

## The Relationship among Strategy, Competition and Management Accounting Systems on Organizational Performance

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### Abstract

This study examines the relationships among competition, strategy, management accounting system (MAS) and organizational performance. It follows a structural equation modeling (SEM) to propose that competition forces companies to modify their strategy and MAS and that these changes enhance performance. Change in strategy concerned in the model as change in competition causes change in strategy, and this in turn results in the change in MAS, along with improving performance directly. Data were collected by the means of questionnaires that were personally addressed to the managers or heads of accounting departments. The Data obtained from 120 manufacturing firms, were analyzed using a SEM estimated by partial least squares. The findings of the study led us to two results: (1) changes in competition cause enhancement in performance directly and indirectly through by changes in MAS and strategy, and (2) change in strategy leads to higher organizational performance through by the change in MAS. These findings contribute to the MAS literature by the means of supplying empirical evidence that the association between performance and competition is mediated through by change in strategy and changes in MAS of the firm.

**Keywords:** Competition, Strategy, Management Accounting Systems, Organizational Performance, Structural Equation Modeling.

### Introduction

In the recent years, the rapid environmental changes and increasing pressure of competition have changed external environment of organizations, which consecutively influence their internal processes like management accounting system. Due to these changes, corporate managers are working in a more and more complicated environment (Chung *et al.* 2012). In this condition, firms find themselves obligated to redefine the fundamentals of their businesses, and consequently to search for solutions that will allow them to endure and grow (Urquidi and Ripoll, 2013). To manage successfully in this situation, managers require to implement a broad scope information system that supplies them with adequate and essential business information (Bouwens and Abernethy, 2000; Chung *et al.* 2012). Management accounting is a kind of system that can support managers to access an d use necessary management accounting information to achieve firm's objectives and consequently improve their performance (Abernethy & Bouwens, 2005; Baines & Langfield-Smith, 2003; Chung *et al.* 2012; Williams & Seaman, 2001).

While previous MAS researches have investigated the associations among environmental factors, organizational characteristics, MAS, and performance (e.g. Emsley *et al.*, 2006; Hammad, *et al.*, 2010; Cinquini and Tenucci, 2010; Abdel-Kadera and Luther, 2008; Cadez and Guilding, 2012; Verbeeten, 2010), there has been little systematic empirical evidence of whether performance is

influenced by competition, organizational strategy and management accounting system (MAS) information. The current research fills this gap of knowledge in current MAS literature.

The current research makes contribution to our understanding of the antecedents or contingent factors under which MAS might be applied to affect performance. First, this research provides further insights into our understanding of the mediating role of MAS information on the association between competition and strategy on organizational performance. This topic is not well developed in the existing MAS research literature. Second, this research applies SEM analysis in theorizing the research problems.

The remainder of the paper is structured as follows: Section 2 discusses the theoretical background and existing literature, develops the hypotheses and suggests a research model based on the theoretical background. Section 3 presents the research methodology. Section 4 discusses the research results and the empirical evaluation of the research model. Section 5 addresses the conclusions and limitations of the research and directions for future research.

### **Literature Review and Hypotheses Development**

The current research utilizes the mediating or the intervening notion of contingency approach (Mia, 1993; Mia and Clarke, 1999; Jermias and Gani, 2004; Jusoh, 2008; Cheng, 2012) to examine whether changes in strategy and MAS intervene, or mediate the association between performance and competition. Figure 1 shows that both the changes in strategy and MAS are the mediating variable, competition and performance are the independent and dependent variable respectively. The expected relations among the constructs are offered in turn.

#### ***Competition and Strategy***

Firms must formulate their strategies efficiently after they analyzed their environmental conditions (Singh et al., 2010). According to Baines and Langfield-Smith (2003) when environmental conditions are changing, competition will increase in markets, mostly relating to the products' quality and price. Firms may react to these challenges by rearranging their work processes by formulating new strategies that are strongly customer-oriented.

The organizations should change their strategy to accommodate the changes in environment. However, the institutional approach to organizational change proposes that an organization's learning strategies and capability to adapt to the environmental changes are affected by organizational structure. Sisaye (2003) proposes that the structural arrangements of an organization can successfully change if they employ either incremental or radical adaptive strategic changes. All organizational elements such as structure, strategy, systems, people and culture, must be changed at the same time to reach highest alignment and effectiveness in the organization (Huy, 2001).

A number of scholars have also studied the association between competition and strategy (e.g., Baines and Langfield-Smith, 2003; Chenhall and Langfield-Smith, 2003; Singh et al., 2010). They suggested that, firms' strategy is formulated in response to environmental competition, and that the suitable fit between strategy and the level of competition can improve organizational performance. Fuschs et al. (2000) also concluded that successful company fits its strategies with the environmental changes. Hence, the following hypothesis is proposed:

H1: There is a direct relationship between level of market competition and changes in organizational strategies.

#### ***Competition and MAS***

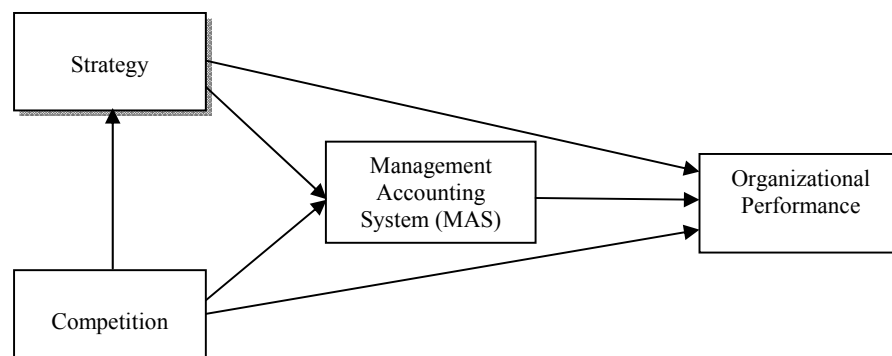
Increasing market competition creates turbulence, stress, risk and uncertainty for organizations. Active organizations scan the environment in terms of social, economic and technological changes to take benefit from them accordingly. Hence, while facing extensive competition, it is important for managers to use the market information for decision making (Mia

and Patiar, 2001). It demands that organizations mount appropriate strategies to the threats and opportunities in the competitive environment, and that they design and use appropriate management accounting systems (MASs) for this purpose (Laitinen, 2008; Mia and Patiar, 2001; Santos *et al.*, 2012).

These perspectives extend a number of accounting studies that have examined the relationship between the MAS information and market competition (Chenhall and Morris, 1986; Gordon and Narayanan, 1984; Gul, 1991; Hoque, 2011; Mat *et al.*, 2010b; McManus, 2012; Mia and Patiar, 2001; Santos *et al.*, 2012). The findings of these studies propose that organizations confronting extremely competitive market environments have a tendency to employ relatively more broad scope MAS information (McManus, 2012).

Therefore, competition may influence the choice of MAS design in a firm and may similarly lead to the firm's needing to re-evaluate its current organizational design and strategy to cope with the uncertainty of the environmental factors (Hoque, 2011; Laitinen, 2008; Mat *et al.*, 2010; McManus, 2012; Mia and Patiar, 2001; Santos *et al.*, 2012). Therefore, the following hypothesis is proposed:

H<sub>2</sub>: There is a direct and positive relationship between level of market competition and the change in MAS information.



**Figure 1. Theoretical Framework**

### ***Change in Strategy and Changes in MAS***

In order to recognize the process of strategic choices, different strategy types are needed to be mentioned. Miles and Snow (1978) established 4 strategy types: prospector, defender, analyzer and reactor. These typologies constitute profiles of different strategic postures that emphasize integrative components of different strategies and is based on how firms react to environmental changes and align their firms with that changing environment (Hammad, *et al.*, 2010; Cinquini and Tenucci, 2010; Abdel-Kadera and Luther, 2008; Verbeeten, 2010).

There is a consensus that strategic priorities must be supported by suitable management accounting systems in order to facilitate performance (Cadez and Guilding, 2012; Hammad, *et al.*, 2010; Mat *et al.*, 2010). Mat *et al.* (2010) suggest that low financial performance may cause economic pressure on the company to modify its management accounting system to improve performance. They argue that if changes in MAS are accompanied by a higher reliance on accounting information, it may lead to enhanced performance.

From a contingency approach viewpoint, management accounting scholars have proposed that the MAS must fit the firm's strategy-type to improve performance (Hammad, *et al.*, 2010;

Verbeeten, 2010). In pursuing competitive advantage, organizations may implement manufacturing processes and administrative functions that are aligned with their particular strategic priorities. For example, firms that focus on product differentiation strategy, use more broad scope MAS information (Chenhall and Langfield-Smith, 1998b; Callahan and Gabriel, 1998). In addition, use of broad scope MAS information can support firms to more easily focus on attaining differentiation priorities, for instance quality, delivery and customer service, compared to more traditional financially based accounting practices, as they highlight the need to satisfy customer requirements.

On the other hands, prospector firms tend to have information needs that cover a much broader range than competitors that focus on a defender strategy; this is mainly because of their quest for product market opportunities (Abdel-Kadera and Luther, 2008; Ferreira, et al., 2009; Hammad, et al., 2010; Verbeeten, 2010). On the other hand, defenders operate in a relatively stable environment and offer a narrow product range. They emphasized efficiency rather than innovation (Cinquini and Tenucci, 2010; Hammad et al., 2010). Their narrow product range lessens the need for extensive monitoring of the external environmental factors. Therefore, information with narrow scope would be proper for defender-type organizations (Hammad et al., 2010; Cinquini and Tenucci, 2010).

Analyzers combine features of these two typologies, because they compete in a two-type product-market domain; one is more stable so, as defenders, they concentrate on efficiency, while the other is more dynamic so, as prospectors, they contrast competitors through product innovation (Hammad et al., 2010; Cinquini and Tenucci, 2010).

This argument results in a prediction that change in organizational strategies is likely to be related with an organization's effort to change the MAS information. Stated formally:

H3. There is a direct relationship between changes in organizational strategy and changes in MAS information.

#### ***Strategy, Changes in MAS and Performance***

Strategy is considered as a contextual factor, inside the organization that may have a linkage to changes in MAS (Mat et al., 2010). In this section we attempt to extend the research questions concerning the linkages between strategy, broad scope MAS information and firm performance. Understanding the relationships between strategy, MAS and performance is one of the focal points in the reflections based on a contingent view of accounting (Cinquini and Tenucci, 2010).

A number of scholars have also investigated the association between strategy and use of MAS information on performance. For example Cadez and Guilding (2008) and Hammad et al. (2010) discuss that a suitable management accounting system should support strategic priorities in order to improve performance. Chenhall and Langfield-Smith (1998) found that in firms that pursue similar strategic priorities, performance tends to be higher where management accounting system information is congruent with strategy.

The effectiveness and performance of a organization depends on the match between the design of information system and the organization's strategic priorities. Information system which provides broad scope information was found to be more effective in organization that employs a strategy of continuous product or market development and innovation (prospector), than in organization which was protecting a comparatively narrow and stable product-market (defender) (Hammad, et al., 2010). As shown in figure 1, and by considering above discussion, an indirect effect of the change in strategy on performance via changes in MAS information is expected. This means that changes in MAS information mediate the association between change in strategy and performance. Hence, above discussion results in the following hypothesis:

H4. There will be a positive relationship between change in organizational strategies and performance directly and indirectly through change in MAS information.

### ***Change in MAS and Performance***

It has been suggested by scholars that the organizations operate more effectively when they apply and utilize management accounting system that cope with their environmental condition (see also Arroiteia et al., 2012; Etemadi et al., 2009; Hoque, 2011; Jauhari, 2012; Mia and Patiar, 2001; Waweru et al., 2004). Therefore, in this condition management accounting information is expected to support organizations to survive in an environment with high competition through supplying helpful information for planning, controlling and decision-making. Thus, this information will then be employed to enhance organizational performance (Ismail and Isa, 2011).

In other words, management accounting system in a firm supplies managers with information for learning about problems, about outcomes and about opportunities, leading to accurate and appropriate decision-making in response (Chenhall, 2003; Hammad et al., 2010; Ferris and Haskins, 1988). Broad scope management accounting system information is likely to supply managers with information for setting performance objectives, performance assessment standards and feedback on performance leading to enhanced organizational performance (Mia, 1993; Mia and Clarke, 1999; Rasid et al., 2011; Moores and yuen, 2001).

Realizing the usefulness of broad scope MAS information, this research also hypothesizes the direct association between the use of broad scope MAS and performance. Therefore, the following hypothesis is proposed:

H5. There is a positive and direct relationship between changes in MAS information and organizational performance.

### ***Competition, Strategy, MAS and Performance***

Based on the above discussion, competition has a positive and direct relationship with strategy and MAS information. In addition, both changes in strategy and MAS information separately and jointly have impact on performance. Consequently, this is expected that competition is expected to have a positive relationship with performance indirectly through by changes in strategy and MAS information, separately and jointly. This means that as shown in figure 1, both change in strategy and MAS information intervene and mediate the association between competition and performance. Hence, the following hypothesis is proposed:

H6. The association between competition and performance operates through changes in strategy and MAS information.

## **Methodology**

### ***Sample and data***

Data was collected using self-administrated questionnaires that were personally addressed to the managers or heads of accounting departments of manufacturing companies listed in Tehran Stock Exchange (TSE), between June 2014 and August 2014. This study considered the total population of 162 manufacturing companies listed in TSE as the study sample size in order to avoid low response rate. Among the 162 questionnaires distributed, 120 were successfully completed and returned, thereby achieving an effective response rate of 74%. This high response rate was as a result of two main reasons: First, all of these organizations are located or at least have their central office in Tehran city. Hence, enabling easy contact with them therefore saving time Secondly, researcher's personal contact with these organizations facilitated questionnaires delivery to the respondents. The summarized demographic profile of the respondents is presented in Table 2. Data was collected from more than 11 different industries that includes Wood and paper products- Chemical products- Oil, gas and petrochemicals, Electronics and computer, Machinery and equipment- Non-metallic, minerals- General construction- Food and beverages and sugar- Pharmaceuticals and healthcare- Automotive- Metal amongst others. The majority of the

respondents were chief accountant or group controller who are specialists in management accounting context (78 respondents) and the number of respondents in the positions of administrative management and general management were 24 and 13 respectively. Also, there were more male (85 per cent) than female (15 per cent) respondents. Finally, the majority of respondent were aged over 45 years (55 per cent).

**Table 1. Profile of sample firms and respondents**

Background variable	Category	Frequency (n=120)	Percentage %
Industry classification:	Wood and paper products	3	2.5
	Chemical products	23	19.2
	Oil, gas and petrochemicals	5	4.2
	Electronics and computer	6	5
	Machinery and equipment	7	5.8
	Non-metallic, minerals	9	7.5
	General construction	6	5
	Food and beverages and sugar	21	17.5
	Pharmaceuticals and healthcare	14	11.7
	Automotive	17	14.2
	Metal	3	2.5
	Other manufacturing	6	5
Position of respondent:	Chief accountant/group controller	78	65
	Administrative manager	24	20
	General manager	13	10.8
	Other	5	4.2
Firms' size of (Number of employees)	100–249	15	12.5
	250–499	37	30.8
	500–999	41	34.1
	1000≥	27	22.5
Gender:	Female	18	15
	Male	102	85
Age:	<30	5	4.2
	30-45	48	40
	45>	67	55.8

The majority of respondents were chief accountants or group controllers who are specialists in management accounting context (78 respondents) and the number of respondents in the positions of administrative management and general management were 24 and 13 respectively. In terms of

gender of respondents the majority of them (85 per cent) were male and only 15 percent of them were female. Finally, the majority of respondent were aged over 45 years (55 per cent).

#### ***Measurement of research variables***

In order to test our research model, we developed a questionnaire to measure the impacts of intensity of market competition, organizational strategies on organizational performance acting through by management accounting system (MAS) information. Survey questions about each construct were modified and developed to fit the research questions, for which reliability and validity have been demonstrated in the literature (see Table 2).

*Competition:* For measuring the perceived intensity of market competition, this study employs a five-item instrument of market competition, which was developed by Khandwalla (1972) and adopted by Mia and Chenhall (1994), Williams and Seaman (2001) and Hoque (2011). Accordingly, these validated and reliable dimensions include competition (1) for raw materials, parts and equipment, (2) for technical personnel such as engineers, accountants, programmers, (3) in promotion, advertising, selling, distribution, etc., (4) in quality and variety of products, and (5) price competition in their main line of business. The questionnaire asks respondents to rate how intense, these types of competition intensify competition pressure on their organization for the past three years by a five-point Likert scale ranging from one (very low) to five (very high).

*Change in Organizational Strategy:* The measure of change in organizational strategies is adapted from Chenhall and Langfield-Smith (1998), Parthasarthy and Sethi (1992), Perera et al. (1997) and Baines and Langfield-Smith, (2003) Respondents were asked to identify the extent to which their firm had changed its strategic emphasis over a range of differentiation aspects, during the past 3 years. The eight items all measured aspects of changes. Each element was rated on a 5-point Likert scale ranging from 'not at all' (scored 1) to 'great extent' (scored 5).

*Management accounting system (MAS) information:* MAS information was assessed using the 6-item instrument adapted from Chenhall and Morris (1986) which was subsequently applied by some scholars (e.g. Agbejule, 2005; Bouwnes and Abernethy, 2000; Cheng, 2012; Chong and Eggleton, 2003; Chung et al., 2012; Etemadi et al., 2009; Lal and Hassel, 1998; Mia and Clarke, 1999; Naranjo-Gil and Hartmann, 2007; Susanto, 2010). Firms' managers were asked to indicate the extent to which they use the broad scope MAS information during the past three years, on a 5-point Likert-scale ranging from 1 (not at all) to 5 (to a great extent).

*Organizational Performance:* The measure of organizational performance is adapted from Govindarajan (1984) and which was subsequently applied by some scholars (e.g. Abernethy and Stoelwinder, 1991; Agbejule, 2011; Chenhall and Langfield-Smith, 1998; Mia and Clarke, 1999). The respondents were asked to specify the extent to which their organizations have been successful in reaching their planned objectives such as attainment of planned productivity, quality, costs, delivery schedule, market share, level of profit and sales volume. They were asked to identify, on a 5-point Likert scale, their organization actual performance compared to the planned performance. On the scale, 1 signifies poor performance and 5 signifies excellent performance.

#### **Results**

Table 3 shows summary statistics including mean, standard deviation (SD), Variance and variables' range. Competition and strategy have the highest mean score (both 3.46), followed by MAS (3.41) and organizational performance (3.35).

**Table 2. Measures and items**

Construct	Item	Measurement items	References
Competition	COM1	competition for raw materials, parts and equipment	Khandwalla
	COM2	competition for technical personnel such as engineers, accountants, programmers	(1972), Mia and Chenhall
	COM3	competition in promotion, advertising, selling, distribution, etc.	(1994), Williams and
	COM4	competition in quality and variety of products	Seaman 2001),
	COM5	price competition in their main line of business	Hoque (2011)
Strategy	STR1	Make changes in design and introduce quickly	Chenhall and
	STR2	Customize products and services to customer need	Langfield-
	STR3	Product availability (broad distribution)	Smith (1998),
	STR4	Provide effective after sales service and support	Perera et al.
	STR5	Make rapid volume/product mix changes	(1997) and
	STR6	Provide on time delivery	Baines and
	STR7	Provide high-quality products	Langfield-
	STR8	Make dependable delivery promise	Smith, (2003)
MAS information	MAS1	Information which relates to possible future events (e.g. possible changes in government regulations).	Chenhall and Morris (1986),
	MAS2	Qualification of the likelihood of future events occurring (e.g. probability estimates)	Agbejule (2005),
	MAS3	Non-economic information such as customer preferences, employee attitudes, labor relations, attitudes of governments and customer bodies, competitive threats, etc.	Bouwnes and Abernethy (2000),
	MAS4	Information on broad factors external to your organization, such as economic condition, population growth, technological advancements, etc.	Cheng (2012), Chong and Eggleton,
	MAS5	Non-financial information that relates to the productivity information such as hours of computer breakdowns, employee absenteeism, customer services, etc.	(2003) and Chung <i>et al.</i> (2012)
	MAS6	Nonfinancial information that relates to market information such as market size, growth share, etc.	
Performance	PER1	Attainment of target related to productivity	Govindarajan
	PER2	Attainment of target related to cost	(1984),
	PER3	Attainment of target related to quality	Abernethy and
	PER4	Attainment of target related to delivery of service	Stoelwinder
	PER5	Attainment of target related to total assets	(1991),
	PER6	Attainment of target related to market share	Agbejule
	PER7	Attainment of target related to profit	(2011), Hoque
	PER8	Attainment of target related to return on investment	and James
	PER9	Attainment of target related to new product introduction	(2000), Mia
	PER10	Attainment of target related to personnel development	and Clarke
	PER11	Attainment of target related to overall business performance and practice	(1999)



**Table 3. Descriptive statistics.**

Variables	Mean	SD	Variance	Range
Competition (COM)	3.46	0.54	0.29	2.00
Strategy (STR)	3.46	0.49	0.24	1.75
Management Accounting System (MAS)	3.41	0.46	0.21	2.00
Organizational performance (PER)	3.35	0.44	0.19	1.60

**Table 4. Reliability and convergent validity**

Construct	Item	Factor loading	Communality	R2	Cronbach's $\alpha$	Composite reliability	AVE
Competition	COM1	0.951	0.835	NA	0.950	0.961	0.835
	COM2	0.832					
	COM3	0.948					
	COM4	0.878					
	COM5	0.952					
Strategy	STR1	0.868	0.683	0.178	0.935	0.945	0.683
	STR2	0.802					
	STR3	0.795					
	STR4	0.771					
	STR5	0.868					
	STR6	0.831					
	STR7	0.839					
	STR8	0.831					
MAS information	MAS1	0.896	0.747	0.379	0.932	0.946	0.748
	MAS2	0.862					
	MAS3	0.801					
	MAS4	0.854					
	MAS5	0.927					
	MAS6	0.841					
Performance	PER1	0.844	0.620	0.457	0.939	0.947	0.620
	PER2	0.856					
	PER3	0.773					
	PER4	0.750					
	PER5	0.830					
	PER6	0.739					
	PER7	0.813					
	PER8	0.731					
	PER9	0.717					
	PER10	0.783					
	PER11	0.808					

In the current study, structural equation modeling (SEM) via PLS was used to analyze the data using a two-stage process measurement model and structural model analysis. PLS has ability to model linear relations without the constraints of other approaches of structural equation modelling (Chin et al., 2003). Hence, it has been implemented in many fields of management, such as

marketing (e.g., Henseler et al., 2009), organization (e.g., Sosik et al., 2009), management information system (e.g., Chin et al., 2003), and business strategy (e.g., Hulland, 1999). This software assists scholars to analyze the measurement model at the same time with the structural model, and helps them to adopt more complex research models (Lee et al., 2011).

**Measurement model**

The correlation between measures and constructs was assessed via the measurement model by measuring the reliability and validity of the scale measures. Reliability measures internal consistency, while validity measures how accurately the target concepts are measured. In this study, we selected several items to measure each construct. Table 4 presents the results of the reliability assessment of the model. Reliability was tested by the means of Cronbach’s *a* to verify if multiple items within the constructs violated the internal consistency of each item. As the reliability coefficients of all factors were greater than the generally accepted 0.7, hence, each measurement item had internal consistency (Hair et al., 1998). An another test of reliability known as composite reliability index was also implemented, as it is considered to offer much more precise reliability information than Cronbach’s *a* (Chin et al., 2003). The composite reliability of the constructs was higher than 0.70 level proposed by Nunnally (1978).

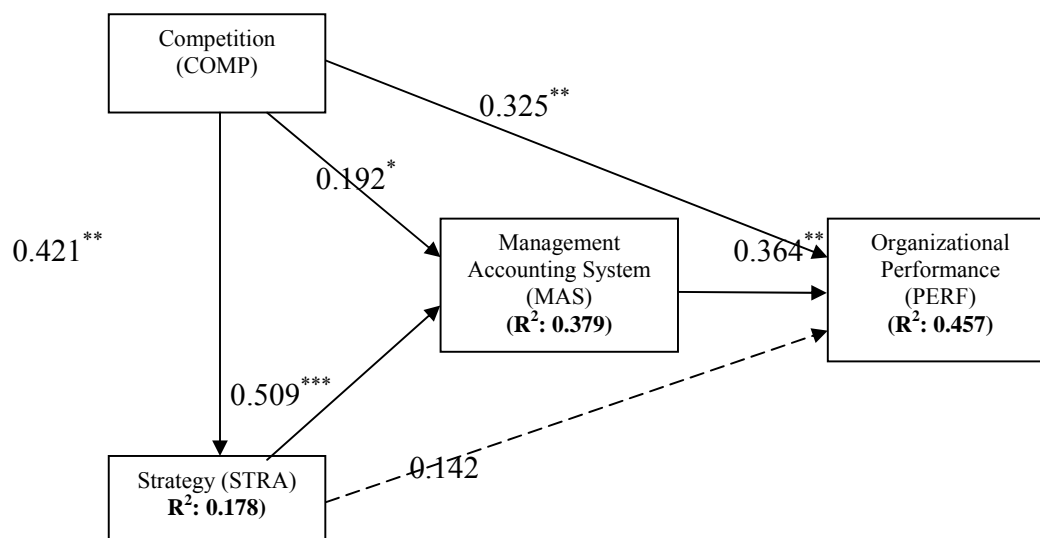
Convergent validity is evaluated by average variance extracted (AVE). As the factor loadings in Table 4 show, all AVE was greater than the standard 0.5, thus, convergent validity was verified (Fornell and Larcker, 1981). In addition, discriminant validity can be verified, when the square root of AVE about the particular concepts is greater than the correlation coefficient between these and other concepts (Fornell and Larcker, 1981). As shown in Table 5, the results confirmed that the square root of AVE was greater than the corresponding correlation coefficient, these are considered to demonstrate adequate discriminant validity. Therefore, based on the above analysis, the measurement model of the current study has high reliability and validity.

**Table 5. Discriminant validity**

	COMP	MAS	PERF	STRA
Competition (COM)	<b>0.91402</b>			
MAS	0.407812	<b>0.86480</b>		
Performance (PER)	0.535027	0.582156	<b>0.78756</b>	
Strategy (STR)	0.421916	0.591041	0.496018	<b>0.82676</b>

**Structural model**

This study estimated the path coefficients and the R<sup>2</sup> values to assess the structural model. R<sup>2</sup> values indicate the amount of variance explained by the independent variables, while path coefficients show the strength of the associations between dependent and independent variables (Ko et al., 2005; Chin et al., 2003). Bootstrap re-sampling method was used to verify the significance of all paths. Figure 2 and table 6 show the overall results of the analysis. Standardized paths, in order to be considered significant, should be as a minimum 0.20, and preferably above 0.30 (Chin et al., 2003). Figure 2 shows that competition is significantly and positively associated with strategy and (β=0.421, P<0.01) and MAS (β=0.192, P<0.05). Hence, the results reasonably support Hypotheses H1 and H2.



**Figure 2. Research model results: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .**

However, strategy shows significant positive association with MAS ( $\beta = 0.509$ ,  $P < 0.001$ ), but no significant relationship with performance. Hence, the results provide support for hypothesis H3 but don't support H4. Though, there is no direct relationship between organizational strategies and performance, but they are linked acting through by MAS. Results also show that MAS is significantly positively related with organizational performance ( $\beta = 0.364$ ,  $P < 0.01$ ) which support H5. Finally, in addition to direct relation between competition and performance ( $\beta = 0.325$ ,  $P < 0.01$ ) there is an indirect relationship between competition and performance through by strategy and MAS jointly and individually which supports H6.

**Table 6. Results of hypotheses testing**

Independent variable	Dependent variable	Relevant hypothesis	Relevant path	Path coefficient	t-value	Result
Competition	Strategy	H1	COM→STR	0.421	5.421**	Supported
Competition	MAS	H2	COM→MAS	0.192	2.263*	Supported
Strategy	MAS	H3	STR→MAS	0.509	5.694***	Supported
Strategy	Performance	H4	STR→PER	0.142	1.260	Rejected
MAS	Performance	H5	MAS→PER	0.364	4.091**	Supported
Competition	performance	H6	COM→PER	0.325	4.011**	Supported

Note: \*  $p < 0.05$  \*\*  $P < 0.01$  \*\*\*  $p < 0.001$

### Discussion and Conclusion

The current research makes several contributions to the management accounting system (MAS) literature. Firstly, the results provide support for a positive relationship between competition and MAS information. This finding is also consistent with the findings of previous MAS studies that higher level of competition leads to higher need for broad scope MAS information that can supply managers with high quality information to adopt with changing environment (e.g. Cooper, 1995; DeFond & Park, 1999; Khandwalla, 1972; Krishnan, 2005). An interpretation of this finding is that when the level of competition in the environment increases, firms become less stable and face market uncertainty; therefore they would demand a greater amount of broad scope MAS

information. They use broad scope MAS to assist them in their daily operations as well as in making decisions for the benefit of their organizations. More importantly, the results show that the use of broad scope MAS information by managers could help firms to achieve the ultimate outcome of every organization, i.e., improved performance.

Secondly, results show that a change in environmental competition will cause changes in strategic behaviour of organizations which is consistent with other researches in this area (e.g. Baines and Langfield-Smith, 2003; Chenhall, 2003; Fuschs et al., 2000). Prior researches have also indicated that competition has significant effect on the changes in strategy and an appropriate matching between them can enhance performance. An interpretation of this finding is that in competitive environment, organizations need to formulate clear business strategies, in order to differentiate themselves from their rivals, as well as to create value for customers' satisfaction (Jermias and Gani, 2002). They must produce new products and develop markets to search for new market and compete with their rivals, which subsequently affect the organization's learning strategy.

Thirdly, as for the variable of strategy, the findings from this study show that the association between strategy and performance although positive, but is not significant. However, this result is not consistent with prior expectation, the findings of prior researches such as Chong and Chong (1997) also reported similar results. In contrast, the relationship with between strategy and MAS is mostly direct and positive. The direct relationship between strategy and MAS was reported in prior studies (Abernathy and Guthrie, 1994; Baines and Langfield-Smith, 2003; Chenhall and Langfield-Smith, 2003; Verbeeten, 2010). Moreover, the hypothesis suggests that a change in environmental competition will lead to changes in strategic priorities of organizations. In this condition, managers need broader scope MAS information to formulate a clear business strategy, in order to differentiate themselves from their rivals to gain competitive advantages and improve performance (Cooper, 1995; Hoque et al., 2001; Kaplan & Norton, 1996; Khandwalla, 1972; Krishnan, 2005).

Fourthly, MAS fully mediated the relationship among competition, strategy and performance and was found to be a significant influential factor of performance. The direct and positive relationship between MAS and performance suggests that, the use of broad scope MAS information by managers can help them in making more correct decisions, which will result in enhancement in organizational performance (Baines and Langfield-Smith, 2003; Chenhall, 2003; Hammad *et al.*, 2010; Ismail and Isa, 2011; Mia, 1993).

Fifthly, an important finding of the current research is the existence of an association between competition and performance, which is because of two significant mediators—strategy and MAS. These findings propose that competition has an impact on performance through by changes in strategies and MAS information. Though, one may discuss that if a firm has already created suitable MAS given current level of competition in environment and its current strategy, for what have to change it? By considering the findings of this research, it can be discussed that as competition and strategy change, most existing MAS no longer applicable or there have been numerous MAS advances in the past decades that current MAS have become out-dated. Based on the above discussions, the two variables in this research— strategy and change in MAS— appear to be effective forces for a positive association between competition and organizational performance.

Sixthly, globalization has opened manufacturing industries in Iran to higher level of competition, and application of broad scope MAS information has increased. It is necessary for them to suitably align their strategy and MAS information with the changes in the competitive environment. This conclusion is supported by Chong and Chong (1997), Tuanmat and Smith (2011) and Martin-Pena and Diaz-Garrido (2008) who propose that the formulation of strategies and design of MAS is not a static one, but that change follows dynamically consistent with changes in the

competitive environment. When there is a suitable fit among these variables, organizational performance will be improved.

Seventh, the current research provides a better understanding of the associations among competition, strategy, MAS information and organizational performance in the background of manufacturing industry. This research increases our understandings about organizational change literature for organizations, especially in the Iranian manufacturing organizations. Iran is different to other countries in economy and culture; hence, the results of this research offer a superior understanding of how organizational changes occur in a dissimilar economic background. The results provide managers of organizations with some useful insights and helpful guidelines to the function of MAS information and change in strategies which can be used to improve their organizational performance in a competitive environment. The results may provide Iranian policy makers with some direction in terms of identifying Iranian manufacturing organizations and reorganizing the important elements for higher performance.

As this research concentrates only on two contextual factors (competition and strategy) it could be interesting to further empirically investigate the effect of other contextual variables (e.g. organizational structure, technology, and organizational culture) and different measurement instruments. As mentioned above, the two variables under study here– organizational strategy and MAS information– seem to be influential forces for a positive association between competition and organizational performance. It would also be interesting for further studies to investigate what other ways the association between competition and organizational performance improvement. Furthermore, it might be possible to repeat a related research in service sectors, such as financial, education, IT and communication, and tourism, to attain a better understanding of management accounting concepts and applications.

There are at least four limitations to the research which are worth mentioning. First, the sample of the study involves only a relatively small proportion of all manufacturing firms of Iran, hence, it may not be fully representative of the population and there may be some non-response bias. In addition, generalizing the results to service sectors may be difficult and should be done cautiously. Furthermore, the use of a self-rating scale to measure organizational performance is possible to have higher mean-values (higher leniency error) and a restricted range (lower variability error) in the score. Finally, the current research examines only one characteristic of MAS information.

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