

The Effect of Organizational DNA on the Use of Management Accounting Practices: Using the Structural Equation Model

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Abstract

The issue of cost management and the use of efficient and effective ways to improve financial and budgetary resources due to lack of resources, price competition, quality supply of goods and services and entry into global markets. Therefore, this field is one of the most important and challenging issues for economic enterprises, especially considering the recent economic and financial developments and crises. The statistical population of the study includes all small and medium-sized enterprises of Mashhad city (603 active enterprises) in 2019, which using the Cochran's formula, 95 CEOs, finance managers and or accountants head were randomly selected. A questionnaire was used to measure the variables and in order to test the hypotheses, the structural model method with SPSS and PLS software were used. The results showed that organizational DNA has a significant effect on the use of management accounting techniques. It was also found that all organizational DNA determinants have a significant positive effect on the use of management accounting techniques.

Keywords: *Management Accounting Techniques, Organizational DNA, Human Resources, Information Structure, Organizational Culture, Management Systems*

1. Introduction

In the last decade, many researchers in the fields of accounting and management have conducted studies on small and medium-sized enterprises. Such enterprises play an important role in the economic growth of developing countries (Mitchell & Reid, 2000). Globally, small and medium-sized enterprises account for about 99 percent of the population (Azudin & Mansor, 2017). Therefore, such enterprises have become one of the attractive topics in financial research. Small and medium-sized enterprises, like large ones, face problems related to business sustainability that result from globalization, size, technological advancement, intensified competition in the market, changes in management, and existing constraints on capital supply (Davilla, 2005; Davilla & Foster, 2007; Nandan, 2010; Messner, 2016). Senftlechner & Hiebl (2015) argue that in order for enterprises to be sustainable and survive, they must consider both financial and non-financial information. Therefore, management accounting (MA), which reports both financial and non-financial information, can be used to improve management practices in small and medium-sized enterprises. Management accounting is also very important in order to support business tasks (Lavia Lopes & Hiebl, 2015). Ahmad (2012) emphasized that management accounting reports can increase the profitability of a business by continuously reducing waste, as well as making optimal use of resources. Considering the importance of the role of management accounting practices (MAP) in institutions and the vital role of small and medium enterprises in the economic development of the country, this study seeks to investigate the effect of organizational DNA on human resource determinants, information structure, organizational culture and management systems. Investigate management accounting techniques in small and medium enterprises.

2. Theoretical Framework

The International Federation of Accountants (1998) considers management accounting to be a specific area of accounting that focuses on providing information for management planning, evaluation, and control in the

organization. Management accounting practices refer to tools and methods that are specifically designed to support management tasks in improving operational performance as well as achieving optimal performance. Therefore, innovation in management accounting practices will take place with the development of management accounting (Davilla & Foster, 2005). Nishimura (2003) argues that the evolution of management accounting is divided into four main stages, each with its own purpose. In fact, the change in these goals indicates the importance of different stages in helping business enterprises. Table (1) lists the goals and focus of each stage of management accounting evolution based on the framework provided by Nishimura (2003).

Table (1) -The evolution of Management Accounting

| Stage | Focus and Techniques or Tools |
|-------------------|---------------------------------------------------------------------------------------------------|
| Stage 1 | Focus: Management and control decision through the use of actual costing and past financial data. |
| (Drifting MA) | Techniques or Tools: Financial ratios and comparative business analysis. |
| Stage 2 | Focus: Efficient MA through the utilization of scientific management. |
| (Traditional MA) | Techniques or Tools: Cost-Volume-Profit (CVP) and liability accounting. |
| Stage 3 | Focus: Controlling the planning process and forecasting the business future. |
| (Quantitative MA) | Techniques or Tools: Economic Order Quantity (EOQ) and list management. |
| Stage 4 | Focus: Integration of management accounting and organizational management. |
| (Integrated MA) | Techniques or Tools: Target costing and lean production. |

Nishimura (2003) states that the changes and developments in management accounting are due to internal and external challenges in the face of business. Various studies have been conducted to examine these challenges that can affect changes in management accounting practices as well as their use in organizations (Davilla, 2005, Davilla & Foster, 2005, Ahman, 2012). Studies by Davilla (2005) and Davilla & Foster (2005) specifically focused on the impact of internal factors (such as firm size and changes in top management etc.) and the positive impact of these factors on the use of management control systems in small and medium-sized enterprises. The results of their research showed that by increasing the size of the company (measured by the number of employees), the need for formal interactions between different levels of management staff becomes stronger, and therefore companies start to establish a management control system. Azudin & Mansor (2017) concluded that increasing the number of employees in the company has a significant effect on the use of management accounting system. They stated that their results mean that with the increase in the number of employees, there is a need for an official control system among the various levels of managers in order to achieve optimal performance.

In addition to internal factors such as the number of employees, external pressures such as market competition can also be effective in using management accounting practices. In a study, Amat et al., (1994) examined the effect of market competition on the use of management accounting practices in small and medium-sized enterprises. The results of their research showed an increase in the use of management accounting practices with the intensification of competition in the market. This could be due to the fact that the competition indirectly puts pressure on the organization to gather more financial and non-financial information so that it does not lag behind the competition in the market. Ahmad (2012) also studied the effect of external factors (i.e., advanced manufacturing technology). He claimed that the implementation of management accounting practices in manufacturing companies is significantly related to selected factors. However, Messner (2016) claims that some factors, such as the type of industry and geographical areas, can play an important role in influencing the results of studies in this area.

One of the topics that has recently been discussed in management and organizational issues is the issue of organizational DNA, which describes the organization with a genetic approach. Organizational DNA includes elements that together describe the personality of the organization and is in fact a way of examining, thinking, reflecting and deliberation about the organization. Organizational DNA, instead of using organizational models and forms, examines issues such as teamwork, decision-making, and the improvement and development of human resources as separate or at least independent variables (Bols, 2004). Organizational DNA looks at the whole organization as a multi-faceted charter that requires a thorough look at all aspects and with multiple eyes to fully understand it. These issues and aspects are not only used to understand the organization, but also to identify how to manage it. This way of managing and thinking is very effective, and organizational managers and designers can visualize organizations in different forms and achieve different and innovative organizational

structures and frameworks in the creative world of imagination. In this case, managers, recognizing the type of organization that is done with the help of these issues, with real understanding, manage and choose a style that is compatible with the conditions and type of organization. There is one type of dominant organizational DNA in each organization, and each of the other types is located in the dominant DNA space. Of course, the existence of dominant DNA does not mean that other DNAs are not important. Azudin & Mansor (2017) believe that the main reason for the lack of organizational effectiveness and poor performance of individuals is the lack of coordination between different organizational DNAs. They claim that if organizational matters and activities align with DNA, organizational stress will subside. Organizational DNA in this study consists of four parts: human resources, information structure, organizational culture and management systems. According to the contingency theory that organizational efficiency is a result of the compatibility between the external environment and the internal arrangements of that organization, this research aims to investigate the influence of organizational DNA including factors such as human resources, information structure, organizational culture and management systems on the use of management accounting practices. Of course, this theory holds that there is no universal accounting system that applies equally to all organizations under all circumstances (Otley, 1980). Regardless of the managerial benefits expressed in the use of management accounting practices, very little research has yet been done in this area in Iran, which could be due to educational weaknesses in this field. This research is the first in the field of the impact of organizational DNA components on management accounting practices.

3. Research hypotheses

Based on the theoretical framework and research literature, the following hypotheses were developed:

The main hypothesis:

Organizational DNA has a significant effect on the use of management accounting practices.

Sub-hypotheses:

The characteristics of human resource management have a significant effect on the use of management accounting practices in small and medium-sized enterprises.

The characteristics of the information structure have a significant effect on the use of management accounting practices in small and medium-sized enterprises.

The characteristics of organizational culture have a significant effect on the use of management accounting practices in small and medium-sized enterprises.

The characteristics of management systems have a significant effect on the use of management accounting practices in small and medium-sized enterprises.

4. The conceptual model of research

According to the objectives and hypotheses of the research, the relationship between the variables is plotted as follows:

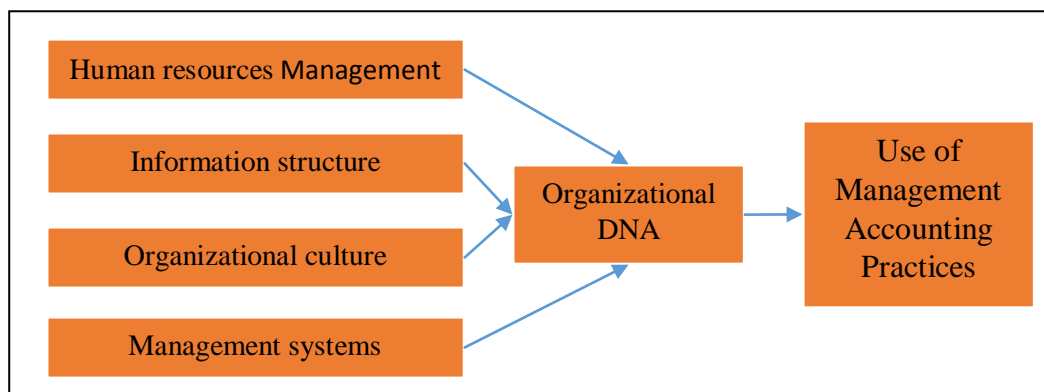


figure 1: Conceptual model of research

5. Research method

Considering that the research studies the relationship and correlation between variables of human resource management, information structure, organizational culture and management systems on the use of management accounting practices, it is based on data collection and correlation research. The statistical population of the study includes all small and medium-sized enterprises of Mashhad (603 active companies) at 2019. The Cochran's formula was used to select the sample. For this purpose, at first, a sampling was performed on 20 target population, the standard deviation of which was 0.38. Then, by placing it in the Cronbach's formula, the sample size was determined.

$$n = \frac{NZ^2\alpha/2\sigma^2}{e^2(N-1)+Z^2\alpha/2\sigma^2} = \frac{603(1.96)^2(0.38)^2}{(0.07)^2(602)+(1.96)^2(0.38)^2} \cong 95$$

Therefore, 95 questionnaires were randomly distributed and collected. To verify the reliability, the internal consistency method was used by considering Cronbach's alpha coefficients. The results of this test are as follows:

Table (2) -The reliability of the variables (Cronbach's alpha coefficient)

| Variable | No. of Questions | Cronbach's alpha coefficient |
|---------------------------------|------------------|------------------------------|
| Human resources | 6 | .83 |
| Information Structure | 6 | .79 |
| Organizational Culture | 2 | .82 |
| Management Systems | 6 | .77 |
| Management accounting practices | 19 | .85 |

Considering that the Cronbach's alpha coefficients for all variables are above 0.7, it can be concluded that the variables have the necessary reliability.

6. Data analysis and research results

6.1. Confirmatory factor analysis

Confirmatory factor analysis is actually the development of factor analysis and one of the important aspects of structural model programs. The closer the factor loading is to the number one, it means that the questionnaire questions are more strongly related to the main variables, and if the standard factor loading is zero, it means that the questionnaire is not related to the main variable. A negative factor means that the questionnaire is reversed to affect the main variable. The factor loading should be more than 0.7, but this does not happen easily the case with real data. Therefore, many researchers consider a minimum level of 0.4 as the criterion (Suhr, 2009). In this study, after taking factor analysis, 13 questions were removed from the analysis due to having a factor loading of less than 0.4, and the results of factor analysis of 39 items are shown in Table (3).

Table (3) - Factors analysis of research questionnaire items

| No | Questionnaire item | Factor Load | Result |
|----|-------------------------------------------------------------------------------------------------------------|-------------|-----------|
| 1 | There is a person in the company who is accepted by everyone as a leader and can influence people. | .826 | Confirmed |
| 2 | There are clear policies on staff recruitment. | .836 | Confirmed |
| 3 | The qualifications required for each job are defined. | .732 | Confirmed |
| 4 | In hiring and retaining employees, attention is paid to job competencies. | .775 | Confirmed |
| 5 | It is clear what path to take and what jobs to go through in order to be promoted. | .780 | Confirmed |
| 6 | Policies and principles are defined according to which individuals are promoted to organizational status. | .484 | Confirmed |
| 7 | All units are formally required to submit specific reports to the CEO in a predefined format and framework. | .725 | Confirmed |

| | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------|
| 8 | There is decision-making authority at the top of the organization. | .490 | Confirmed |
| 9 | Managers have enough decision-making power. | .805 | Confirmed |
| 10 | Managers' decisions are easily accepted and implemented by employees. | .817 | Confirmed |
| 11 | Different people's tasks are designed as a conscious process. | .789 | Confirmed |
| 12 | Every action that is taken is exactly what part of a work process is. | .696 | Confirmed |
| 13 | There is a clear incentive system to encourage good company behavior. | .961 | Confirmed |
| 14 | There is a clear picture of the company's assumptions (such as the principles it has in competing or trading and interacting with the customer). | .950 | Confirmed |
| 15 | Precise targeting is done for the actions and tasks of the units at the beginning of the year. | .753 | Confirmed |
| 16 | According to the approved plans, the budget will be allocated to the units. | .720 | Confirmed |
| 17 | More funds will be allocated to priority and strategic missions and goals. | .719 | Confirmed |
| 18 | There is a precise control system that evaluates the performance of the units. | .740 | Confirmed |
| 19 | There is a comprehensive control system that determines the extent to which each unit achieves its goals. | .756 | Confirmed |
| 20 | Comprehensive and multifaceted metrics are designed to evaluate a company's performance (not limited to financial metrics). | .714 | Confirmed |
| 21 | There is budgeting to control costs in the organization. | .554 | Confirmed |
| 22 | The performance of the organization is evaluated based on financial criteria (sales, profitability, etc.). | .592 | Confirmed |
| 23 | Valuation of investment projects is done with the criteria of payback period and accounting rate of return. | .454 | Confirmed |
| 24 | Budgeting is done for planning purposes (budgeting is a tool by which financial resources can be divided between different purposes). | .610 | Confirmed |
| 25 | There is a cost-benefit analysis for the main products. | .642 | Confirmed |
| 26 | There is a profitability analysis for each product. | .591 | Confirmed |
| 27 | Inventory control models are observed (raw materials and manufactured products). | .704 | Confirmed |
| 28 | Valuation of investment projects is done with methods based on discounting the cash flows of the project. | .426 | Confirmed |
| 29 | Existence of activity-based costing system (main activities for the production of products are identified and then the cost of activities is allocated to the products according to the extent to which each product uses those activities). | .690 | Confirmed |
| 30 | Zero-based budgeting is done (budgeting is not based on the numbers of previous years, but each cost-effective activity must be estimated and justified from scratch). | .696 | Confirmed |
| 31 | There is a target-based costing (in this method, the selling price and the amount of profit are determined before the product is produced. The company must minimize the cost of the product in order to achieve the set profit and sales to achieve the target cost). | .707 | Confirmed |
| 32 | Performance appraisal is based on economic value added. | .562 | Confirmed |
| 33 | There is optimization (modeling the successful actions and plans of successful industry companies). | .789 | Confirmed |
| 34 | The profitability analysis of major customers is done. | .661 | Confirmed |
| 35 | Paying attention to non-financial aspects in evaluating investment projects (increasing employee learning, increasing customer satisfaction, paying attention to social responsibility, etc.). | .658 | Confirmed |
| 36 | The use of cost of capital in discounting the cash flow of investment projects. | .613 | Confirmed |
| 37 | Industry analysis (rate of input of new products, rate of entry of new | .668 | Confirmed |

| | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------|
| | competitors, difficulty of supplying raw materials for all companies, importance and variability of customer demands). | | |
| 38 | Value chain analysis (cost and benefit analysis of each of the activities related to raw material supply, warehousing, production process, product packaging, distribution and sales, and after-sales service). | .612 | Confirmed |
| 39 | Product life cycle analysis (analysis of the status of each product in the stages of product introduction, growth, maturity and decline of the product and decisions appropriate to each stage for products). | .587 | Confirmed |

6.2. Model determination coefficient

The coefficient of determination of the conceptual research model using PLS calculation software is shown in Table (4). In this table, the rate of change of the independent variable was determined under the influence of the variables entering them.

Table (4) - Coefficient of determination of the conceptual model

| Main variable | The coefficient of determination |
|-----------------------------------------|----------------------------------|
| Management Accounting Techniques | .721 |
| Average of coefficient of determination | .721 |

As can be seen, about 0.721 variables of management accounting practices are explained by the variables Human Resources, Information Structure, Organizational Culture, and Management Systems.

6.3. Good fit index

In modeling structural equations using the P-S method, unlike the covariance-based method, there is no indicator for measuring the whole model, but an indicator called the goodness of fit was proposed by Tenenhaus et al. (2005). This index considers both measurement and structural models and is used as a criterion for measuring the overall performance of the model.

$$GOF = \sqrt{\text{average}(\text{Commonality}) * R^2}$$

Table (5) -

| Variable | Common values |
|----------------------------------|---------------|
| human resources | .560 |
| Information structure | .531 |
| Organizational Culture | .813 |
| Management systems | .538 |
| Management Accounting Techniques | .386 |
| Average of common values | .565 |

$$GOF = \sqrt{0.721} \times \sqrt{0.565} = 0.736$$

The GOF index in this model is approximately 0.736, which is very good.

6.4. Testing the research hypotheses

In order to study the research hypotheses, first the path coefficient is calculated and then the significance of these coefficients is examined by the test statistic. If the P-value is less than 0.05, the path and the coefficient of the desired path are significant and otherwise it will not be significant. The result of the fit of the research model is as follow:

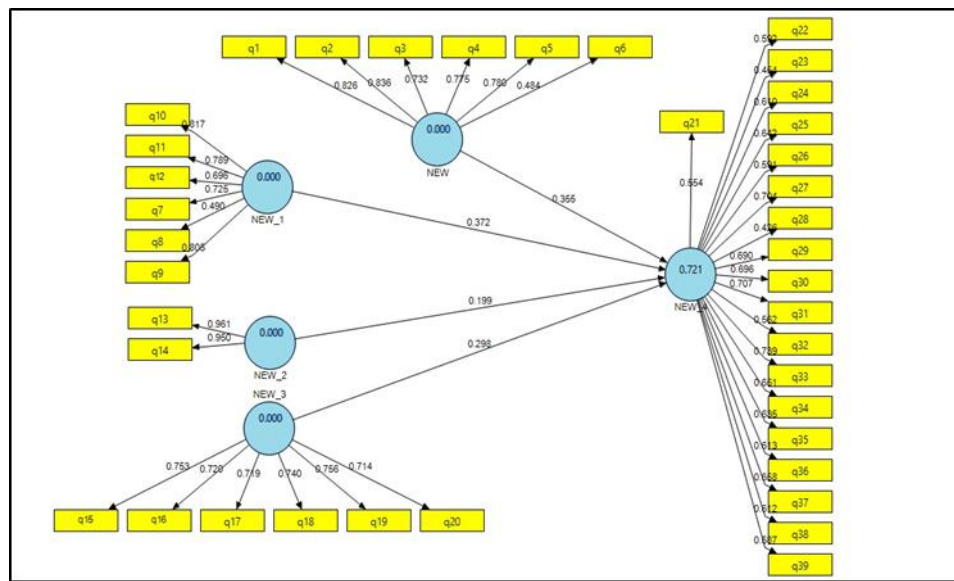


figure2: Fitting the structural equation model of the main research hypothesis

6.5. The result of First hypothesis of the research

As shown in Figure (2), in the first hypothesis, the path coefficient is estimated to be 0.355 with a standard error of 0.032. Considering the probability value (P-value) which is less than 0.05, it can be concluded that this path coefficient is significant at the error level of 0.05. In other words, human resource capability has a significant and positive effect on the use of management accounting practices.

Table (6) - Human resource path coefficient on management accounting techniques

| Direct path | Path coefficient | Standard Error | Statistics | P-value | Result |
|-----------------|------------------|----------------|------------|---------|-----------------------------|
| Human resources | .355 | .028 | 12.45 | .000 | The hypothesis is confirmed |

6.6. The result of second hypothesis of the research

In Hypothesis 2, as shown in Figure (2), the path coefficient is estimated to be 0.372 with a standard error of 0.027. Of course, given the P-value, which is equal to 0.000 and is less than 0.05, it can be concluded that this path coefficient is significant. That is, the power of information structure has a significant and positive effect on the use of management accounting practices.

Table (7) -Information structure path coefficient on management accounting techniques

| Direct path | Path coefficient | Standard Error | Statistics | P-value | Result |
|-----------------------|------------------|----------------|------------|---------|-----------------------------|
| Information structure | .372 | .027 | 13.67 | .000 | The hypothesis is confirmed |

6.7. The result of the third hypothesis of the research

According to Figure (2) in Hypothesis 3, the path coefficient is estimated to be 0.199 with a standard error of 0.023. Given that the probability value (P-value) is equal to 0.000 and is less than 0.05, it can be concluded that this path coefficient is significant at the level of 0.05. In other words, the power of organizational culture has a significant and positive effect on the use of management accounting techniques.

Table (8) – Organizational culture path coefficient on management accounting techniques

| Direct path | Path coefficient | Standard Error | Statistics | P-value | Result |
|------------------------|------------------|----------------|------------|---------|-----------------------------|
| Organizational culture | .199 | .016 | 11.95 | .000 | The hypothesis is confirmed |

6.8. The result of the fourth hypothesis of the research

In Hypothesis 4, based on Figure (2), the path coefficient of 0.298 is estimated with a standard error of 0.017. Given the P-value, which is equal to 0.000 and is less than 0.05, it can be concluded that this path coefficient is significant at the level of 0.05. In other words, power relations in management systems have a significant and positive effect on the use of accounting techniques.

Table (9) -Management systems coefficient on management accounting techniques

| Direct path | Path coefficient | Standard Error | Statistics | P-value | Result |
|--------------------|------------------|----------------|------------|---------|-----------------------------|
| Management systems | .298 | .024 | 12.37 | .000 | The hypothesis is confirmed |

7. Conclusion

One of the problems faced by managers of small and medium-sized enterprises is the lack of proper use of management accounting practices. These managers think that by reducing costs and increasing profitability, they have implemented some of the management accounting techniques. In contrast to these managers, there are other managers who use management accounting practices. But they do not get the right answer from using the desired technique. These managers have ignored the contingency theory in the implementation of the techniques. Contingency theory suggests that one technique is considered an opportunity for one type of business and a threat to another. Managers must have sufficient knowledge of the components of their economic institution before using management accounting practices. With this knowledge, they can implement the scope of each technique, which includes identifying costs and financial control, providing information for planning and managing, reducing resource waste, and creating value for decision making. This research is the first research on the impact of organizational DNA components on management accounting practices using structural equation modeling. Organizational DNA is a form of business thinking. It makes the business look like a multi-faceted charter and directs managers to think and understand enough about the structure that makes up their organization. Organizational DNA in this study consists of four parts: human resources, information structure, organizational culture and management systems, each of which has a related subset. According to the above, one main hypothesis and four sub-hypotheses along with the researcher-made questionnaire were examined.

The results of the first hypothesis indicate that a successful manager can communicate with his / her human resources properly before implementing his / her institution and lead them towards the goals of his / her collection. Managerial recruitment policies also refer to how new staff are accepted and the individual stays in the organization. Successful institutions determine employees based on their competencies and job status. Such managers believe that human resources, as a visible and valuable asset, can help implement management accounting practices with adequate training, job creation skills, and appropriate leadership.

The results also showed that the process of information flow, which is provided by subordinates as tasks assigned to its organizational charter for each section, is generally provided to managers. Process flow refers to the agility and flexibility of the organization. A company has the dynamism to be able to make flexible decisions in different opportunities and situations. This decision requires agility and operational structure.

Organizational culture was addressed with two elements of valuable behavior and business assumptions in the questions. Valuable behaviors are actually related to organizational ethics or professional ethics at work. A person is considered to be a valuable that has responsibility, commitment and honesty. Managers answered such questions in the affirmative. All managers need systems through which they can plan survival systems to compete, budget, and control to estimate costs and revenues as operational budgeting, a measure of business performance appraisal that is actually planning, organize and monitor. Also, the incentive system to motivate employees will lead to the behavior of the members of the organization towards the goals in a management system that managers answered positively to such questions and the hypotheses were confirmed.

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