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Performance consequences of management accounting system information usage in Jordan

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The purpose of this study is to contribute to the body of knowledge in the area of management accounting systems (MAS) within the context of Jordanian manufacturing companies. The current study empirically investigated the relationship between MAS information usage and companies' performance. Data were collected from manufacturing companies listed in Amman Stock Exchange. The results of this study provide ample confirmation on the role of the usage of MAS information in enhance the manufacturing companies performance in Jordan.

JEL Classifications: M10,M41

Keywords: Management accounting systems, accounting information, organizational performance, manufacturing industry, Jordan

Introduction

Growing market competition, technological advancements, globalization and customers' awareness has contributed to environmental uncertainty within the contemporary business environment (Drury, 2007; Zeithaml and Binter, 2000). At the same time, several researchers reveal that the use of broad scope MAS information helps to reduce uncertainty and complexity, thereby improving decision-making (Chenhall and Morris, 1986; Gordon and Narayanan, 1984; Mia and Clarke, 1999; Van Biema and Greenwald, 1997). This in turn will lead to enhance the organizational performance (Mia and Patiar, 2002; Olsen, Murthy and Teare, 1994). The relevant literature suggests that in the competitive environment, manager's extensive use of MAS leads to improve decisions then organizational performance (Mia and Patiar, 2002; Olsen, Murthy and Teare, 1994). Extensive research evidence points to a positive relationship among managers' MAS information use, perceived environmental uncertainty, organizational structure, and the organizational performance in the developed countries (Dent, 1996; Foster, Gupta Sjoblom, 1996; Kaplan and Cooper, 1998; Mia, 1993; Mia and Clarke, 1999; Rust, Zahorik and Keiningham, 1995; Van Biema and Greenwald, 1997). Yet, evidence of a similar nature in the developing countries, like Jordan, is lacking.

Mia (1993) found that a high-perceived environmental uncertainty in managers encouraged them to make greater use of MAS information resulting in improved performance. Mia and Chenhall (1994) reported that marketing managers and production managers in the manufacturing industry had differing perceived environmental uncertainty and they used MAS information accordingly. The results indicated that marketing

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managers' perceived environmental uncertainty was higher than production managers were, and that marketing managers made more extensive use of MAS information to reduce high levels of uncertainty that resulted in higher performance levels.

This study examined the relationship between managers' use of broad scope MAS information, and the performance of Jordanian manufacturing companies. The next section will review the related literature, the theoretical framework and hypothesis development will be then presented. At the end of this paper, the results of the study, discussion and conclusion will be reported.

Previous Research

Kaplan and Norton (1992) and Mia (1993) highlight that the use of traditional management accounting information in the form of budget reports and variance analysis can be traced back to the origin of accounting systems. It is argued that in the competitive environment, continual use of traditional accounting information could be harmful, since it focuses on historical and financial facts. Irrespective of its limitations, traditional MAS information is still widely used in companies for evaluating performance and exercising control (Harris and Brander Brown, 1998). While in the past, complete reliance on financial reports was satisfactory. In the contemporary business environment, MAS needs to include information from internal (i.e., operations, finance, marketing and human resources) and external (i.e., government bodies and consultants) sources, and ought to be of a financial (budgets) and non-financial nature as well as being historical and future oriented (Chenhall and Morris, 1986; Gordon and Narayanan, 1984; Mia and Chenhall, 1994). Gordon and Miller (1976) have conceptualized MAS as formal system designed for providing information to managers. In addition, Chenhall and Morris (1986) outlined four dimensions of MAS information including scope, timeliness, aggregation and integration. Gordon and Narayanan (1984) argued that, the scope of MAS information ought to include details from different sources. First, the relevant information needs to be gathered within the organization (e.g., operations- weaknesses in products, service and processes; finance- sales mix, sales and costs breakdown; marketing- customer satisfaction and repeat business; and human resources- employees' morale and training programmes). As well as outside the organization (e.g., general trends in customers buying behavior, competitors audit and reports from government bodies and consultants). Second, the information needs to include both financial as well as non-financial details. Third, the information needs to be of a historical nature taken from the profit and loss accounts, and futuristic information, such as sales and volume forecasts for different products and services.

However, the current study has focused on one dimensions of MAS which is scope MAS information for two main reasons. First, the use of broad scope MAS information let insight into complex decision-making (Chong, 1996; Gul and Chia, 1994). Second, the usage of broad scope MAS information has been widely used by different authors (Chong, 1996; Gordon and Narayanan, 1984; Gul, 1991; Gul and Chia, 1994; Mia, 1993; Mia and Chenhall, 1994; Mia and Clarke, 1999).

Indeed, the information related to operations, finance, marketing and human resources is made available through various management reports and operating budgets. Chenhall and Morris (1986) maintain that broad scope MAS information should be specifically designed to meet the needs of managers, so they can make most effective decisions. Davidson and Griffin (2000), Huber (1980) and Moores and Booth (1994) state that the competitive environment creates uncertainty and affects managers' decision- making ability related to increasing sales revenue, reducing costs, improving customer satisfaction and raising employees' morale as well as developing new products, services, processes and markets. Each of the above decisions requires managers to draw on a comprehensive set of MAS information that includes financial and non-financial data from internal and external sources.

The relationship between MAS information and organizational performance

The relationship between the usage of MAS information and organizational performance can be seen under the broad view of the association between management accounting and control systems and organizational performance. In the literature, management accounting and control system is defined broadly as a system providing useful information to assist managers in their decision making to achieve desired organizational outcomes or goals efficiently (Anthony and Govindarajan, 2001; Chenhall, 2003; Fisher, 1995; Langfield-Smith, 1997; Otley, 1999). According to Ferris and Haskins (1988) and Mia (1989), extensive use of broad scope MAS information assists managers in reducing high levels of job complexity and uncertainty, and leads to successful decisions. This is because extensive use of broad scope MAS information encourages managers to consider several options; some of which would perhaps otherwise go unnoticed. Thus, the result is a dramatic improvement in managers' understanding of the job and enhanced performance (Ferris and Haskins, 1988; Gordon and Narayanan, 1984; Mia, 1993).

Choe (2004) investigated the relationship between management accounting information and production performance, Choe's findings showed there was a positive relationship between management accounting information and production performance. In addition, the empirical results showed that facilitators of organizational learning had a moderating impact on the relationship between provision of information and performance improvement.

Other authors also have examined the link among the management accounting techniques. For example, Agbejule (2005) investigated the relationship between MAS and performance. He found that MAS has a negative effect on performance under low levels of perceived environmental uncertainty. Further, Baines and Langfield-Smith (2003) pointed out that an increasingly competitive environment has resulted in an increased emphasis on differentiation strategies. This, led to changes in organizational design, advanced manufacturing technology and advanced management accounting practices. These changes have guided to a greater reliance on nonfinancial accounting information, which has a positive influence on performance.

Ittner et al. (2003) have reported that a broadly set information usage has a positive relationship with stock returns, while they could not find any relationship of information usage with ROA and sales growth. Mia and Clarke (1999) investigated the relationship among intensity of marketing competition with the role of benchmarking and monitoring information provided by the management accounting systems and business unit performance. Their findings showed that the managers' use of the information moderates the relationship among the intensity of market competition and business unit performance. This result explains that the organizations which used MAS information were able to successfully face competition in the market and improve their performance.

Ittner and Larcher (1997) found a negative relationship between several strategic control practices (such as market research, benchmarking, and strategic audits) and performance. Chong and Chong (1997) found MAS played a role in the relationship between strategy choices and performance. The study showed that the broad scope of MAS information positively affects the performance. Perera, Harrison, and Poole (1997) investigated the effect of customer focused strategy and nonfinancial performance measurement systems on the performance. The study showed that there is a positive association between customer-focused strategy and the use of nonfinancial performance measures, but there is no relationship between nonfinancial performance systems and performance. Gul et al. (1992) have investigated the relationship between MAS and organizational performance, and their finding showed that there is positive relationship between MAS and organizational performance under high level of PEU. The same relationship became negative under low level of PEU. Recently, Ajibolade et al. (2010) also investigated the association between MAS and organizational performance, and their results confirmed a

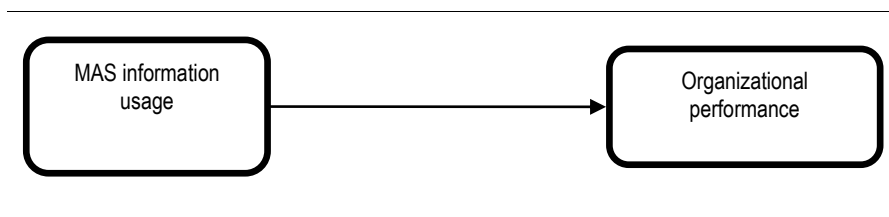
positive relationship under high level of PEU. Also, Seaman and Williams (2011) confirmed the relationship between MAS and sub-unit performance.

In the context of Jordan, Al-Mawali et al., (2012) have investigated the relationship between the usage of customers accounting information usage and the performance of Jordanian services companies. They found that the level of customers accounting information usage positively affect the organizational performance.

Theoretical framework and hypotheses

Based on contingency theory and previous studies that have done in management accounting and control (as explained in the previous session), this study developed the underlining framework to investigate the relationship between the usage of MAS information and organizational performance. Otley (1980) among the earlier promoters of contingency theory in accounting research has highlighted the theoretical framework for accounting systems. Among other, MAS as part of the organizational management control systems (independent variable) will be contingent to the context within which an organization operates, consequently, the organizational performance will be affected by the level of MAS information usage. In other words, the organizational performance will be enhanced if these companies make extensive usage of MAS information to reduce the uncertainty (see Figure 1).

FIGURE 1. RESEARCH FRAMEWORK



The extent of broad scope of the information has been recognized as potentially essential in assessing managerial decision making (Chenhall and Morris, 1986; Mia and Chenhall, 1994; Cadez and Guilding, 2008) authors have reported significance role for ex-ante information to support the managers' decision, and have argued that broad scope MAS information, which includes internal, external, financial and non-financial information, has positive association with organizational performance. In sum, this information can help managers to make a better decision, and thus, enhance organizational performance.

According to the discussions above, the following hypotheses was developed:

H1: There is positive relationship between broad scope MAS information usage and organizational performance.

Research Method

Sample

All manufacturing companies listed in Amman Stock Exchange (Companies' Guide 2011) were used as the sampling frame for the current study. The companies' Guide by Amman Stock Exchange is the only listing that specifically covers all sectors and industries in Jordan. This directory lists the names, titles, and the general information about the listed companies (e.g., the address and established year), from which a list of 93 companies in

Jordan were identified. To get the minimum sample requested for analysis, the researchers have distributed the questioner to all the publication.

This survey valued inputs from top management level managers; therefore, they were contacted by telephone requesting their participation in the survey. After obtaining consent, questionnaires were later hand-delivered to the managers, and collected. Additionally, the questionnaires were translated into Arabic by a bilingual native Arabic management accounting professors. The overall usable response is 64 questionnaires (68%).

Measurement of variables. Independent variable

The instrument applied in evaluating managers' usage of broad scope MAS information was adapted from Chenhall and Morris's (1986) six-item instrument. This questionnaire was considered to be appropriate for the current study, since Chenhall and Morris's instrument secures the distinctiveness of MAS information that is considered to be highly important for managers' decision-making (Mia, 1993). Accordingly, Chong (1996), Gul and Chia (1994) and Mia and Chenhall (1994) suggested measuring the manager's extent of MAS use, rather than the manager's perception of its usefulness. For the current study, managers' use of MAS information was used.

In the current study, managers were asked to indicate a number that described their level of information use associated to financial and non- financial aspects of the operation, non-financial aspects of the market, future events, likelihood of the future events occurring, social changes and external environment using a seven point Likert scale where 1 indicated "Very low" and 7 indicated "Very high". Table 1 explains the descriptive statistics for the seven items of broad scope MAS information use.

Measurement of variables. Dependent variable

The current study has measured organizational performance using a modified instrument (Hoque and James, 2000) that has been used in the related studies to assess organizational performance. Each manager was asked to evaluate her/his company's performance level by comparing it with the major competitor on seven financial and non-financial performance indicators. Managers respond to each of the items of performance on a seven-point Likert scale anchored at both ends such that, 1 = below average and 7 = above average. However, recognizing the possible problems with self-report measures, to make sure the reliability and the validity of the indexes and to minimize random fluctuations and anomalies in the data the respondents were asked to report performance over the past 3 years (Katou and Budhwar, 2010).

Goodness of measurement

Factor analysis and reliability analysis were used to check the data validity and reliability for the MAS information and organizational performance. The results of the factor analysis and reliability are presented in Table 1. All individual loadings for MAS information as well as organizational performance were above the minimum of 0.5, the factor analysis results also show that all conditions that recommended by Hair et al. (1998) were met. The reliability values (Cronbach's Alpha) were all above 0.7. Therefore, it can be concluded that the measures utilized in current study are valid and reliable.

TABLE 1. GOODNESS OF MEASUREMENT

Items	Factor loading	Cronbach's Alpha
MAS information		0.86
MAS 2 Non-financial aspects of the market	0.81	
MAS 3 Financial aspects of the operation	0.78	
MAS 5 Non-financial aspects of operation	0.77	
MAS 6 Future events	0.73	
MAS 1 Social changes	0.69	
MAS 4 External environment	0.63	
<i>Eigenvalue</i>		4.552
<i>Percentage of variance explained</i>		69.73
<i>Kaiser-Meyer-Olkin MSA</i>		0.872
<i>Bartlett's test of sphericity</i>		9532.464**
Organizational Performance		
OP1 Return on investment	0.91	0.88
OP2 Margin on sales	0.88	
OP5 Capacity utilization	0.84	
OP4 Customer satisfaction	0.82	
OP3 Product/service quality	0.75	
OP6 Development of new products	0.70	
OP7 Market share	0.66	
<i>Eigenvalue</i>		3.532
<i>Percentage of variance explained</i>		63.35
<i>Kaiser-Meyer-Olkin MSA</i>		0.793
<i>Bartlett's test of sphericity</i>		8435.887**

Results

Table 2 provides means, standard deviation, and Correlation Matrix for all variables. Taking into consideration that the scale used for MAS information usage was 1 to 7 (with 4 as the midpoint). The table shows that Jordanian companies used MAS information for decisions to moderate extent. This means that, on average, the Jordanian companies' usage of MAS information was above average (above midpoint), the table presents the mean and standard deviation of organizational performance as well, and the results show that mean of organizational performance was above midpoint on the seven Likert scale.

TABLE 2. CORRELATION MATRIX AND DESCRIPTIVE STATISTICS OF STUDY VARIABLES

	Mean	Std. deviation	MAS information
MAS information	5.81	0.98	1
Organizational Performance	5.32	0.87	0.532*

Note: Level of significant: *p < 0.10, **p < 0.05, *** p < 0.01

To test the study's hypothesis, a two-step hierarchical regression was used. In first step, the analysis tested the effect of the control variable (firm size) on the dependent variable as suggested in previous studies (Otley and Wilkinson, 1988; Otley, 1978). Then, in the second step, the independent variables were introduced to test their marginal effect on the dependent variable. In the first step, firm size had significant effect on organizational performance. The control variable explained about 4.8% of the total variation in

organizational performance. The addition of the MAS information dimension in step two explained an additional 25.4% of the variance in organizational performance. This means that the control variable and MAS information dimension cumulatively explained 30.2% of the variance in organizational performance. Table 3 presents the result of the regression.

TABLE 3. RESULTS FROM THE REGRESSION ANALYSIS

Control Variable	DV: Organizational Performance	
	Step 1 Beta	Step 2 Beta
Firm Size (≥ 300 employees = 1, < 300 employees = 0)	0.254*	0.383**
Independent variable:		
MAS information		0.436**
F value	5.822*	12.402**
R ²	0.048	0.302
R ² Change	0.048	0.254

Note: Level of significant: *p < 0.10, **p < 0.05, ***p < 0.01

The statistical result shows that MAS information had a positive and significant effect on organizational performance at $p < .05$, $\beta = 0.436$. This means that the higher MAS information usage for decision making the higher organizational performance. Thus, the research hypothesis is supported.

Discussion

The effect of the usage of MAS information on organizational performance has examined in this study, in particularly the usage of broad scope MAS information for decisions purposes. The findings from this study confirm the contingent relationship between MAS information and organizational performance. This is consistent with the basic proposition of contingency theory assuming that, superior performance depends on a good fit between accounting information systems and contingent factors. The significant result that obtained by this study is running with previous related researches, for example; Davidson and Griffin (2000) pointed out that MAS information assists in decision making related to improving financial and non-financial performance. Moreover, Almawali, Zainuddin and Kader Ali (2012) provide evidences to support positive effect of the usage of customer accounting information that has strategic characteristics on organizational performance in services industries. Mia and Clarke (1999), in their study, showed that the managers' use of the information moderates the relationship among the intensity of market competition and business unit performance. This finding explains that the organizations that used MAS information were able to successfully face competition in the market and improve their performance. Chong and Chong (1997) found MAS played a role in the relationship between strategy choices and performance. The study illustrated that the broad scope of MAS information positively affects the performance.

On the other hand, the result obtained by the current study is inconsistent with some other related studies. For example, Agbejule (2005) who investigated the relationship between MAS and performance found that, MAS has a negative effect on performance under low levels of perceived environmental uncertainty. In addition, Jusoh et al. (2008) found that there is no significant relationship between information related to financial performance and organizational performance.

Conclusion, limitation and future research

To conclude, the current study has confirmed the positive effect of MAS information and the organizational performance. MAS information including financial and non-financial, internal and external information permitted top management to consider a number of alternative strategies to achieve the optimum results. Thus, this improved top managements' understanding of their job, will be reflected in their decisions and finally enhance the organizational performance (Ferris and Haskins, 1988; Gordon and Narayan, 1984).

Several limitations should be taken into consideration for future studies. However, most of these limitations in the sample since only companies listed in Amman Stock Exchange were taken into account. As a result, the sample was relatively small and not comprehensive as much as necessary. In order to get superior understanding of the MAS information usage in context of Jordan and its relationship with organizational performance, future research should focus in examination of larger sample size and application of MAS concepts further than only listed companies. Another limitation is regarding the nature of data collection in a cross-sectional study, where data are collected at one point in time. Bearing in mind that MAS information is long-term information strategies that need time to be built and nurtured to yield results in terms of organizational performance, a study conducted in a longitudinal framework might be able to illuminate the causal relationships between the variables of concern, which were not captured by the cross-sectional data, and provide more accurate results.

Finally, the current study has examined the direct relationship between MAS information and organizational performance. Upcoming researches could introduce some of the contingent factors (e.g. perceived environmental uncertainty) as a moderator on the direct relationship between MAS information and organizational performance.

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