

The Effect of Applying Management Accounting Information on Firm Production Operation

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Abstract: Present study is to examine the effect of management account information application on firm production operation. The universe includes the companies listed in Tehran stock exchange based on the conditions considered for 129 companies in 2012. The NAFMA questionnaire (National Award for Management Accounting) was used to collect the data to test the hypotheses. NAFMA is the best choice to assess the companies in field of the research. Generally the information indicate that there isn't a significant relation between management accounting approaches and techniques and firm operation but there is a positive and significant relation between the firm size and operation.

Keywords: Management Accounting Information, Firm Producing Operation, Organizational Facilitators.

Introduction

In industrial ear the value creation depended mostly on industrial potency and investment in tangible and financial assets while nowadays with economic paradigm change from industrial to knowledge-based the only way to create value is the acceptance of innovation as a business process. The knowledge-based economy is a type of economy in which knowledge creation and enjoyment play the main role in wealth creation. One of the distinguishable characteristics of the knowledge-based economy is the great investment in organizational learning, IT and communications; that is why Chenhall (1997) believes that nowadays many businesses have concluded that value is not achieved based on tangible sources but the intangible ones create value (Choe, 2004).

We know that the management accounting information system is to collect, classify and summarize the information which finally leads to present the information to the management to program, control and assess production operation (Bruggeman & Slagmulder, 1995). In this study the management accounting information is examined to achieve optimal operation of production finally led to AMT (Advanced manufacturing technology).

Applying management account techniques and attitudes to prepare and report rapidly and assess information precisely leads to optimal operation .that is why in this study we examine the effect of organizational learning on firm production operation.

Study hypotheses

In his study Yadav (1985) showed there is a significant and positive relation between types of information and operation. Chenhall (1997) showed under advanced producing operation the organizational learning effects of operational information may play some role in promoting production operation. In their study Schaffer (2004) examined the management accounting information application, organizational learning and organizational operation; they stated that the management accounting information application have considerable direct and indirect effects on organizational operation through learning process. In his study Choe (2004) examined the relations of management

accounting information, organizational learning and production operation; the findings shows a positive correlation between advanced technology level and management accounting information rate (Namely programming and controlling information and nonfinancial operation information); also there is a significant and positive relation between the information presentation and improvement in production operation. Nordtvedt (2005) concluded that organizational learning and effective training in the organizations improve the firm's operation and he showed that the organizational learning plays an important role in organization success.

By virtue of above reasons it can be said that the information collection increases organizational learning and proper learning increases organizational operation; thus, we may propose hypothesis:

Hypothesis: *There is a significant relation between applying management accounting approaches and techniques and producing operation.*

Study framework

Management accounting information system: Management accounting information system's goal is to collect, classify and summarize the information which finally lead to present the information report for programming, controlling and assessing producing activities (Bruggeman & Slagmulder, 1995).

Management accounting includes designing and using accounting in the organization. It is not possible to consider management accounting as a collection of fixed rules, but the management accounting methods is to achieve organization's goals through improving decisions by its managers and personnel. Considering the organizations have different goals and are a composition of different members it is not possible to define general and monotone rules for all organizations. So management accounting should adapt itself with related organization's qualities and needs (Shabahang, 2011).

Management accounting which is advanced industrial accounting including different subjects to be able to help the users of internal financial information specially the managers to do their duties well and sufficiently (Namazi, 2005).

Management accountings relation to prepare and apply accounting information for internal managers of the organization to give them the information to permit them to be equipped better in their directional and control duties and take official and commercial decisions.

By virtue of CIMA Institute's (Chartered Institute Management Accounting) view management accounting means: Identifying, collecting, analyzing, preparing and exchanging information to program, assess and control internally and also it is used to secure proper application and responsibility by the managers. Also management accounting includes preparing financial reports for non-managing groups such as shareholders, beneficiaries, governmental organizations and tax department.

Management accounting information: Management accounting information in organizational learning are used as basic elements of learning. The Management accounting information play critical role in creating new science and up-to-dating mental models presented by the organization (Ouksel et al., 1997).

Producing operation: Producing operation includes product quality, flexibility and product delivery on time. Jayram et al and Joshi et al and Devaraj et al define such cases as follows: 1–Product quality may be defined as the product adaptation with the qualities expected by the client realized according to the latter's needs and final product presentation. 2– Flexibility is assessed in two dimensions: volume and features of the product. Flexibility is to increase or decrease the organization's production ability upon the client's demand without consuming time and expense shock. Also it is possible to consider the organization ability to change the client's view concerning the product design or its production process as flexibility. 3–Delivery on time means the organization's ability to deliver the product on due time and delivery speed in client's emergency conditions or when the client benefits from 'Just in Time Production System' (Choe, 2004).

Type's of operations: It is possible to divide the operations into financial and nonfinancial operation information groups (Abernethy & Brownell, 1997). Financial operation indicates how much the organization's goals (Such as capital productivity, sale productivity and investment productivity) have been achieving (Miller, 1992). The nonfinancial operation information includes qualitative and nonfinancial measures such as client's satisfaction, product quality and personnel's partnership (Harrison & Poole, 1997).

Considering the importance of the factors such as human force, capital, product and management it is possible to group the operation assessment methods as follows:

A) Financial assessment: The assessment is done through financial ratios or reports and methods such as profit and loss, balance sheet, budgeting, budget adaptation, costing based on activity, etc.

B) Human resources assessment: The assessment is done by the methods such as work evaluation, obligational choice, comparison, sensible events registration, dual comparison, etc.

C) Assessing production processes:
Adam Smith's methods.
Tailor's ergometry.
Project control.
Statistical quality control.
Models to program production control.
D) Assessing management processes:
Iso 14000-9000.
Management based on goal.
Comprehensive quality management.
Malcolm Baldrich's prize.
Hoshin's management system.
Self-assessment.
Balanced score card.
Puberty models.
European Quality management foundation.
Beneficiaries' views.

Study history

Chenhall (1997) examined the organizational learning panorama to identify the types of management accounting information necessary for advanced production technology. In his study he showed experimentally that by virtue of advanced production technology the effects of organizational learning of operational information may promote production operation.

Fullerton and McWatters (2002) examined the effect of the operational information of qualitative management and organizational learning on producing operation; in their study they showed in detail the operational information of qualitative management has a positive effect on the producing operation through organizational learning.

In a study under title, 'Studying Organizational Learning, Culture and Strategy' Hudspeth (2004) emphasized on the role and importance of organizational learning culture and considered the culture of the organization effective in changing the organization to a learner one.

In their study Schaffer (2004) examined how to apply management accounting information, organizational learning and organizational operation. The study indicated that different information do not influence learning; the study stated that applying management accounting information have direct and indirect positive effect on organizational operation through learning process; the findings indicated that different types of management accounting information have different effects on keeping main model, main structural model and organizational learning.

In his study Choe (2004) examined the relations of management accounting information, organizational learning and producing operation; by virtue of the study organizational learning was examined to improve producing operation through examining management accounting information for AMT (Advanced Making Technology).

Russ (2011) states that the leaders try to gain resources, listen carefully what their personnel say, try in line with their progress and help to facilitate learning in the organization to achieve the organizational goals.

Study methods and variables

NAFMA (National Award for Management Accounting) questionnaire which is the best choice to assess companies in the field was used to collect the data and test the hypotheses. The questionnaire was created officially by MIA (Malaysian Institute of Accountant) and CIMA (Chartered Institute of Management Accounting) in Kuala Lumpur on April, 13, 2004.

The general and main regression model designed to test the hypotheses is as follows:

$$Y_i = \alpha + \beta_1 \text{TEQ} + \beta_2 \text{Size} + \beta_3 \text{Debt Ratio} + \epsilon$$

Regarding how to use management accounting approaches and techniques and their effects on the companies' operation the studies indicate that applying management accounting techniques increase the assets yield (Choe, 2004).

Following models are used to test the hypotheses:

$$\text{ROA} = \alpha + \beta_1 \text{TEQ} + \beta_2 \text{Size} + \beta_3 \text{Debt Ratio} + \epsilon$$

$$\text{ROE} = \alpha + \beta_1 \text{TEQ} + \beta_2 \text{Size} + \beta_3 \text{Debt Ratio} + \epsilon$$

Regarding the study models, the dependent variable in the study is producing operation (ROA, ROE) and the independent ones in this study are approaches and management accounting techniques. The control variables in the study are the firm size (Normal logarithm of the data) and debt ratio.

By virtue of the limitations 129 companies were selected as the sample.

Table 1. Number of the distributed and gathered questionnaires.

	distributed	gathered	no reply
number of the questionnaires	160	129	31

The measurement method is used in the study by which the questionnaire was used to collect the data. First in the tentative step 50 questionnaires were given to the universe subjects who were sampled and then gathered in order to examine the reliability of the questionnaire. Having analyzed the data the reliability coefficient was calculated by Cronbach alpha test and the questionnaire alpha was 0.8597 percent.

The questions' numbers related to each variable are defined in following table:

Table 2. Number of the questions relating to each variable.

the variable under consideration	special questions
management accounting	5
management accounting information	2
commerce results (Operation measures)	2
management accounting approaches	26

Statistical analysis

Descriptive statistics

In this section the study variables descriptive statistics are described to validate the study findings.

Table 3. Operational variables descriptive statistics and other final variables used in the study models.

study variables	Minimum	Maximum	Mean	SD
assets yield	-0.06	0.59	0.14	0.124
owners' equity yield	-0.37	1.67	0.338	0.273
how much the management accounting is used	0.289	1.000	0.585	0.227
advantage to use the management accounting techniques	0.380	0.92	0.613	0.144
Firm size	10.932	19.114	13.632	1.716
debt ratio	0.05	1.840	0.602	0.219

Inferential statistics

Four following regression models of the least usual squares were estimated and examined in order to test hypothesis based on if there is any significant relation between the management accounting techniques and producing operation:

The dependent variable namely assets yield with the independent variable (The rate of using management accounting), control variables of the firm size and debt ratio were examined in order to estimate first model; related findings are shown in Tables 4 and 5.

Table 4. The findings from general examination of first model.

R	R ²	adjusted determination coefficient	Fischer test	Fischer test significance	Durbin– Watson statistic
0.556	0.309	0.293	18.669	0.000	2.194

As you see in Table 4 the Fischer test rate and related significance indicate that the estimated regression model is statistically significant.

In continuation the findings from examining the partial coefficients of the model presented in Table 5 are described. As you see the examined positive coefficient of the independent variable states there is a positive relation between the rate of using management accounting and assets yield though the 't' statistic rate and the significance related to the independent variable state that the relation is not statistically significant. Having taken into

consideration the model's findings hypothesis is not accepted. The coefficients and significance rate of the 't' statistic rate related to the control variables indicate the firm size has a significant and positive relation and the debt ratio has a significant and negative relation with the assets yield.

Table 5. The findings from partial examination of first model.

variable title	coefficient	SD	't' statistic	significance
the rate of using management accounting	0.021	0.042	0.5	0.618
firm size	0.018	0.006	3.058	0.003
debt ratio	-0.241	0.044	-5.441	0.000
fixed rate	0.033	0.090	0.368	0.714

The dependent variable namely assets yield with the independent variable (The rate of using management accounting), control variables of the firm size and debt ratio were examined in order to estimate second model; related findings are shown in Tables 6 and 7.

Table 6. The findings from general examination of second model.

R	R ²	adjusted determination coefficient	Fischer test	Fischer test significance	Durbin– Watson statistic
0.558	0.312	0.295	18.855	0.000	2.196

As you see in Table 6 the Fischer test rate and related significance indicate that the estimated regression model is statistically significant.

In continuation the findings from examining the partial coefficients of the model presented in Table 7 are described. As you see the examined positive coefficient of the independent variable states there is a positive relation between the rate of using management accounting and assets yield though the 't' statistic rate and the significance related to the independent variable state that the relation is not statistically significant. Having taken into consideration the model's findings the hypothesis is not accepted. The coefficients and significance rate of the 't' statistic rate related to the control variables indicate the firm size has a significant and positive relation and the debt ratio has a significant and negative relation with the assets yield.

Table 7. The findings from partial examination of second model.

variable title	coefficient	SD	't' statistic	significance
the advantage to use management accounting techniques	0.021	0.042	0.5	0.618
firm size	0.018	0.006	3.08	0.003
debt ratio	-0.241	0.044	-5.441	0.000
fixed rate	0.033	0.090	0.368	0.714

The dependent variable namely owners' equity yield with the independent variable (The rate of using management accounting), control variables of the firm size and debt ratio were examined in order to estimate third model; related findings are shown in Tables 8 and 9.

Table 8. The findings from general examination of third model.

R	R ²	adjusted determination coefficient	Fischer test	Fischer test significance	Durbin– Watson statistic
0.519	0.270	0.253	4.737	0.000	2.129

As you see in Table 8 the Fischer test rate and related significance indicate that the estimated regression model is statistically significant.

In continuation the findings from examining the partial coefficients of the model presented in Table 9 are described. As you see the examined positive coefficient of the independent variable states there is a positive relation between the rate of using management accounting and owner equity yield though the 't' statistic rate and the significance related to the independent variable state that the relation is not statistically significant. Having taken into consideration the model's findings the hypothesis is not accepted. The coefficients and significance rate of the

't' statistic rate related to the control variables indicate the firm size has a significant and positive relation and the debt ratio has no significant relation with the owner equity yield.

Table 9. The findings from partial examination of third model.

variable title	coefficient	SD	't' statistic	significance
the rate of using management accounting	0.098	0.108	0.916	0.361
firm size	0.037	0.015	2.485	0.001
debt ratio	-0.076	0.115	-0.667	0.506
fixed rate	0.025	0.233	0.108	0.914

The dependent variable namely owners' equity yield with the independent variable (The advantage of using management accounting), control variables of the firm size and debt ratio were examined in order to estimate fourth model; related findings are shown in Tables 10 and 11.

Table 10. The findings from general examination of fourth model.

R	R ²	adjusted determination coefficient	Fischer test	Fischer test significance	Durbin– Watson statistic
0.519	0.269	0.245	4.711	0.000	2.125

As you see in Table 10 the Fischer test rate and related significance indicate that the estimated regression model is statistically significant.

Table 11. The findings from partial examination of fourth model.

variable title	coefficient	SD	't' statistic	significance
the advantage of using management accounting techniques	0.148	0.169	0.874	0.384
firm size	0.037	0.015	2.511	0.001
debt ratio	-0.077	0.115	-0.669	0.505
fixed rate	-0.012	0.243	-0.049	0.961

The findings from examining the partial coefficients of the model presented in Table 11 are described. As you see the examined positive coefficient of the independent variable states there is a positive relation between the advantage of using management accounting and owner equity yield though the 't' statistic rate and the significance related to the independent variable state that the relation is not statistically significant. Having taken into consideration the model's findings the hypothesis is not accepted. The coefficients and significance rate of the 't' statistic rate related to the control variables indicate the firm size has a significant and positive relation and the debt ratio has no significant relation with the owner equity yield.

Conclusion

In the study hypothesis the relation between applying the management accounting and techniques and approaches and producing operation. In fact, we try to examine if the managers benefit from management accounting techniques and approaches in the decisions or not. Are such techniques and approaches effective on the firm?

In hypothesis we defined two indexes for the firm operation: 1–Assets yield and 2–Owner equity yield and also we took into consideration the management accounting information and techniques as the index indicating the management accounting approaches and techniques in order to test hypothesis. Then four models were supposed to define the hypothesis. The variables: firm size and debt ratio were considered as the control variables in the models.

Generally the findings of the two models in which the assets yield was used as the index indicating firm's operation indicate that there is a no significant relation between management accounting approaches and techniques and firm's operation, but there is a significant and positive relation between the firm's size and a negative and significant relation between the debt ratio and assets yield. Also the findings of the two models in which the owner equity yield was used as the index indicating the firm's operation indicate that there is no significant relation

between the management accounting approaches and techniques and the firm's operation, but there is a significant and positive relation between the firm's size and owner equity yield. The findings of this study are inconsistent with the findings of Schaffer (2004) and Choe (2004); perhaps because the management accounting approaches and techniques are not used properly in the examined companies or it had better we consider the firm's operation more practically such as aerometry or dual comparison.

Conflict of interest

The authors declare no conflict of interest

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