and autonomy, research on the implications of matching accounting-based evaluation style and high autonomy for higher subunit managerial performance would seem warranted. The failure to support the second hypothesis concerning the interdependence variable was consistent with the observation by Otley [1978] that profit centers and investment centers are characterized by a low level of interdependence between subunits.

Generalizability of the findings however is subject to several limitations which should be borne in mind. First, some measurement instruments (e.g. measurement of interdependence) used here could be crude. Secondly, the sample selected was not drawn randomly and was restricted to a specific geographical area, Wollongong and Sydney. Notwithstanding these limitations, this study provided some evidence about how the organization characteristics of autonomy and interdependence interacted with evaluation style to affect subunit managerial performance.

References

Baumler, J. V., "Defined Criteria of Performance in Organizational Control", Administrative Science Quarterly, (Sept 1971), pp.340-349.

Blau P.M. and R.S. Schoenherr, "The Structure of Organisation", Basic Books (1971)

Brownell, Peter, "Budgetary Systems and the Control of Functionally Differentiated Organizational Activities", Journal of Accounting Research, Vol 23 No. 2, (Autumn 1985), pp.502-511.

______________, "The Role of Accounting Data in Performance Evaluation, Budgetary Participation, and Organizational Effectiveness", Journal of Accounting Research, Vol 20 No. 1, (Spring, 1982), pp.12-27.

Brownell, Peter, and Morris McInnes, "Budgetary Participation, Motivation, and Managerial Performance", The Accounting Review, Vol LXI No.4, (Oct. 1986)

Bruns, William J. and John W. Waterhouse, "Budgetary Control and Organization Structure", Journal of Accounting Research, Vol 13. (1975), pp.177-203.

Chenhall, Robert H. and Deigan Morris, "The Impact of Structure, Environment and Interdependence on the Perceived Usefulness of Management Accounting Systems", The Accounting Review, Vol LXI No.1, (Jan 1986), pp.16-35.

Cherrington, D. J. and J. O. Cherrington, "Appropriate Reinforcement Contingencies in the Budgeting Process", Empirical Research in Accounting : Selected Studies, Supplement to Journal of Accounting Research 11, (1973), pp.225-266.

Child, J., "Organization Structure, Environment and Performance - The Role of Strategic Choice", Sociology, (Jan 1972)

Dill, William R., "Environment as an Influence on Managerial Autonomy", Administrative Science Quarterly, (1958), pp.409-443.

Emmanuel, Olive and David Otley, "Accounting for Management Control", Van Nostrand Reinhold (UK), (1986).

Gordon, Lawrence A. and Danny Miller, "A Contingency Framework For The Design of Accounting Information System", Accounting, Organization and Society, Vol 1 No. 1, (1976), pp.59-69.

Govindarajan, V., "Appropriateness of Accounting Data in Performance Evaluation : An Empirical Examination of Environmental Uncertainty as An Intervening Variable", Accounting, Organization and Society, Vol 9 No.2, (1984), pp.125-135.

Hayes, D. C., "The Contingency Theory of Managerial Accounting", The Accounting Review, (Jan 1977), pp.22-39.

Heneman III, Herbert G., "Comparisons of Self and Superior Ratings of Managerial Performance", Journal of Applied Psychology, Vol 59 No.5, (1974), pp.638-642.

Hirst, M. K., "Accounting Information and the Evaluation of Subordinate Performance : A Situational Approach", The Accounting Review, Vol LVI No. 4, (Oct 1981) pp. 771-784.

____________, "Reliance on Accounting Performance Measures, Task Uncertainty, and Dysfunctional Behavior : Some Extensions", Journal of Accounting Research, Vol 21 No. 2, (Autumn 1983), pp.596-604.

Hopwood, Anthony G., "Empirical Study of the Role of Accounting Data in Performance Evaluation", Empirical Research in Accounting, Supplemental to Journal of Accounting Research, Vol 10. (1972), pp.156-182.

Inkson, J.H.K., D.S. Pugh and D.J. Hickson, "Organisation Context and Structure : An Abbreviated Replication", Administrative Science Quarterly, (Sept 1970), pp.318-329.

Kahn, Robert L., "Discussion of An Empirical study of the Role of Accounting Data in Performance Evaluation", Empirical Research in Accounting, Supplemental to Journal of Accounting Research, Vol 10. (1972), pp.187-188.

Kudla, R. T., "The Effects of Strategic Planning on Common Stock Returns", Academy of Management Journal, Vol. 23, (1980), pp.5-20.

MacIntosh, N. B. and R. L. Daft, "Management Control System And Departmental Interdependencies : An Empirical Study", Accounting, Organization and Society, Vol. 12 No. 1, (1987), pp.49-61.

Mahoney, T. A., T. H. Jerdee, and S. J. Carroll, "Development of Managerial Performance : A Research Approach", Cincinnati : South-Western, (1963).

McCann, J.E. and D.L. Ferry, "An Approach for Assessing and Managing Inter-Unit Interdependencies", Academy of Management Review ,4, (1979), pp.113-119.

Merchant, Kenneth A., "The Design of the Corporate Budgeting System : Influences on Managerial Behavior and Performance", The Accounting Review, Vol LVI No.4, (Oct 1981), pp.813-829.

__________________, "Influences on Departmental Budgeting : An Empirical Examination Of A Contingency Model", Accounting, Organization and Society, Vol 9 No.3/4, (1984), pp.291-307.

Otley, David T., "Budget Use and Managerial Performance", Journal of Accounting Research, Vol 16 No.1, (Spring 1978), pp.122-149.

______________, "The Contingency Theory of Management Accounting : Achievement and Prognosis", Accounting, Organization and Society, Vol 5 No.4, (1980), pp.413-428

Pugh, D. S., D. J. Hickson and C. R. Hinings, "An Empirical Taxonomy of Structure of Work Organization", Administrative Science Quarterly, (March 1969), pp.115-126.

Rappaport, A., "Selecting Strategies that Create Shareholder Value", Harvard Business Review, Vol. 59 No.3, (1981), pp.139-149.

Ridgway, V. F., "Dysfunctional Consequences of Performance Measurements", Administrative Science Quarterly, Vol 1, (1956)' pp.240-247.

Ronen, J., and J. L. Livingstone, "An Expectancy Theory Approach to the Motivational Impact of Budgets", The Accounting Review, (Oct 1975), pp.671-685.

Scapens, Robert W. and J. Timothy Sale, "An International Study of Accounting Practices in Divisionalized Companies and Their Associations with Organizational Variables", The Accounting Review, Vol LX No.2, (April 1985), pp.231-247.

Thompson, J. D. "Organization Action", McGraw-Hill, (1967).

Tomkins, C., "Financial Planning in Divisionalized Companies", Haymarket, (1973).

Van de Ven, A.H., A.L. Delberg, and R. Koenig Jr, "Determinants of Coordination Modes Within Organisations", American Sociological Review, (1976), pp.322-338.

Vancil, R. F., "Decentralization : Ambiguity by Design", Irwin, (1979).