Akdeniz İ.İ.B.F. Dergisi (17) 2009, 105-126

THE IMPACT OF BUDGET PARTICIPATION AND MANAGEMENT ACCOUNTING SYSTEMS ON PERFORMANCE OF TURKISH MIDDLE LEVEL MANAGERS

TÜRK ORTA KADEME YÖNETİCİLERİNİN PERFORMANSI ÜZERİNE BÜTÇE KATILIMI VE YÖNETİM MUHASEBE SİSTEMİ ETKİSİ

Melek EKER*

ABSTRACT

This paper examines impacts of relationship between budget participation and management accounting system on managerial performance. To test this relationship, the data are obtained through the survey from 150 managers that have been working in accounting and finance department in the top 500 businesses in Turkey in 2006. The results of multiple regression analysis indicate that the higher interaction score between budget participation and management accounting system information leads to higher managerial performance. Also, discriminant analysis shows that subordinates with high performance use MAS information more than ones with low performance.

***Keywords**: Budget Participation (BP), Management Accounting System (MAS), Managerial Performance (MP).*

ÖZET

Bu çalışma, yönetsel performans üzerine bütçe katılımı ve yönetim muhasebe sisteminin etkilerini incelemektedir. Önerilen ilişkiyi test etmek için veriler, 2006 yılı istatistiklerine göre Türkiye'de ilk beşyüz büyük işletme içerisinde yer alan 150 firmanın muhasebe–finansman yöneticelerin anket formu kullanılarak elde edilmiştir. Çoklu regresyon analizinin sonuçları, bütçe katılımı ve yönetim muhasebe sistemi bilgisi arasındaki yüksek etkileşimin daha yüksek yönetsel performansa yol açtığını ortaya koymaktadır. Buna ilaveten diskriminant analizi, yüksek performanslı orta kademe yöneticiler düşük performanslı yöneticilerden daha fazla yönetim muhasebe sistemi kullandıklarını göstermektedir.

***Anahtar Sözcükler:** Bütçe Katılımı, Yönetim Muhasebe Sistemi, Yönetsel Performans.*

* Uludağ Üniversitesi İİBF İşletme Bölümü Araştırma Görevlisi Doktor

INTRODUCTION

Recently, the effects of MAS (Management Accounting System) and BP (Budget Participation) on managerial performance increment is one of the most important subjects in management accounting literature. In the literature, it is argued that MAS and BP has positive effects on managerial performance increment. Especially, BP is seen as a technique to persuade managers about budget goals and to increase organizational effectiveness (Aranya, 1990: 68).

As known, motivational and cognitive roles are two important roles of BP (Murray, 1990: 104-123; Chow et al., 1988: 111; Lau et al., 2001:374). In this respect BP, on the one hand, increase acceptance and commitment of subordinates towards budget decisions and targets, on the other hand, makes possible to share informations about internal and external condition of organization with subordinates for top management. So, by process of exchanging, disseminating and discussing information between top managers and subordinates, job relevant information of managers and quality of decision can increase (Libby, 1999: 125).

In one sense, BP construct an environment that makes possible to get broad scope and timely information by subordinates and in this environment decision-making process can get easy and become effective. Thus, subordinates are able to get broad scope and timely information about whole organization and take right position to reach organizational targets by considering their own departmental duties more clearly.

In addition, using broad scope and timely information together with participation to budget setting process can enhance managerial performance of subordinates. This view supported by the western behavioral management accounting literature suggest that subordinates faced with a high competition would seek broad and timeliness information through BP. When subordinates can obtain broad scope and timeliness information about all organization, they get a clear understanding about their job and environment and this understanding decrease organizational risk in the market.

This paper is partially based on the model developed by Tsui (2001: 125-146). Therefore, our basic hypothesis is that broad scope and timeliness MAS with high BP is positively associated with ascending managerial performance. It is possible to say that in participative budget setting process, broad scope and timely information that facilitate participative decision-making, increase the quality and reality of decision making in the process of evaluating critical activities and effect positively subordinates managerial performance. This is also the basic argument examined in Turkey as one of developing countries.

In this respect, the analysis is made by evaluating the data gathered from the survey on top 500 firms in Turkey. This paper is structured as follows. First, the relevant literature is reviewed and the hypotheses are developed. The research method, results and conclusion are presented in the subsequent sections of the study.

LITERATURE REVIEW

There are many studies in the literature on the roles of MAS and BP to improve MP (Managerial Performance). When we look at them elaborately, it is seen that some of them are about MAS-MP and the other part are about BP-MP but there are few studies on the effects of MAS and BP together on MP.

The studies on the effects of MAS on MP show consistent results in a positive direction in itself. For example, Chong et al. found positive and significant linkage between broad scope MAS and high performance (Chong et al., 1997: 268-276). In addition to this study, there are studies about the effects of department and organizational structure on this relationship. For example, Mia and Chenhall (1994: 1-13) found that the association between the extent of broad scope MAS information and management performance was stronger for managers of marketing than production activities. Similarly, Gerdin's (2005: 297-327) results indicate that the impact of the use of greater amounts of MAS information on subunit performance is substantially more positive for departments experiencing higher levels of interdependence compared with those experiencing lower levels. In the same way, Abernethy et al. (1994: 49-66) found that the use of broad scope MAS information contributes more to performance in prospector-type firms than in defender-type firms.

On the other hand, there are studies on the effects of environmental uncertainty on the relationship between MAS-MP. Agbejule (2005: 295-305) found that the effects of MAS on performance were dependent on environmental uncertainty. Under high levels of environmental uncertainty, sophisticated MAS had a positive effect on performance, but under low levels it had a negative effect. Similarly, Gul et al. (1994: 413-426.) found that the availability of MAS information in conditions of high environmental uncertainty is associated with higher MP.

The effects of task uncertainty on the relationship between MAS and MP constitute the important part of relevant literature. Chong (1994: 1-13) argue that the extent of use of broad scope MAS information led to effective managerial decisions and hence improved MP under a high task uncertainty situation. In another study, Chong (1998: 331–342) contend that an appropriate 'fit' between manager's personality variable of tolerance for

ambiguity and the extent of use of broad scope MAS information for managerial decisions will lead to improved MP.

Job-relevant information can be evaluated as another independent variable effecting on the relationship between MAS and MP. In the study based on three-way interaction between the extent of use of broad scope MAS information, job-relevant information and task uncertainty, Chong (2004: 1-23) argue that the use of more broad scope MAS information and high use of job-relevant information for decision-making lead to improved MP under high task uncertainty situations. In addition, Chong and Eggleton (2003: 165-197) include locus of control as a new variable into the three-way interaction. According to this study, under high task uncertainty situations, they suggest that "internal" managers improve their performance when they make more use of broad scope MAS information for managerial decisions, while "external" managers are insensitive to the degree of use of broad scope MAS information for managerial decisions.

The role of BP in improving MP has been discussed extensively through two major mechanisms in the accounting literature: motivational and informational. The studies on the motivational role of BP on performance have been equivocal. For example, while some studies argued that BP positively and significantly associated with performance(Brownell et al., 1986: 587; Kenis, 1979: 707-721; Orpen, 1991: 695-696; Lau et al., 1998: 163; Brownell, 1982; 12-27), other studies have found either only a weak positive association between participation and performance(Milani, 1975: 282) or a negative association between two variables (Bryan et al., 1967: 274-277). However, the empirical research on informational roles of BP has, in general, produced consistent results. For example, Kren (1992: 511-526) argued that BP was associated with greater job-relevant information, which, in turn, was associated with higher job performance. Chong et al. (2002: 65) argued that the act of participation provides an opportunity for subordinates to gather, exchange, and disseminate job-relevant information to facilitate their decision-making process, which in turn improves job performance. In addition, Chong et al. (2007: 3-19) suggested that the cognitive effect of participation in goal-setting allows subordinates to gather, exchance and share job-relevant information. Chong et al. (2007: 3-19) further suggested that the availability of job-relevant information allows subordinates to develop effective strategies or plans, which will help them to exert effort over time, in an attempt to attain their goals. Magner et al. (1996: 43) found that participation has a direct and positive effect on job relevant information. Also, Magner et al. (1996:43) argued that the act of participation allows subordinates to interact with superiors whereby subordinates can ask questions to clarify goals, task strategies, conditions in the work enviroment, and other issues that have an important impact on their jobs. On the other hand, Shields et al. (1998: 49-76) suggested that the

cognitive role of BP improves a subordinate's quality of decisions as a result of sharing information with the superior.

We see only two studies, when we look at the literature on the relationship between MAS-BP-MP. One of these studies belongs to Choe. He contend that under high task uncertainty, aggregated and timely information with high BP is positively associated with increased MAS performance (Choe, 1998: 185-198). However, when the competition is low, the BP makes no impact on the relation between performance and information characteristics. In a less structured organization, broad scope, timely and aggregated information with high BP has a positive influence on the performance. In mechanical organizations, narrow scope and disaggregated information through the high BP can lead to higher MAS performance. In the second important study, Tsui (2001: 125-146) concluded that the interaction effects of MAS and BP on MP were different, depending on the cultural background of the managers. Despite the recognition that both MAS and BP influence MP, there are few studies that explicitly examine the joint effect of relationship between MAS information and BP on MP. This study is, therefore, designed to address this existing gap in the management accounting literature in Turkey.

THEORETICAL MODEL AND HYPOTHESES

MAS is identified in various ways. Chia (1995: 812) defined the MAS as an organizational control mechanism which facilitates control by reporting and creating visibility in the action and performance of its members. Atkinson et al. (2004: 283) described the MAS as a control system which generates and uses information to help decision makers assess whether an organization is achieving its objectives. Similarly, Horngren defined as those parts of the formalized information system used by organizations to influence the behavior of their managers that lead to obtain organizational objectives (Horngren et al., 2002). In considering these definitions, we can say that MAS refer to the numerous subsystems which are available in an organization to provide historical, current and future oriented information about the internal and external conditions of organization.

In this study, MAS is conceptualized as a formal information system designed to evaluate managerial activities and to facilitate subordinates' decision making. If MAS is evaluated as to the presenting form of information to managers, it has four sub dimensions as scope, timeliness, aggregation[1], and integration[2] (Chenhall et al., 1986: 19). In this study, due

[1] The aggregated dimension involves the summary information relevant to functional areas or time periods through application of either decision models or analytical models.

to theoretical relationship with BP and MP, we dwell on only scope and timeliness sub dimensions of MAS.

MAS Information Scope

Scope of information presenting by MAS can be categorized as to the three sub basic parameters. These are focus, quantification, and time horizon, respectively. By considering these characteristics of information, it is possible to examine MAS information generally in two ways as narrow and broad scope (Bouwens et al., 2000: 223).

MAS with narrow scope information present only historical and financial data which only focus on events in organization. Narrow scope information may be enough for carrying out static job functions because existing rules and procedures may be adequate for effective performance. With this speciality, because of being meaningful in decision process in predictable, stable and routine firms environment, narrow scope information can be referred to an information system dominated by traditional accounting-based systems. Through the narrow scope information, managers can rely more readily on insights gained from previous experience. For example, Abernathy et al. (1994: 49–66) argued that defender-type firms operating in a stable and narrow product market emphasise efficiency rather than innovation. The stability of their market is congruous with a reliance on historical information. Their narrow product domain reduces the need for extensive monitoring of the external environment conditions. Accordingly, narrow scope MAS information would be appropriate for managers of defender type firms.

On the other hand, broad scope information stem from managers who encounter with many non-routine managerial decisions inevitably because of decreasing predictability in a dynamic environment. In such environments, decisions can be in need of information relevant to the external environment, which may be economic or non-economic, non financial factors pertaining to the operations of the organization, and future-oriented information (Chenhall et al., 1986: 20). Researches believe that both environmental and organizational changes imply changes in type of information and use of information from decision making (Atkinson et al., 1997: 79-108 ; Abernethy et al., 1999: 189; Otley, 1978: 122). So, these changes require MAS which is apt to compensate user necessity of knowledge.

It is possible to contend that broad scope information-based MAS enable to facilitate decision-making by BP. By using BP, managers can use broad scope information to determine unusual problems and thus, can make

[2] Integration dimension consists of information about the activities between the segments of a sub-unit and between the sub-units.

complex decision to solve these problems. At the same time, this means preparing more creative, qualitative and realistic budgets to carry out organizational targets.

Also, broad scope MAS can help managers in comparing the cost of alternative decisions, guiding strategy development, evaluating existing strategies, focusing efforts related to improving organizational performance and evaluating the contribution and performance of organizational units and members in participatory budget setting process (Kaplan et al., 1998: 12; Sprinkle, 2003: 287-318). In pointing to the importance of this help, Chenhall et al. (1986: 16-35) and Tsui (2001: 125-146) refer to the usefulness of broadly based "attention directing" and "problem solving" information to assist decentralized managers on matters such as product pricing, inventory management, marketing, and labor negotiations.

Broad scope information facilitates control and evaluation by reporting non-financial data relating to subordinates and worker behavior and performance. In this context, broad scope information especially in the firms applying modern manufacturing and management technics, can make performance evaluation and control functions of personel in production line more healthy and suitable for organizational targets. (Banker et al., 1993: 33-55; Lillis, 2002: 497-529; Lau et al., 2003: 91). Also, in budget setting process of participatory firms, there are strict findings indicating significant positive linkage between broad scope non-financial information used to evaluate subordinates' flexibility, reliability and cooperativeness and their performance (Davis et al., 2004: 135-153). Today, broad scope information is getting more important for being successful, since modern firms are in need of management information system that can observe, measure and report non-financial critical success factors such as "quality", "flexibility", "production and delivery time", "cost", "effectivity" and "continuous improvement".

On the other hand, in participatory budgeting process, broad scope non-financial information can help managers and employees as a continuous and healthy feedback mechanism in important subjects for the future such as meeting customer expectation, improving processes and reporting quality performance measures. Especially, if it is considered that in the firms applying participatory budget process, all decisions are related with future, it's clear that using broad scope MAS providing future oriented information and including environment information with various qualitative and quantitive prediction methods is very important. So using broad scope MAS and BP together can make decision-making both easier and more effective and thus increase MP.

In dynamic environments, broad scope information is quite important for firms applying participatory budget process as it provide opportunity to

cope with the complexities of the decision environment. The use of such information can help to improve subordinates' ability to make more informed decisions, to decrease environmental uncertainty and formulate more realistic budgets, which consequently leads to their higher MP. Environmental uncertainty, broad scope information, and MP can be sum up as a trio revealed by many important empirical research. In this respect, Gordon et al. (1984: 33-47), Chenhall et al. (1986: 19-35), Gul et al. (1994: 413-426), Chong et al. (1997: 268-276), Mia (1993: 269-285), Gul (1991: 57-61) and Mia et al. (1999; 137-158) are mentioned as some prominent examples.

MAS Information Timeliness

Reporting frequency of systematically gathered information and availability of information on demand mean timeliness of information. Need for this kind of information is the result of changes in competition and manufacture system. In this respect, timely MAS information can be seen as an important tool to cope with necessities of new manufacture and competition environment.

Timely MAS information with many useful features can provide notable advantages for firms. For instance, using timely MAS information can facilitate partipatory budget decision making and thus increase MP as it reports the most recent events and provides rapid feedback on results of former decisions. Traditional management accounting system generally rules out this sort of information. Therefore, especially firms in a dynamic environment need timely MAS information as they want to get feedback about former decisions in time and to respond rapidly to unforeseeable changes in participatory budget setting process. So, BP and using timely MAS information together is expected to increase MP.

In the literature, some prominent studies attract attention on the important functions of timely MAS information. Gul et al. (1995, 108) suggested that, in uncertain situations, relevant information is required at the time and place of task execution and, further, a decentralized structure facilitates this information processing. Bruns et al. (1975: 177-203) and Banker et al. (1993: 33) provide empirical evidence that the frequency of reporting manufacturing performance measures to workers positively related to the implementation of just in time, teamwork and total quality management practices. Similarly Sim et al. (1998: 325-346) and Daniel et al. (1991: 601-618) provide empirical evidence which indicates that japanese automobile and consumer electronic firms that use continuous improvement strategies also provide more frequent performance feedback to enhance performance. Accordingly, in this study the following hypothesis are tested:

H1: There is a positive and significant relationship between BP and MP.

H2: There is a positive and significant relationship between MAS and MP.

H3: There is a positive and significant relationship between broad scope MAS information and MP.

H4: There is a positive and significant relationship between timeliness MAS information and MP.

H5: There is a significant two-way interaction between the extent of MAS information and BP on MP.

H6: There is a significant two-way interaction between the extent of broad scope MAS information and BP on MP.

H7: There is a significant two-way interaction between the extent of timeliness MAS information and BP on MP.

METHODOLOGY

The Nature of the Research and Sampling

The population of the study comprised subordinates that have been working in accounting and finance department in the top 500 firms in Turkey. The data forms were sent to subordinates of top 500 firms between the dates of 01 June- 30 December 2007 by mail and electronic mail. A total of 150 completed survey forms were received back, giving a response rate of 28.3%. The activity areas of the firms are depicted in Table 1.

Table 1: Profile of Respondents According to Activity Areas

Activity Areas	Frequency	Percent	Valid Percent	Cumulative Percent
1 Textile, clothing and footwear	38	25.2	25.7	25.7
2 Food and allied products	18	11.9	12.2	37.8
3 Construction	17	11.3	11.5	49.3
4 Petroleum and chemicals	7	4.6	4.7	54.1
5 Plastic products	8	5.3	5.4	59.5
6 Metal Wares	7	4.6	4.7	64.2
7 Machinery	12	7.9	8.1	72.3
8 Wood and paper products	8	5.3	5.4	77.7
9 Automotive and spare part	21	13.9	14.2	91.9
10 Electronic products	10	6.6	6.8	98.6
11 Others	2	1.3	1.4	100.0
Total	148	98.0	100.0	
Missing	3	2.0		
Total	151	100.0		

As can be seen from the table, activity distribution was realised in the following order, 25.7% textile, clothing and footwear, 14.2% automotive and spare parts, 12.2% food and allied products and 11.5% construction.

Data Collection Tools

The survey form, which was developed to collect research data, consisted of three parts. In the first part, BP was evaluated by the six item, five-point Likert-type scale developed by Milani's (1975). All respondents were asked to respond by circling a number from 1 to 5 on the scale for each of the items. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.898. A factor analysis of the six items was subjected to principal component analysis and "none" as rotation technique. At the end of the analysis, one factor has been determined to have an eigenvalue above 1. This factor explained 65.225 % of the total variance. The results of the factor analysis are shown in Table 2. The use of the measure yielded a Cronbach alpha coefficient of 0.892, which indicates very high internal reliability for the scale. An overall measure of BP was constructed by averaging the responses of the six individual items.

Table 2: Factor Analysis of BP Scale

Item No.	Question	Loading Factor
1.	Which category below best describes your activity when the budget is being set? I am involved in setting.	.811
2.	Which category below best describes the reasoning provided by your superior when budget revisions are made? The reasoning is	.596
3.	How often do you state your requests, opinions, and/or suggestions about the budget to your superior without being asked?	.787
4.	How much influence do you feel you have on the final budget?	.880
5.	How do you view your contribution to the budget? My contribution is:	.865
6.	How often does your superior seek your requests, opinions, and/or suggestions when the budget is being set?	.871

In the second part, MAS was measured using the two subdimension developed by Chenhall and Morris (1986). In this study, only the scope and timeliness sub dimensions of MAS were examined, on account of MAS's theoretical connections with BP. MAS scope information scale consists of five items with nine alternative responses which are scored 1 to 9. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.717 (Kalaycı, 2005: 327). A factor analysis of the five items were used principal component analysis and "none" as rotation technique. At the end of the

analysis, one factor has been determined to have an eigenvalue above 1. This factor explained 59.353% of the total variance. The results of the factor analysis are shown in Table 3. The Cronbach alpha coefficient was 0.821 for broad scope MAS information, which indicates high internal reliability for the scale (Kalaycı, 2005: 405). An overall measure of MAS scope information was constructed by averaging the responses of the five individual items.

Table 3: Factor Analysis of Broad Scope MAS Information Scale

Item No.	Questions	Loading Factor
1.	Information which relates to possible future events.	.818
2.	Nonfinancial information that relates to production and market information.	.699
3.	Quantification of the likelihood of future events occuring.	.783
4.	Noneconomic information, such as customer references, relations, attitudes of government and consumer bodies, competitive threat.	.775
5.	Information on broad factors external to your organization, such as economic conditions, population growth, technological developments, etc.	.772

MAS timeliness information consists of the four item with nine-point Likert-type scale which are scored 1 to 9. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.812. A factor analysis of the four items were used principal component analysis and "none" as rotation technique. At the end of the analysis, one factor has been determined to have an eigenvalue above 1. This factor explained 66.595% of the total variance. The results of the factor analysis are indicated in Table 4. The Cronbach alpha coefficient was 0.825 for timeliness MAS information, which indicates high internal reliability for the scale. An overall measure of MAS timeliness information was constructed by averaging the responses of the four individual items.

Table 4: Factor Analysis of Timeliness MAS Information Scale

Item No.	Questions	Loading Factor
1.	Reports are provided frequently on a systematic, regular basis.	.826
2.	Requested information to arrive immediately on request.	.819
3.	There is no delay between an event occuring and relevant information being reported to you.	.823
4.	Information supplied to you automatically upon its receipt into information system as soon as processing is completed	.795

In the last part, MP was measured by the eight -item, nine point Likert-type scale developed by Mahoney et al. (1965). These items are: planning, investigating, coordinating, evaluating, supervising, staffing, negotiating and representing. The KMO measure of sampling adequacy was 0.861. A factor analysis of the eight items were used principal component analysis and "none" as rotation technique. At the end of the analysis, one factor has been determined to have an eigenvalue above 1. This factor explained 52.679% of the total variance. The results of the factor analysis are indicated in Table 5. The use of the measure yielded a Cronbach alpha coefficient of 0.867, which indicated satisfactory internal reliability for the scale. An overall measure of MP was constructed by averaging the responses of the eight individual items.

Table 5: Factor Analysis of MP Scale

Item No.	Questions	Loading Factor
1.	Planning	.693
2.	Investigating	.765
3.	Coordinating	.765
4.	Evaluating	.763
5.	Supervising	.715
6.	Staffing	.693
7.	Negotiating	.711
8.	Representing	.698

Data Analysis

In this study, the data was entered into SPSS 13 for data analysis. Multi-correlation, multiple regression and discriminate analysis were performed.

Descriptive Statistics and Correlation analysis for all variables

Table 6 presents the descriptive statistics and pearson correlation matrix for the independent and dependent variables of this study.

Table 6. Descriptive Statistics and Correlation Matrix For All Measured Variables

Variables	N	Mean	Standard Deviation	(1)	(2)	(3)	(4)	(5)
BP (1)	148	3.6552	.80101	1	.581(**)	.558(**)	.511(**)	.419(**)
MAS (2)	146	6.6680	1.24693	.581(**)	1	.939(**)	.890(**)	.534(**)
Broad Scope (3)	145	6.1886	1.43269	.558(**)	.939(**)	1	.680(**)	.463(**)
Timeliness (4)	146	7.2300	1.27904	.511(**)	.890(**)	.680(**)	1	.508(**)
MP (5)	149	7.1679	.97206	.419(**)	.534(**)	.463(**)	.508(**)	1

** Correlation is significant at the 0.01 level (2-tailed).

BP is positively and significantly correlated with MAS, two sub dimensions of MAS and MP and the correlations were 0.581 ($p<0.01$), .558 ($p<0.01$), .511 ($p<0.01$) and 0.419 ($p<0.01$), respectively. Also, Table 6 displays that MAS and its sub dimensions are positively and significantly associated with MP, as proposed.

Multiple Regression Analysis

The multiple regression analysis was used to test the effect of interaction between MAS and BP on MP. The model is presented below in equation form:

$Y= b0 + b1X1 + b2X2 + b3X1X2+ e$

Where:

Y = Managerial Performance;

X1 = Budget Participation;

X2 = Management Accounting Systems;

X1 X2, Interaction Terms

e = error term.

In the model, the interaction terms were formed by multiplying the average scores of BP and MAS. If the β for the interaction term does not equal to 0, this implies that the interaction is significant (Tsui, 2001: 125-146). In according to this, regressions results of interaction between BP and MAS information on MP are presented in Table 7.

Table 7: Regressions Results of BP and MAS Information on MP

Predictor Variables	Nonstandard beta	Std. Error	Standard beta	T value	P	Collinearity Statistics	
						Tolerance	VIF
(Constant)	6.814	1.205		5.654	.000		
BP (X1)	-.632	.380	-.523	-1.665	.098	.048	20.721
MAS (X2)	-.099	.198	-.127	-.499	.618	.074	13.565
Interaction term X1 X2	.134	.058	1.130	2.317	.022	.020	49.954
F=23.030; p=.000; R=0.573; R^2= 0.329; Durbin-Watson= 1.911.							

The results presented in the table 7 show that the standardised beta coefficient for the interaction between MAS usage and BP positive and highly significant ($\beta_{3=}$ 1.130; t=2.317, p=0.22). Accordingly, as $\beta \neq 0$, hypothesis H5 is accepted. Mentioned model explained 32.9% of the

variance of the managerial performance score. In this context, the managerial performance scores were found increase as the interaction score between BP and MAS information increase.

Table 8: Regressions Results of BP and Sub-Dimensions of MAS Information on MP

Predictor Variables	Nonstandard beta	Std. Error	Standard beta	T value	P	Collinearity Statistics	
						Tolerance	VIF
(Constant)	6.536	1.078		6.063	.000		
BP (X1)	-.257	.333	-.214	-.770	.442	.068	14.753
Scope (X3)	-.106	.189	-.155	-.558	.578	.068	14.772
Interaction term X1 X3	.096	.054	.837	1.775	.078	.024	42.476
F=17.111; p=.000; R=0.518; R^2= 0.268; Durbin-Watson= 1.877.							
(Constant)	6.343	1.261		5.029	.000		
BP (X1)	-.480	.392	-.397	-1.225	.223	.046	21.793
Timeliness (X4)	-.052	.192	-.069	-.272	.786	.075	13.308
Interaction term X1 X4	.110	.056	.960	1.968	.051	.020	49.360
F=22.201; p=.000; R=0.566; R^2= 0.321; Durbin-Watson= 1.809.							

To investigate further the relationship predicted in multiple regression model, analysis was performed again to two sub-dimensions of MAS information (scope and timeliness). The results that are presented in tablo 8 show that the interaction terms were found significant on MP. The standardised beta values in Table 8 indicate that interaction terms affected in a positive direction MP with the powerful beta coefficient such as .837 ($\beta \neq 0$) and .960 ($\beta \neq 0$), respectively. It is seen that hypothesis H6 and H7 are supported. In this context, MP scores were found increase as the interaction between BP and use of each of MAS information increase. In other words, higher interactions between the two sub dimensions of MAS (scope and timeliness) and BP is associated with increasing MP. Overall, the mentioned models explained 26.8% and 32.1% of the variance of MP score, respectively. These results provide additional support to the study's hypothesis.

Discrimination analysis

In this section, we investigate that if usage of independent variables effect MP individually. With this aim, discriminate analysis (a multiple-variable statistical technique) was performed to examine the relationships between the dependent and metric independent variables. Firstly, MP was grouped into two levels, low (G1) and high (G2) level performance. Later, a correlation matrix of independent variables was calculated and the correlation coefficients were less than 0.70. This showed that there were no multiple linear linkages between independent variables. As covariance matrices of groups were equal (Box's M= 1.039 F= 1.017 p=0.313), linear dicriminant analysis was used. Table 9 shows the results of this linear discrimiant analysis, which was constituted according to MP levels. In Table 9, the structure matrix shows the correlations of each variable with each discriminant function. While structure matrix coefficients are whole (not partial) coefficients, the standardized canonical discriminant function coefficients indicate the partial contribution of each variable to the discriminant functions and are used to compare the relative importance of the independent variables.

As indicated in Table 9, the structure matrix shows the correlations of each variable with each discriminant function. According to this, there was one function because there were two groups. As the discriminat function for MP levels were positive and significantly correlated with MAS (r=1.000), scope (r=.936), timeliness (r=.882), interaction term 1(r=.837), interaction term 2 (r=.830), interaction term 3 (r=.794) and BP (r=.559). According to the standardized canonical discriminant function coefficients, MAS were found significantly influence group separation.

In Table 9, columns of Group 1 and Group 2 show the Fisher discriminate function co efficiencies. These coefficients show the degree that the variables discriminate two groups. While the high coefficient shows the high discrimination, the low coefficient shows the low discrimination. As a result, MAS variable is a better predictor for low and high MP.

Table 9: Structure Matrix, Standardized Canonical Discriminant Function Coefficients and Fisher's Linear Discriminant Functions

Variables	Structure Matrix	Variables	1 Function	1.Group	2. Group
MAS (X2)	1.000	MAS	1.000	4.027	4.880
Broad Scope MAS (X3) (a)	.936				
Timeliness MAS (X4) (a)	.882				
Interaction term X1 X2 (a)	.837				
Interaction term X1 X3 (a)	.830				
Interaction term X1 X4(a)	.794				
BP (X1)(a)	.559				
(Constant)				-13.435	-16.715

Table 10 shows the eigenvalue of discriminant functions and the significance level of the eigenvalue for each discriminant function. The larger the eigenvalue, the more of the variance in the dependent variable is explained by that function. Wilks's lambda tests the significance of each discriminant function. Accordingly, as seen in Table 10, the discriminant function was found to be statistically significant (Wilks' Lambda=0.903; χ^2=14.375; df=1 and p<0.01). The eigenvalue indicated that the discriminant function explained 10.7% of the total variance and the square of canonical correlation indicated that the discriminant function explained 9.6721% of the variance in the dependent variable. The classification results, which were made according to the subordinates' performance level, are presented in table 11.

Table 10: Eigenvalues and Wilks' Lambda

Function	Eigenvalue	Canonical Correlation	Wilks' Lambda	Chi-square	Df	Sig.
1	.107(a)	.311	.903	14.375	1	.000

a First 1 canonical discriminant functions were used in the analysis.

As seen in Table 11, 5.6% of the 18 subordinates with low performance were correctly classified, 96.1% of the 128 subordinates with high performance were correctly classified. The correct classification ratio was 84.9% [(1+123)/146] in this analysis. This result indicated that degree of correctly classifying of the discriminant function was high.

Table 11: Classification Results(a)

Predicted Group Membership					
Original	Count	Group	1	2	Total
		1	1	17	18
		2	5	123	128
	%	1	5.6	94.4	100.0
		2	3.9	96.1	100.0

a 84.9% of original grouped cases correctly classified.

CONCLUSION

This study aims to examine the effect of interaction between BP and MAS on MP. The population for this study comprised of subordinates who have been working in accounting and finance departments of top 500 firms in Turkey. According to the aim of the study, three questionnaires were performed (budget participation, management accounting system and managerial performance scales) and these questionnaires were sent to 500 subordinates via mail and electronic mail. 150 subordinates responded the questionnaires. The response rate was 30%. In the analysis of data, descriptive statistic (mean and standard deviation), correlation analysis, factor analysis, multiple regression analysis and discriminant analysis were used.

This study is expected to contribute to the current management accounting literature. Firstly, the multiple regression analysis is employed to test the effect of interaction between BP and MAS on MP. The results of this analysis supported the hypothesis that a greater interaction between BP and MAS is associated with higher MP. In this context, a higher interaction between each of scope and timeliness information and BP leads to increase MP. That is to say, high interaction between BP and MAS provides an appropriate condition for high managerial performance.

Secondly, the effects of the independent variables on low and high MP individually are explained through discrimination analysis. The results of this analysis indicate that MAS were found influence group separation significantly. In other words, MAS score varies according to low and high managerial performance. As to this, while higher use of MAS information leads to high MP, less use of MAS information leads to low MP. Also, MP levels were positive and significantly correlated with scope, timeliness, interaction between BP and MAS, interaction between BP and scope, interaction between BP and timeliness and BP.

A number of limitations of this study can be mentioned. Firstly, the sample was compose of only accounting and finance managers of top 500

firms in Turkey. Therefore, more comprehensive sample may be useful for future studies. Also, this study used BP, MAS and two sub-dimension of MAS as variables affecting MP. Future research may include such variables lie four sub-dimensions of MAS, competition, uncertainty of environmental, organizational structure and culture. Also, future research may be test the contingency factor affecting MP using different research methods. Future research may be designed to compare the findings in this study with findings that relate to companies in other countries.

REFERENCES

ABERNETHY, M.A. and GUTHRIE, C.H. (1994) An Empirical Assessment of The "Fit" Between Strategy and Management Information System Design, *Accounting and Finance*, 34, 49–66.

ABERNETHY, M.A. and BROWNELL, P. (1999) The Role Of Budgets in Organizations Facing Strategic Change: An Exploratory Study, *Accounting, Organizations and Society*, 24, 189-204.

AGBEJULE, A. (2005) The Relationship Between Management Accounting Systems and Perceived Environmental Uncertainty on Managerial Performance: A Research Note, *Accounting and Business Research*, 35(4), 295-305.

ARANYA, N. (1990) Budget Instrumentality, Participation and Organizational Effectiveness, *JMAR*, 2, 67-77.

ATKINSON, A.A., KAPLAN, R.S. and YOUNG, S.M. (2004) *Management Accounting*, Fourth Edition, Pearson Prantice Hall, New Jersey.

ATKINSON, A.A., BALAKRISHNAN, R., BOOTH, P., COTE, J.M., GROOT, T., MALMI, T., ROBERTS, H., ULIANA, E. and WU, A. (1997) New Directions in Management Accounting Research, *Journal of Management Accounting Research*, 9, 79-108.

BANKER, R.D., POTTER, G. and SCHROEDER, R.G. (1993) Reporting Manufacturing Performance Measures to Workers: An Empirical Study, *JMAR*, 5, 33-55.

BOUWENS, J. and ABERNETHY, M.A. (2000) The Consequences of Customization on Management Accounting System Design, *Accounting, Organizations and Society*, 25, 221-241.

BROWNELL, P. (1982) The Role of Accounting Data in Performance Evaluation, Budgetary Participation, and Organizational Effectiveness, *Journal of Accounting Research*, 20(1), 12-27.

BROWNELL, P. and MCINNES, M. (1986) Budgetary Participation, Motivation, and Managerial Performance, *The Accounting Review*, LXI(4), 587-603.

BRUNS, W.J. and WATERHOUSE, J.H. (1975) Budgetary Control and Organization Structure, *Journal of Accounting Research*, Autumn, 177- 203.

BRYAN, J. and LOCKE, E.A. (1967) Goal Setting As A Means of Increasing Motivation, *Journal of Applied Psycholoy*, June, 274-277.

CHENHALL, R.H. and MORRIS, D. (1986) The Impact of Structure, Enviroment, and Interdependence on The Perceived Usefulness of Management Accounting Systems, *The Accounting Review*, 61(1), 16-35.

CHIA, Y.M. (1995) Decentralization, Management Accounting System, MAS Information Characteristics and Their Interaction Effects on Managerial Performance: A Singapore Study, *Journal Of Business Finance and Accounting*, 22(6), 811-830.

CHOE, J. (1998) The Effects Of User Participation On The Design Of Accounting Information Systems, *Information & Management*, 34, 185-198.

CHOW, C.W., COOPER, J.C. and WALLER, W.S. (1988) Participative Budgeting: Effects Of A Truth-Inducing Pay Scheme and Information Asymmetry On Slack and Performance, *The Accounting Review*, 63, 111-122.

CHONG, V.K. and CHONG, K.M. (2002) Budget Goal Commitment and Informational Effects Of Budget Participation On Performance: A Structural Equation Modeling Approach, *Behavioral Research in Accounting*, 14, 65-86.

CHONG, V.K. and JOHNSON, D.M. (2007) Testing A Model Of The Antecedents and Consequences Of Budgetary Participation on Job Performance, *Accounting and Business Research*, 37(1), 3-19.

CHONG, V.K. (1998) Testing The Contingency 'Fit' Between Management Accounting Systems and Managerial Performance: A Research Note On The Moderating Role Of Tolerance For Ambiguity, *British Accounting Review*, 30, 331–342.

CHONG, V.K. (2004) Job-Relevant Information and Its Role With Task Uncertainty and Management Accounting Systems On Managerial Performance, *Pacific Accounting Review*, 16(2), 1-23.

CHONG, V.K. (1996) Management Accounting Systems, Task Uncertainty and Managerial Performance: A Research Note, *Accounting, Organizations and Society*, 21, 415-421.

CHONG, V.K. and CHONG, K.M. (1997) Strategic Choices, Environmental Uncertainty and SBU Performance: A Note on the Intervening Role of Management Accounting Systems, *Accounting and Business Research*, 27(4), 268-276.

CHONG, V.K. and EGGLETON, I.R.C. (2003) The Decision-Facilitatıng Role Of Management Accounting Systems On Managerial Performance: The Influence Of Locus Of Control and Task Uncertainty, *Advances in Accounting*, 20, 165-197.

CHOW, C.W., COOPER, J.C. and WALLER, W.S. (1988) Participative Budgeting: Effects Of A Truth-Inducing Pay Scheme and Information Asymetry On Slack and Performance, *The Accounting Review*, LXIII(1), 111-122.

DANIEL, S.J., REITSPERGER, W.D. (1991) Linking Quality Strategy With Management Control Systems: Empirical Evidence From Japanese Industry, *Accounting, Organizations and Society*, 16(7), 601-618.

DAVIS, S. and ALBRIGHT, T. (2004) An Investigation of The Effect of Balanced Scorecard Implementation on Financial Performance, *Management Accounting Research*, 15, 135-153.

GERDIN, J. (2005) The Impact of Departmental Interdependencies and Management Accounting System Use on Subunit Performance, *European Accounting Review*, 14(2), 297–327.

GORDON, L.A. and NARAYANAN, V.K. (1984) Management Accounting Systems, Percieved Enviromental Uncertainty and Organizational Structure: An Empirical Investigation, *Accounting, Organizations and Society*, 9, 33-47.

GUL, F.A. (1991) The Effects Of Management Accounting Systems and Environmental Uncertainty On Small Business Managers' Performance, *Accounting and Business Research*, 22, 57-61.

GUL, F.A., TSUI, J.S.L., FONG, S.C.C. and KWOK, H.Y.L. (1995) Decentralization As A Moderating Factor in The Budgetary Participation-Performance Relationship: Some Hong-Kong Evidence, *Accounting and Business Research*, 25(98), 107-113.

GUL, F.A. and CHIA, Y.M.. (1994) The Effects of Management and Accounting Systems, Perceived Environmental Uncertainty and Decentralization on Managerial Performance: A Test of Three-way Interaction, *Accounting, Organizations and Society*, 19, 413-426.

HORNGREN, C.T., BHIMANI, A., DATAR, S.M. and FOSTER, G. (2002) *Management and Cost Accounting*, Second Edition, Pearson Education, United Kingdom.

KALAYCI, Ş. (2005) *SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri*, I. Baskı, Asil Yayın Dağıtım, Ankara.

KAPLAN, R.S. and ATKINSON, A.A. (1998) *Advanced Management Accounting*, Third Edition, Prentice Hall, Upper Saddle River, New Jersey.

KENIS, I. (1979) Effects Of Budgetary Goal Characteristics On Managerial Attitudes and Performance, *The Accounting Review*, October, 707-721.

KREN, L. (1992) Budgetary Participation and Managerial Performance: The Impact Of Information and Environmental Volatility, *The Accounting Review*, 67(3), 511-526.

LAL, M. and HASSEL, L. (1998) The Joint Impact Of Environmental Uncertainty and Tolerance Of Ambiguity On Top Managers' Perceptions Of The Usefulness Of Non-Conventional Management Accounting Information, *Scandinavian Journal of Management*, 14(3), 259-271.

LAU, C.M. and BUCKLAND, C. (2001) Budgeting- The Role Of Trust And Participation: A Research Note, *Abacus*, 37(3), 369-386.

LAU, C.M. and EGGLETON, I.R.C. (2003) The Influence Of Information Asymmetry and Budget Emphasis On The Relationship Between Participation and Slack, *Accounting and Business Research*, 33(2), 91-104.

LAU, C.M. and TAN, J.J. (1998) The Impact Of Budget Emphasis, Participation and Task Difficulty On Managerial Performance: A Cross-Cultural Study Of The Financial Services Sector, *Management Accounting Research*, 9(2), 163-183.

LIBBY, T. (1999) The Influence Of Voice and Explanation On Performance in A Participative Budgeting Setting, *Accounting, Organizations and Society*, 24, 125-137.

LILLIS, A.M. (2002) Managing Multiple Dimensions Of Manufacturing Performance- An Exploratory Study, *Accounting, Organizations and Society*, 27, 497-529.

MAGNER, N., WELKER, R.B., and CAMPBELL, T.L. (1996) Testing A Model Of Cognitive Budgetary Participation Processes in A Latent Variable Structural Equations Framework, *Accounting and Business Research*, 27(1), 41-50.

MAHONEY, T.A., JERDEE, T.H. and CARROLL, S.J. (1965) The Jobs Of Management, *Industrial Relations*, 97-110.

MIA, L. (1993) The Role of MAS Information in Organisations: An Empirical Study, *British Accounting Review*, 25, 269-285.

MIA, L. and R. CHENHALL (1994) The Usefulness of Management Accounting Systems, Functional Differentiation and Managerial Effectiveness, *Accounting Organizations and Society*, 10, 1-13.

MIA, L. and CLARKE, B. (1999) Market Competition, Management Accounting Systems and Business Unit Performance, *Management Accounting Research*, 10, 137-158.

MILANI, K.W. (1975) The Relationship Of Participation in Budget-Setting to Industrial Supervisor Performance and Attitudes: A Field Study, *The Accounting Review*, April, 274-285.

MURRAY, D. (1990) The Performance Effects Of Participative Budgeting: An Integration Of Intervening and Moderating Variables, *Behavioral Research in Accounting*, 2(2), 104-123.

ORPEN, C. (1991) Job Difficulty As A Moderate Of The Effect Of Budgetary Participation On Employee Performance, *The Journal Of Social Psychology*, 132(5), 695-696.

OTLEY, D.T. (1978) Budget Use and Managerial Performance, *Journal Of Accounting Research*, 16(1), 122- 149.

SIM, K.L. and KILLOUGH, L.N. (1998) The Performance Effects Of Complementarities Between Manufacturing Practices and Management Accounting Systems, *Journal of Management Accounting Research*, 10, 325-346.

SPRINKLE, G.B. (2003) Perspectives On Experimental Research in Managerial Accounting, *Accounting, Organizations and Society*, 28, 287-318.

SHIELDS, J.F. and SHIELDS, M.D. (1998) Antecedents of Participative Budgeting, *Accounting, Organizations and Society*, 23(1), 49-76.

TSUI, J.S.L. (2001) The Impact Of Culture On The Relationship Between Budgetary Participation, Management Accounting Systems, and Managerial Performance: An Analysis Of Chinese and Western Managers, *The International Journal Of Accounting*, 36, 125-146.