A Design of Managerial Accounting Information Characteristics considered the Organizational Culture

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Abstract This study empirically investigated cultural differences in the amount of information provided by managerial accounting information systems as well as the differences in organizational performance according to variations in the amount of information. Through cluster analysis, I classified sample firms into five organizational cultural types: Semi-innovative, innovative, bureaucratic, semi-bureaucratic and supportive. The results showed that in the semi-innovative firms, a greater amount of the traditional and advanced types of information is produced, while in bureaucratic firms, traditional information is much more provided than in the innovative, semi-bureaucratic and supportive firms. These results confirmed cultural differences in the amount of information produced. According to the results of this study, it was found that in organizational performance, the rankings of semi-innovative firms, which have the highest scores in the amount of information, are also the highest, and the performance scores in innovative firms are generally next to those of semi-innovative firms. Hence it is concluded that there are cultural differences in the amount of information provided and theses differences affect organizational performance

Key Words : ITEC, design of MAIS, information characteristics, Organizational culture

1. Introduction

Many studies have empirically investigated and suggested contextual variables that have an impact on the design of information systems (ISs). Through a contingency approach, they have examined relationships between contextual variables and information characteristics of ISs, which affect organizational performance. Most prior research, however, has primarily focused on the effects of such contextual variables as environmental uncertainty, organizational structure and task or technology [1][2].

Since organizational culture, as shared norms and values of organizational members, naturally influences members' preferences for specific information characteristics, managers' information requirements may be expected to be culturally influenced and determined. Culturally appropriate information characteristics may be preferred and even required more than characteristics that are regarded as culturally inappropriate. Thus, different types of organizational cultures may require different kinds of information, process differently and ultimately demand different design configurations of their ISs [3][4][5]. In this study I empirically investigate the effects of organizational culture on information characteristics of managerial accounting information systems (MAIS). MAIS collect, classify, summarize and report information to managers in order to support them in their control of business activities. Since MAIS are also s subsystems of the total ISs, information characteristics such as the amount of information

produced by MAIS seem to be inevitably influenced by the culture of a firm [6][7][8][9].

Using a cluster analysis, this study first, classifies and identifies types of organizational cultures. As a result of a cluster analysis, we empirically suggest various cultural typologies of firms that can explain variations in the information characteristics of MAIS. We also empirically confirm differences in the amount of types of information provided by MAIS, according to the variations of organizational cultures. In examining differences in the amount of information, we consider industrial types that seem to affect information characteristics. Moreover, this study demonstrates whether there exist any differences in the improvement of organizational performance, according to the variations in the amount of information produced that are caused by cultural variations. Finally, through a structural equation modeling technique, the current study investigates and analyzes the causal relationships among organizational culture, the amount of managerial accounting information and organizational performance [10][11].

Therefore, the results of this study can answer the following research questions: Is the amount of types of information provided by MAIS different according to variations in organizational culture? ; does organizational culture significantly influence the amount of information produced? ; are there any differences in the improvement of organizational performance according to variations in the amount of information produced? ; does the amount of information provided have a significant impact on organizational performance?

2. Theoretical Background and Hypotheses

Characteristics of ISs, which are generally identified as design variables of ISs, can be broadly classified into three categories: Architectural characteristics, information presentation structures, and information characteristics.

Although many studies have considered various contextual variables in the investigation of their impact on the information characteristics of MAIS, previous studies have omitted a key contextual variable: Organizational culture that must be considered first of all when designing MAIS. Flamholtz et al. and Flamholtz asserted that organizational culture, as an upper-level contextual variable, affects the design of control systems or MAIS as well as the type of organizational structure adopted and business strategy [12].

Organizational culture provides an interpretive context that enables members of the culture to make sense of their surrounding objects, such as newly employed information technology or ISs. In different cultural setting, since completely different interpretive schemes may be developed and applied, even the same ISs can acquire different meanings. The same application of information technology or ISs may symbolize providing useful and preferred types of information or functions in one setting, and producing useless and aversive information in another. These positive or negative interpretations can be explained by tracing the development of values and assumptions pertinent to the ISs. Generally, when the application of ISs is culturally well compatible, positive interpretations are likely to be given to these ISs, and if the design of the ISs conflicts with cultural settings, organizational members may have negative meanings or interpretations about them. Ultimately, these different interpretations affect performance or outcomes of the ISs. Types of information provided by the ISs that attain positive interpretations are likely to be more preferred, required and utilized [13].

From previous research and arguments, it seems to be proposed that there are cultural differences in the amount of information provided by MAIS and that organizational culture significantly influence the amount of information. Hence I can suggest the following Hypotheses 1 and 2.

Hypothesis 1. Organizational culture has a significant

impact on the amount of managerial accounting information produced.

Hypothesis 2. There are significant differences in the amount of managerial accounting information produced according to cultural variations.

Accounting Information is utilized in organizational learning as the raw material of learning. Accounting information plays a critical role in creating new knowledge and updating the organization's shared mental models. The amount of managerial accounting information produced by MAIS is also material utilized in organizational learning. The provision of a large amount of managerial accounting information can give rise to organizational learning and, consequently increase the performance of a firm. Kloot suggested that MAIS closely related to the four constructs of organizational learning. Depending on environmental changes, MAIS can enhance the organization's ability to acquire knowledge, distribute and interpret information, and increase its memory. A large amount of nonfinancial performance information provided by MAIS positively affects knowledge acquisition. Financial performance measurement and evaluation may also contribute to knowledge acquisition and information interpretation. Accounting and budgetary control reports are likely to support information distribution as well as organizational memory.

Organizational learning is the process of improving actions or outcomes through better information and understanding. The ultimately result of effective organizational learning in increased or improved organizational performance. With a resource-based view, the positive effects of learning on organizational performance can be explained. Resource-based theory suggests that the competitive advantage of a firm is caused by the firm's unique resource.

Based on prior research and argument, it is concluded that organizational performance is positively influenced by the degree of organizational learning, and

the amount of information provided has a significant positive impact on organizational learning. Accordingly, it is likely that organizational performance differs according to variations in the amount of managerial accounting information, which are caused by cultural variations, and that the amount of information significantly influences organizational performance. Thus, the following Hypotheses 3 and 4 are suggested.

Hypothesis 3. There are significant differences in organizational performance according to variations in the amount of managerial accounting information provided.

Hypothesis 4. The amount of managerial accounting information produced has a significant impact on organizational performance.

3. Research Method

According to Wallach, shared values, norms and beliefs of people in an organization can be mapped on to an innovative, supportive and bureaucratic culture. In order to describe organizational culture completely, all three constructs are required. Culture is therefore, measured in terms of parameters describing these three constructs. Covering almost all aspects of organizational culture, Wallach provided a validated instrument of 16 questionnaire items. Wallach's instrument has been used in IS research, such as Kangungo et al. Organizational culture was measured on a seven-point Likert-type scale that ranged from 'Never describe my firm (organization)' to 'Completely describes my firm'. The 16 items are: risk taking, results oriented, creative, stimulating, challenging and driving (six items for innovative), Collaborative, relationship, freedom, equitable and power oriented (five items for bureaucratic).

To measure types of managerial accounting information, 19 questionnaire items developed by prior research were utilized. They include full costs, variable costs, capital budgeting, cost-volume-profit(CVP)

analysis, product profitability, budgeting and variance analysis, return on investment and divisional profit (eight items for traditional information), activity-based costs, target costs, product life-cycle costs, activity-based management, value chain analysis, long-range forecasting, benchmarking, nonfinancial performance information, team performance, balanced score card and residual income (eleven items for advanced information). Respondents were asked to indicate on a seven-point Likert-type scale, anchored by 'No amount of information, none supplied' and 'Very large amount of information, very high extent of provision', the extent or the amount of information that is provided by MAIS [14].

Benefits of the provision of information are multidimensional. Therefore, any single indicator of performance may not be effective. In this study, I measured the perceived organizational performance of a firm over the last 3 years and its financial performance using 2 variables: Return on assets (ROA) and Return on Sales (ROS). Using 7 questionnaire items developed by Gupta and Govindarajan, perceived performance was measured on a 7 point Likert-type scale. 7 question items include sales, growth, market share, pre-tax income, new product, employee morale and welfare. ROA focuses on the overall performance of a firm. ROS represents a firm's ability to generate income from sales revenue. Accounting data to compute ROA and ROS were collected from the firm's balance sheets and income statements in 2012, which were provided in the Korea Annual Report of Small and Medium Business Companies.

Factors of external environments include environmental dynamism, heterogeneity, hostility, competition and external needs. perceived environmental uncertainty (PEU) totally comprises and represents all these external factors. Since PEU significantly influences the amount of information produced, this study measured PEU as a control variable. Four question items, developed by Miller, were utilized. 4 questionnaire items are: product obsolescence, technology change,

components change and the life-cycle of product. Measures of PEU were made on a seven-point Likert-type scale.

AMT also affects the amount of information provided and thus, this study considered AMT as a control variable. Since the level of AMT is closely related to the degree of automation, this study measured the degree of automation in the production systems to obtain the AMT measurement. Meredith and Hill suggested a four-stage model to assess the degree of automation. Based on Meredith and Hill's model a seven-stage model was developed: Partially automated stand-alone equipment, some automated stand-alone equipment, a greater number of automated stand-alone equipment, low level of integration. High level of integration, linked islands, and full integration. With the seven-stage model, respondents were asked to select the stage that best corresponds with the state of automation in their manufacturing systems.

4. Empirical Results

From the results, it is indicated that there are significant differences in organizational performance according to the variations in the amount of information across clusters. This conclusion implies that culturally appropriate information is more preferred and utilized in organizational learning and consequently, the knowledge created through valid learning may contribute to the improvement of performance. Therefore, we can accept Hypothesis 3.

This study employed a structural equation modeling technique to analyze causal relationships among research variables. So Theorized, distinct causal paths from organizational culture and types of managerial accounting information predict alternative outcomes with respect to organizational performance. Hypothesis 1 suggested that organizational culture significantly affects the amount of information provided. Consistent with this prediction, the path estimate between culture and the amount of information is significant (0.39,

p=0.00). Thus, Hypothesis 1 is confirmed. Hypothesis 4 is also supported by a significant and positive relationship (0.50, p=0.00) between the amount of information and organizational performance. Hence, it is concluded that the differences in the amount of information according to organizational cultural forms can increase or decrease organizational performance.

5. Conclusion

Prior research has argued that organizational culture as shared norms and values of people affects managers' preferences for specific information characteristics and ultimately, the design of ISs. However, the effects of organizational culture on the design of ISs have never been empirically confirmed. This study empirically investigated both cultural differences in the amount of information provided by MAIS and the differences in organizational performance according to variations in the amount of information. First, according to the results of cluster analysis, we classified sample firms into five organizational cultural types: Semi-innovative, innovative, bureaucratic, semi-bureaucratic and supportive firms.

In the semi-innovative firms, the greater amount of the traditional and advanced types of information is produced. In bureaucratic firms, traditional information is much more provided that in the innovative, semi-bureaucratic and supportive firms. The amount of advanced information provided in the innovative firms is relatively greater. In the case of the semi-bureaucratic and supportive firms, except for nonfinancial information, there are no significant differences in the amount of information produced. However, the rankings of the amount of information provided are the lowest in semi-bureaucratic firms. A large amount of advanced types of information produced in innovative firms may be associated with innovative and supportive cultural characteristics. A greater amount of traditional information provided in bureaucratic firms

may also be related with bureaucratic cultural characteristics. Thus, we confirmed cultural differences in the amount of information.

The scores of performance in innovative firms are generally next to those of the semi-innovative firms. However, basically, significant differences may not exist in the performance between innovative firms and bureaucratic firms, since a large amount of traditional information is provided in bureaucratic firms and relatively, the greater amount of advanced information is produced in innovative firms. The rankings of the performance of supportive firms are the lowest. Compared with the scores of the innovative and supportive culture of supportive firms, the smaller amount of advanced information produced in supportive firms seems to cause the lowest performance. This result suggests that the shortage of culturally appropriate types of information may give rise to invalid learning and thus, decrease organizational performance. Hence, this study demonstrated performance differences according to variations in the amount of information.

If the design of IS is not culturally compatible, there are two ways to obtain a culturally matched IS design. One is by receiving an IS design and the other is undergoing a process to change organizational culture in advance. In revising or developing a new IS design, through user involvement with which user value assumptions become embedded into the new system's architecture, the IS design can be fitted with organizational culture. The methods of changing culture are very diverse.

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