The relationship between the use of strategic human capital, the design of the management control system and organisational performance: an empirical study in the Greek context.

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Abstract

The aim of this study is to examine, within the context of Greece, the relationship between the four attributes (importance, behavioural uncertainty, firm-specificity and spread) of strategic human capital (SHC), the design / use of management control system (MCS) and organisational performance. It combines transaction cost economics and contingency theory to develop the theoretical background of the study, since both analyse the function of management control. This study extends the model of Widener (2004) one step further by incorporating organisational performance in it.

Using data from 91 respondents and the structural equation modelling (SEM) as the technique for statistical analysis, this study supports the proposed model of Widener, by verifying the positive influence of the four components of SHC to the personnel controls and non-traditional results controls and their negative influence to the use of traditional results controls.

Furthermore, from the three new stated hypotheses, based on existing theory, only one, the positive relationship between personnel control and organisational performance, is verified. The other two, a positive relationship between non-traditional control and organisational performance and a negative relationship between traditional control and organisational performance, are both rejected having reverse signs, which support exactly the opposite relationships.

We finish our research by trying to explain all above results within the Greek context.

Key words: Strategic Human Capital (SHC), Management Control Systems (MCS), Organisational Performance, Structural Equation Modelling (SEM).

1. Introduction

Management control systems (MCS) provide information that is intended to be useful to managers in performing their tasks and to support organisations in developing and maintaining viable patterns of behaviour. However, any evaluation of the role of such information requires consideration of how managers make use of the information provided to them (Otley, 1999). Anthony (1965) was the first to develop the traditional framework for considering these issues. This could distinguish ‘management control’ from ‘strategic planning’ and ‘operational control’.

According to Langfield-Smith (1997), the relationship between MCS and strategy has attracted a considerable interest. Dent (1990), Samson, Langfield-Smith and McBride (1991), and Simons (1987a; 1990) suggest that the MCS should be tailored explicitly to support the strategy of the business to lead to competitive advantage and superior performance. Moreover, Ittner and Larcker (1997) point out that the need to align specific control practices with the organisation’s chosen strategy is of vital importance.

Merchant (1985b) uses a contingency approach to prove the relationship between the components of the MCS and the strategies of the organisations. Simons (1990) examines how MCS affects the structure of the strategic process. According to Morgan and Hunt (1999) the understanding and the correct use of the strategic resources may contribute to the development of a firm’s competitive advantage.

There are only a few empirical studies that concentrate on MCS and their link to firm strategies. According to Langfield-Smith (1997) the studies about the management control system and strategy are restricted and further research is needed. Widener (2004, p. 377) in line with Amit and Shoemaker (1993) admit that ‘an unexplored dimension of firm-level strategy is the firm’s use of strategic resources that enable the firm to sustain its competitive advantage. Accordingly, Widener (2004) explores the strategic resource of human capital, which includes the knowledge and skills of employees in a firm. According to Quinn, Anderson and Finkelstein (1996) human capital that enriches the knowledge of the firm is an essential strategic resource of many firms. Thus, Widener (2004) investigating the association between the use of SHC and the design of MCS provides an important and novel study.

The aim of the present study is to enrich Widener's (2004) proposed theoretical framework by adding another variable, the organisational performance (financial and non-financial) and test this new model by verifying its implied hypotheses using a sample of Greek companies. The objectives of the study are: (a) to measure the four distinct attributes of the human capital (a strategic resource): its importance to the firm, its behavioral uncertainty, its firm specificity and its spread of use in the firm; (b) to examine the combination of controls in order to provide knowledge for managers on how to achieve a balance between different types of control when they design a MCS and how this combination of controls affects organisational performance; and (c) to critically examine the results and come to specific conclusions, comparing our results with those of Widener (2004).

To test the theoretical framework proposed by Widener (2004), the structural equation modeling (SEM) technique is adopted. According to Kline (1998) SEM evaluates the entire model and gives the opportunity to assess the MCS as a whole, rather than simply its parts. This study is characterised as explanatory research since it tries to test the cause and effect relationship between SHC, MCS and organisational performance.

The remainder of the study is organized as follows. The theoretical background and hypotheses development are presented in section two. An overview of SHC, MCS and organisational performance is presented first, followed by the theory and the hypotheses. Methodology is presented in section three, where the research design, the sample, the variables and the questionnaire are discussed. Statistical analysis and the results are presented in section four, while in section five conclusions are presented followed by the limitations and extensions of the study.

2. Theoretical background and hypotheses development

2.1 Strategic Human Capital-SHC

Organisational value is comprised of three major classes of assets that are integral to an organisation's ability to produce goods and services. According to Weatherly (2003) these assets are the following: financial, physical (tangible) and intangible assets. Intangible assets include intellectual capital (patent formulas, product designs and process technology, i.e., the methods that delineate the steps in a process), goodwill, and human capital. Human capital includes the tacit knowledge and training that the employees receive from the firms; it is a valuable, rare and inimitable resource (Barney, 1991) that a firm can use strategically for gaining sustaining competitive advantage.

Human capital has extensively been studied by scholars in recent years. Becker (1964) discusses the reasons why firms invest in training and education of their employees. Osterman (1987) supports firms using different models of the human capital for strategic reasons. Closely related to this research Rousseau (1995) argues that firms use specific relationships with employees and modify the scope of human capital, depending on their expected contribution to the firm. Barney (1991, p. 105) insists that 'the strategic value of the human capital refers to its potential to improve the efficiency and effectiveness of the firm, exploit market opportunities and neutralise potential threats'.

According to Coff (1997) and Roos and Roos (1997), since the individuals and not the firms possess the knowledge, firms that use SHC face challenging management control issues. Therefore, this lack of ownership makes firms rather uncertain when they want to predict employee behaviour, tenure and performance.

2.1.1 Attributes of Strategic Human Capital

Human capital is valuable when it is important to the firm in terms of creating efficiencies and enabling the firm to be more effective (Barney, 1991). Also, when the tasks and procedures are ambiguous, the degree of firm-specific knowledge is high, or when the knowledge and skills of the human capital are spread throughout the firm, human capital is difficult for other firms to imitate (Barney, 1991). Based on this theory (i.e., the resource-based view of the firm) Widener (2004) examines all four attributes of SHC: importance, behavioural uncertainty, firm-specificity, and spread of resource through the firm, in order to explain the relationship between the use of the strategic human capital resource and the design of MCS.

2.2 Management Control Systems

According to Boone and Kurtz (1992) the tools of control in a financial organisation are divided into five categories: (1) financial controls included budgets, financial analysis and ratio analysis, (2) inventory controls, (3) quality controls, (4) production controls and finally (5) organisational control, which includes the selection of employees, training and performance evaluation. Otley (1994) and Milgrom and Roberts (1995) clearly state that the MCS is a system consisting of complementary components.

Widener (2004) based on previous research (Merchant, 1982; Snell, 1992; Peck, 1994) adopts *personnel controls* as ex ante control mechanisms that regulate the antecedent conditions of performance. Personnel controls are usually focused on human resource policy which aids to ensure that the employees' performance will be of a high level and in accordance with the firm's objectives. On the other hand, *results controls* serve as an ex post control mechanism (Snell, 1992). There are two types of results controls: traditional and non-traditional results controls. Traditionally, firms based upon ex post controls that provided financial data, which was consequently reported for external purposes. In recent years, firms have started to incorporate more non-financial and operational controls into their MCS (Widener, 2004). Non-traditional results controls provide more timely physical measures of operational performance, increased provision of problem-solving information to the workers actually performing the job, and reward systems that focus more on non-financial measures (Ittner and Larcker, 1995: 2). Some of the non-traditional controls are the Balanced Scorecard (Kaplan, 1994), the Economic Value Added (Otley, 1999; Stewart, 1999), the Shareholder Value Analysis (Rappaport, 1998), the Activity Based Costing (Johnson and Kaplan, 1987) etc.

2.3 Organisational Performance

According to Langfield-Smith (1997), the relationship between MCS and strategy has attracted a considerable interest. Dent (1990), Samson, Langfield-Smith and McBride (1991), and Simons (1987; 1990) suggest that the MCS should be tailored explicitly to support the strategy of the business to lead to competitive advantage and superior performance.

For the purpose of this study organisational performance is separated in two sets of measures, the non-financial and the financial ones. The former comprises operational performance measures and the latest corporate and market performance measures.

Banerjee and Kane (1996) report that for performance measurement there is a need for integration of non-financial and financial measures. Kaplan (1994) suggests that financial measures are important. However, other indicators, such as product innovation, product leadership, employee skills and morale, and customer loyalty can be much better indicators for future profitability and thus company performance.

Financial Performance Measures

Profitability and market performance are the two basic components of financial performance (Spanos and Lioukas, 2003). In the current study are treated as additional constructs to operational performance in order to investigate further interdependencies with it. Since profit margin and net profit are basic indicators for a firm's profitability and the former is included in ROI ratio calculation these two items will be included in the category of Corporate Performance (Friedlob, Schleifer and Plewa, 2002). The most common measures for market performance are: Sales Volume, Growth in Sales Volume, Market Share, and Growth in Market Share (Spanos and Lioukas, 2003).

The most common measures of financial performance are: Net profit, Return on Investment (ROI), Profit Margin, Asset Turnover, Return on Equity (ROE), Economic Value Added (EVA), Market Value Added (MVA), (Friedlob, Schleifer and Plewa, 2002). There is plenty of evidence from surveys performed in various countries that financial performance measures are of high appreciation. In the US (McKinnon and Bruns, 1992) reported that actual sales, profit and income as the most important indicators of performance measurement. In Australia (Dean, Joyle and Blayney, 1991) found that the most common performance measures are variance analysis on expenditures, operating income and ROI. Also in Europe there is enough evidence to support that financial measures are highly appreciated. ROI and profit are the leading ones in the Netherlands (Groot, 1996). Standard cost, contribution margin and cost based criteria are widely used in Germany (Scherrer, 1996), Belgium (Bruggeman, Slagmulderand and Waeytens, 1996), and Denmark (Israelsen, Anderson, Rohde and Sorensen, 1996).

Non - Financial Performance Measures

The most common measures in this category are: unit cost, quality, delivery, flexibility, speed of new product introduction (Ahmad and Schroeder, 2003). In Denmark findings report that non – financial measures such as inventory turnover, on time deliveries, and quality yields are major indicators for more than 50 per cent of companies (Israelsen, *et al.*, 1996). In Belgium (Bruggeman, Slagmulderand and Waeytens, 1996) and in the Netherlands (Groot, 1996) while financial indicators are preferred, measures such as customer satisfaction, quality innovativeness are of increased use. In Greece as opposed to the above, non – financial indicators are not widely used and do not play a basic role in company's performance evaluation (Ballas and Venieris, 1996). In our survey we shall examine if the above statement continues to be valid or companies have changed their attitudes and to which direction. Chenhall and Langfield-Smith (1998b) discovered that firms who placed great emphasis on product differentiation strategies benefited from the use of advanced MCS and reliance on non-financial information. Defect-rates, on-time delivery and machine utilization are some of the non-financial measures used by researchers who found a positive association between advanced MCS and these measures, (Abernethy and Lillis, 1995; Banker, Potter and Schroeder 1993; Perera, Harrison and Poole, 1997; Sim and Killough, 1998).

2.4 Proposed model and hypotheses

Widener (2004) develops the proposed theoretical framework which describes the association between the four attributes of SHC and the three control components of MCS, adopting ideas from both *contingency theory* (Otley, 1980; 1999; Merchant, 1985a; 1985b; Chapman, 1997; Nicolaou, 2000; Reid and Smith, 2000; Jermias and Gani, 2003; Chenhall, 2003) and *transaction cost economics (TCE) theory* (Williamson, 1975; 1991; Spekle, 2001; 2002).

According to Widener (2004) contingency theory and transaction cost economics are two theories that both target to the design of the management control mechanisms. Each theory offers a different perspective for understanding how the firm designs its MCS. Therefore, both theories play an important role in developing the hypotheses for all four attributes of SHC. Contingency theory supports the first set of hypotheses concerning the first attribute, *importance* of SHC, while TCE provides evidences about how *behavioural uncertainty (or causal ambiguity), firm specificity and spread of human capital* affect the design of a management control system. Thus, Widener (2004: 381) proposes the following theoretical framework / model (Figure 1):

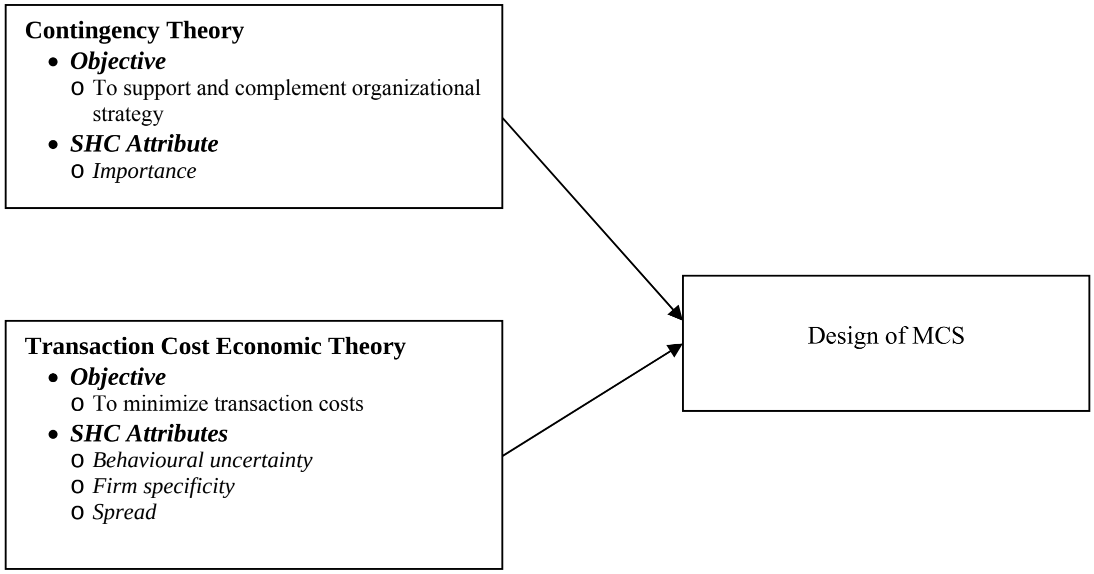

Figure 1: Theoretical model

As management perceives its SHC to be increasing in its importance, the firm will be willing to invest more in personnel controls in order to, *exante*, find and develop employees whose skills, knowledge, and goals are congruent with the needs of the organisation (Becker, 1976; Merchant, 1982; Snell and Dean, 1992; Quinn, Anderson and Finkelstein, 1996). This discussion supports the following hypothesis:

H1a: *Use of personnel controls is positively associated with the belief that the SHC is important.*

Lev (2001) suggests that as firms rely more on off-balance sheet resources, such as human capital, it is likely that they will rely more on nontraditional controls that provide information focused on the strategic resource. Similarly, Snell and Dean (1992) argue that firms that rely more on human capital as a strategic resource will invest in that resource through various training and development costs. But the investment is recorded as an expense that decreases profitability, at least in the short run. Thus, relying on traditional financial controls will provide managers with imperfect (asymmetry) information for decision making purposes, and as McNair, Lynch and Cross (1990) suggest, may actually be counter productive. This discussion supports the following two hypotheses:

H1b: *Use of non-traditional controls is positively associated with the belief that SHC is important.*

H1c: *Use of traditional results controls is negatively associated with the belief that strategic human capital is important.*

TCE assumes that individuals act with self-interest (opportunism) (Williamson, 1985); thus, an environment characterized by behavioural uncertainty may manifest itself in either adverse selection or moral hazard (Coff, 1997). Ex ante personnel controls help mitigate both. Firms that rely heavily on human capital will seek to find individuals with characteristics that are congruent to the firm's culture, thus minimizing opportunistic behaviour and related transaction costs (Merchant, 1998). Therefore, environments characterised by behavioural uncertainty it is likely that firms will rely on ex ante personnel controls since they reduce transaction costs associated with opportunism (Spicer and Ballew, 1983). This reasoning leads to the support of the following hypothesis:

H2a: *Use of personnel controls is positively associated with behavioural uncertainty of the SHC.*

In an environment characterized by a low understanding of the input / output process (e.g., high behavioural uncertainty), a MCS that regulates results using traditional measures may foster an atmosphere of shirking since the firm will not be able to hold any one person accountable for performance (Abernethy and Brownell, 1997). Chenhall (2003) summarizes this literature stream in a proposition that associates high uncertainty with less reliance on traditional accounting measures. This reasoning leads to the support of the following hypothesis:

H2b: *Use of traditional results controls is negatively associated with behavioural uncertainty of the SHC.*

On the other hand, it is likely that firms will rely on non-traditional results controls. Spekle (2001) suggests that in a climate characterised by behavioural uncertainty, firms will seek to establish an environment of congruency to general organisational goals and will seek focused information specifically related to its strategic choices to assist managers in assessing performance outcomes and to use during negotiations or the ex post performance evaluation process (Seal, 1993). It is likely that non-traditional results controls, focused on the firm's strategic goals and objectives, may provide this information, since it is often argued that non-traditional controls provide accurate and timely information that helps the firm assess employees' actual performance (Baiman, 1990; Seal, 1993). This discussion supports the following hypothesis:

H2c: *Use of non-traditional results controls is positively associated with behavioural uncertainty of the SHC.*

Similar to behavioural uncertainty, firm-specificity may facilitate opportunistic behaviour since firm specific human capital possesses idiosyncratic skills and knowledge that others are often unable to observe (Coff, 1997). Thus, there is an increased need for a well-designed MCS that is heavily focused on *ex ante* personnel controls and *ex post* non-traditional results control. The former ensures that employees with similar goals, ethics, and morals are brought into the organisation. The latter ensures that there is a monitoring system in place that focuses on information targeted specifically to the strategic resources. Traditional results controls are not relied on, as they are not effective in this environment (Widener, 2004). This reasoning leads to the support of the following three hypotheses:

H3a: *Use of personnel controls is positively associated with firm-specificity of the SHC.*

H3b: *Use of non-traditional results controls is positively associated with firm-specificity of the SHC.*

H3c: *Use of traditional results controls is negatively associated with firm-specificity of the SHC.*

A traditional MCS is based on financial accounting information and is very closely related to the budgetary system (Ittner and Larcker, 1995). Contrary, a more sophisticated MCS is designed for the purpose of covering the needs of the organisation and it is always closely aligned with the organisation's strategy. Consequently, firms, changing from a traditional to a more sophisticated MCS, incur costs concerning the designing and implementation of the new government (i.e., the MCS) structure (Williamson, 1970, 1975 and 1991). The size of the spread of strategic human capital throughout the firm determines whether the benefits from the new MCS will outweigh its costs. Therefore, as the numbers of SHC increase, the firm will be more willing to invest in personnel controls, designed to find skilled and knowledgeable employees (Becker, 1976; Snell and Dean, 1992), as well as in non-traditional controls more closely aligned with its strategy (Langfield-Smith, 1997). In addition, it is likely that firms will decrease their reliance on traditional results controls since there are limits of cognitive capacity (i.e., information overload) (Williamson, 1975). Therefore, to remain in equilibrium and satisfy a cost minimising objective firms will likely trade-off the cost of traditional controls for non-traditional and personnel controls that are specifically focused on their selected strategy. This discussion supports the following three hypotheses:

H4a: *Use of personnel controls is positively associated with the spread of SHC throughout a firm.*

H4b: *Use of non-traditional results controls is positively associated with the spread of SHC throughout a firm.*

H4c: *Use of traditional results controls is negatively associated with the spread of SHC throughout a firm.*

According to Langfield-Smith (1997), the relationship between MCS and strategy has attracted a considerable interest. Dent (1990), Samson, Langfield-Smith and McBride (1991), and Simons (1987a; 1990) suggest that the MCS should be tailored explicitly to support the strategy of the business to lead to competitive advantage and superior performance. Moreover, Ittner and Larcker (1997) point out that the need to align specific control practices with the organisation's chosen strategy is of vital importance. Consequently, MCSs that are not specifically tailored to support the strategy of the firm (i.e., the traditional results controls) would not probably lead to competitive advantage and superior performance. Alternatively, more sophisticated MCSs (i.e., personnel and non-traditional results controls), which are designed to support the firm's strategy, would probably lead to competitive advantage and superior performance. This discussion supports the following three hypotheses:

H5a: *Use of personnel controls is positively associated with the firm's performance.*

H5b**:** *Use of non-traditional results controls is positively associated with the firm's performance.*

H5c: *Use of traditional results controls is negatively associated with the firm's performance.*

From the above stated theory and the developed hypotheses the following conceptual framework / model could be constructed:

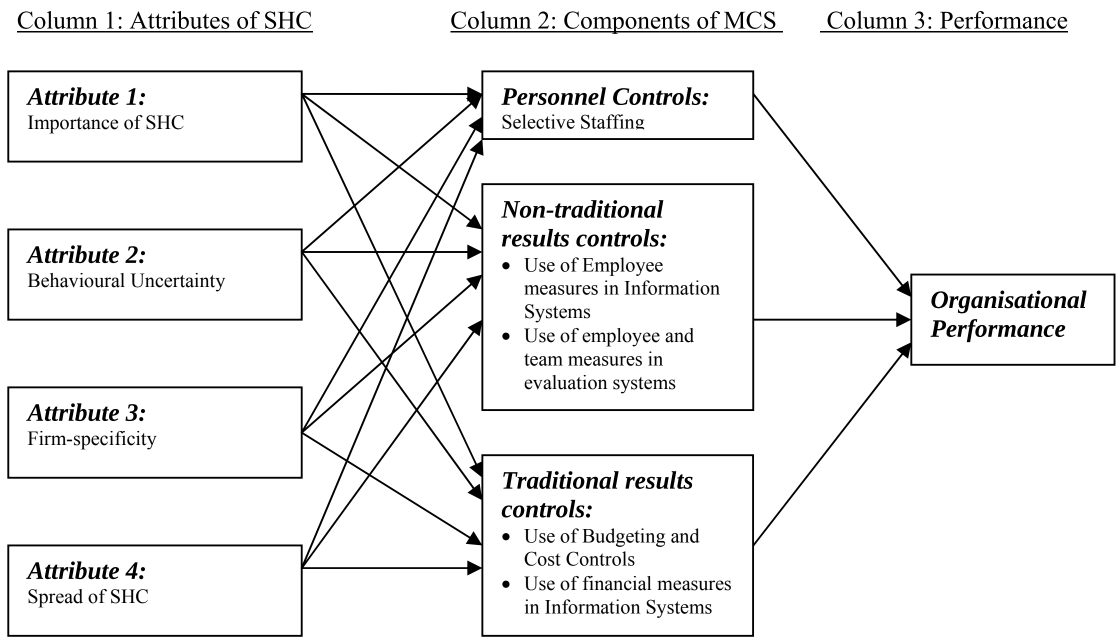

Figure 2: Proposed Conceptual Framework

3. Methodology

3.1. Sample

The sample consists of all listed companies trading in the Athens Stock Exchange (ASE) until the end of fiscal year 2005. Companies with a relatively small number of employees (less than 50 employees) were excluded from the sample. Widener (2004, p. 386) states 'eliminating small firms is necessary since they are less likely to have formal controls'. Thus, 290 listed companies comprise the final sample of the study.

3.2. Data Collection

The Widener (2004) questionnaire, consisted of 40 questions, was extended and a new version was developed consisted of 58 questions. A separate section (a group of questions) on organisational performance was also included in the questionnaire. As a pre pre-test the questionnaire with a cover letter was sent to 10 randomly selected companies. Respondents were asked to test the formulation; namely wording and the sequence of the questions. Moreover, they were asked to comment on the need of adding or eliminating questions. Meanwhile, four visits improved our knowledge on how to deal with this survey and especially how to contact the potential respondents (Dillman, 1978; Zikmund, 2003). Based on the results of 8 respondents and the discussion during the four visits, only a few changes were needed in the formulation, and two more questions were proposed to be added in the questionnaire. Thus, the final instrument consisted of 60 questions. After the minor changes of the questionnaire (table 2), plus a Greek version, plus a stamped return envelop, were sent to the 290 sample firms asking them to answer either in the Greek or in the English version. The whole survey process lasted three months, from March 2006 to May 2006.

This process resulted in 91 responses. The response rate, 31.38 per cent is considered quite satisfactory since it meets the average of 20 per cent that Young (1996) reports for comparable surveys to CEOs. The largest number of responses came from the food and beverage industry, 15.38 per cent, following by the bank industry, 14.29 per cent, and the retail and technology / telecommunication industry, 13.19 per cent. Table 1 shows analytically the response rate.

Table 1: Responses

	Operating sector	Percentage	No of returned questionnaires
1	Banks	14,29%	13
2	Chemicals	5,49%	5
3	Construction and Materials	6,59%	6
4	Food and Beverages	15,38%	14
5	Goods and services	5,49%	5
6	Insurances	5,49%	5
7	Personal and Household goods	8,79%	8
8	Retail	13,19%	12
9	Technology Telecommunications	13,19%	12
10	Travel and Leisure	12,09%	11
		100,00%	91

4. Statistical Analysis

4.1. Reliability measures

Content and construct validity of variable is assessed through: a review of questions for face validity, factor analysis, correlation analysis, and Cronbach's Alpha (Widener, 2004). Factor analysis and correlation analysis proved almost similar results to those of Widener (2004), namely, all measures are unidimensional, and many patterns of plausible behaviour have been revealed. The Cronbach's Alpha are between 0.609 to 0.918 while those of Widener (2004) ranged between 0.640 and 0.808. Similarly to Widener (2004), responses were averaged to create the final score for the variables. Table 2 shows descriptive statistics, reliability scores (Cronbach's Alpha) explained variance and KMO from factor analysis. For a latent construct to be consistent, it should have a Cronbach's Alpha equal or bigger to 0.6. In this study all constructs are higher than 0.6. Only the first one *(select)* with a Cronbach's Alpha of 0.609 is marginally close to 0.60 (see table 2).

Table 2: Descriptive statistics, reliability scores (Cronbach's Alpha), Explained variance and KMO from factor analysis.

	Mean	Std. Deviation	Cronbach Alpha	Explained Variance %	Coefficient KMO
Panel A: Control Systems					
Personnel control: Selective staffing (select)			0.609	53.64	0.563
Q1. Importance on staffing process	5.88	0.865			
Q2. How extensive is the selection process	4.78	0.886			
Q3. Importance of selecting best person	4.49	0.959			
Q4. How expensive is the selection process	4.73	0.854			
Q5. Importance of selecting best person	5.85	0.908			
Q6. Number of people involved	4.07	0.962			
Non-traditional results control: Non-financial employee measures (emp)			0.701	63.50	0.621
Q7. Use of employee satisfaction	4.66	0.931			
Q8. Use of employee skill development	4.56	0.957			
Q9. Use of voluntary turnover	3.85	0.908			
Q10. Use of employee safety	5.18	1.018			
Q11. Use of training day per employee	4.58	1.066			

Q12. Use of personnel plan completed	3.93	1.159			
Non-traditional results control: Evaluation (eval)			0.716	79.78	0.623
Q13. Importance of team measure	4.59	0.984			
Q14. Rewarded for team objectives	4.16	0.972			
Q15. Rewarded for employee related objectives	3.79	0.957			
Q16. Attention focuses on team-related goals	4.29	1.172			
Traditional results control: Budgeting and cost control (bcc)			0.743	59.28	0.629
Q17. Use of variance analysis	4.82	1.171			
Q18. Importance of meeting budgeted targets	5.73	0.886			
Q19. Formal analysis for budget changes	4.93	0.977			
Q20. Cost control system for monitoring	4.30	1.151			
Traditional results control: Financial measures (finl)			0.744	58.41	0.585
Market Performance			0.733	57.64	0.576
Q21. Use of Sales Volume	5.55	0.578			
Q22. Use of Growth in Sales Volume	4.49	0.690			
Q23. Use of Market Share	5.07	0.733			
Q24. Use of Growth in Market Share	4.08	0.777			
Corporate performance			0.716	61.29	0.634
Q25. Use of Return on Investment (ROI)	4.96	0.735			
Q26. Use of Economic Value Added (EVA)	4.81	0.776			
Q27. Use of Net Profit	5.01	0.935			
Q28. Use of Net Margin	4.23	0.890			
Q29. Use of Asset Turnover	4.25	0.778			
Panel B: Strategic Human Capital (SHC)					
Importance of human capital (import)			0.816	73.38	0.679
Q30. Employees are viewed as the most important element in strategic plan	4.49	1.042			
Q31. HC enables firm to be more efficient	4.71	1.086			
Q32. HC enables firm to be more effective	4.77	1.196			
Firm-specificity (fs)			0.788	62.09	0.723
Q33. Knowledge base specific	4.00	1.312			
Q34. Additional firm-specific training	3.73	1.134			
Q35. Time learn f/s products/	3.63	1.137			

customers					
Q36. Time needed for firm-specific training	3.67	1.334			
Behavioral uncertainty (beh)			0.918	67.71	0.892
Q37. Repetitive activities	3.74	1.344			
Q38. Same tasks daily	3.77	1.196			
Q39. Nature of job	3.68	1.235			
Q40. Follow sequence of steps	3.60	1.090			
Q41. Routines of work	3.66	1.272			
Q42. Established procedures/ policies	3.68	1.169			
Q43. Repetitious duties	3.92	1.222			
Spread (spread)			0.865	80.08	0.688
Q44. Proportion of workforce strategic human capital	4.22	1.146			
Q45. Skills found throughout the organisation	4.85	0.967			
Q46. Knowledge found throughout the organisation	4.75	0.940			
Panel C: Performance Measures					
Financial Performance Measures (finmes)			0.725	49.11	0.717
Market Performance			0.687	51.67	0.695
Q47. Sales Volume vs. Industry's average value (last 3 years)	4.48	0.915			
Q48. Growth in Sales Volume vs. Industry's average value (last 3 years)	4.41	1.025			
Q49. Market Share vs. Industry's average value (last 3 years)	4.21	0.985			
Q50. Growth in Market Share vs. Industry's average value (last 3 years)	4.18	1.018			
Company's performance			0.625	62.84	0.650
Q51. Return on Investment (ROI) vs. Industry's average value (last 3 years)	4.26	1.028			
Q52. Economic Value Added (EVA) vs. Industry's average value (last 3 years)	4.36	0.918			
Q53. Net Profit vs. Industry's average value (last 3 years)	3.95	1.079			
Q54. Profit Margin vs. Industry's average value (last 3 years)	4.14	0.976			
Q55. Asset Turnover vs. Industry's average value (last 3 years)	4.12	1.066			
Non-Financial Performance Measures (nonfinmes)			0.757	51.50	0.746
Q56. Unit Cost vs. Industry's average	4.26	1.000			

value (last 3 years)		
Q57. Quality-Product vs. Industry's average value (last 3 years)	4.16	1.054
Q58. Inventory Turnover vs. Industry's average value (last 3 years)	3.96	1.086
Q59. Customer Satisfaction vs. Industry's average value (last 3 years)	4.15	1.367
Q60. Spread new product introduction vs. Industry's average value (last 3 years)	3.96	1.274

4.2. Results

Following the methodology of Widener (2004), the correlation and the discriminant validity of the four attributes of SHC (importance, firm specificity, behavioural uncertainty and spread) are firstly investigated, and then the results of the structural equation model are presented.

4.2.1. Correlation analysis and Discriminant validity

The multitrait matrix (see table 3a) provides evidence of whether the dimensions of the four attributes are distinct or correlated. The diagonal of the matrix (or reliability diagonal) contains the Cronbach's Alpha for each of the four composite constructs and shows their internal consistency or reliability. The remainder of the table is the correlation matrix between the pairs of the four composite constructs. In order to demonstrate that the four dimensions are distinct, the correlation coefficient within a column should be less than the coefficient alpha found in the diagonal (at the top of each column) (Churchill, 1979). This would indicate that there is a higher correlation within each of the composite constructs than between them.

Examining table 3a we notice that the internal reliability of each dimension is higher than the correlation coefficients of each pair of constructs. Table 3b presents the results of Widener (2004). Comparing the results of the two studies it is shown that both studies provide similar outputs on internal reliability. However, examining the correlation coefficients it is clear that our results (table 3a) reveal that the four attributes are positively correlated. This is in contrast with Widener (2004) results where many negative correlations are revealed (see table 3b).

Analytically, we could comment the following:

The results of this research show clearly that, in contrast to US, Greek companies may believe their use of strategic human capital is important, they possess firm-specific knowledge and perform tasks in an ambiguous manner. Thus, they emphasize the use of SHC as a long-term strategy with a big concern for either imitability or mobility of the human capital. Moreover, the positive correlation between the importance and the spread of the human capital through the firm indicate that if Greek firms utilize SHC to sustain their competitive advantage (i.e., long-term focus), they obtain a critical mass of it within them.

Table 3a: Multitrait matrix – Our results

	Import	**Beh**	**Fs**	*Spread*
Import	**0.829**			
Beh	0.406**	**0.917**		
Fs	0.597**	0.691*	**0.793**	
Spread	0.444**	0.255*	0.417*	**0.871**

*** Significant at 0.01, * Significant at 0.05*

Table 3b: Multitrait matrix - Widener's (2004) results

	Import	*Beh*	*Fs*	*Spread*
Import	**0.64**			
Beh	0.104	**0.84**		
Fs	-0.049	-0.021	**0.77**	
Spread	0.238*	-0.219*	-0.081	**0.78**

Any correlation coefficient > |0.19| is significant at 0.05.

Overall both results support the claim and show that the variables are distinct dimensions.

4.2.2. Structural Equation Model

LISREL 8.51 software program is used to estimate the SEM[2]. Due to sample size of the 91 firms, the four distinct attributes of SHC, the five proxies of the MCS and the two proxies of organisational performance are treated as manifest variables (Widener, 2004, p. 391). According to De Ruyter and Wetzels (1999) this technique is used in a small sample size

[2] Several other tests have been performed. Kurtosis and skewness prove that data is within tolerance levels of univariate normality. The Variance Inflation Factor (VIF) and the residuals and White tests, found no evidence for multicollinearity or heteroscedasticity.

since it reduces the number of parameters that are estimated thus accommodating smaller samples.

Kline (1998) suggests the model to be estimated in two distinct sessions. The first one includes the development of the measurement model, while the second one includes the structural model where the hypotheses are tested and the overall model fit is presented. The measurement model associates each latent construct with multiple measures and estimates their loadings. Analytically the results of the measurement model are presented in tables 4a, 4b and are also schematically shown in figure 3. The loadings are ranged between 0.27 and 0.48 indicating that the employed variables capture the defined latent variables.

Table 4a: MCS and their constructs

Measurement Model	Non-Traditional controls Loadings	Traditional controls Loadings
Emp	0.31	
Eval	0.37	
Bcc		0.48
Finl		0.27

Table 4b: Organisational performance (OP) and their constructs

Measurement Model	Organisational performance (OP) Loadings
Fin	0.35
Non-Fin	0.30

Structural equation modelling process includes the relationships among the latent constructs. In this study the proposed model (see figure 1) links SHC with MCS and OP with MCS. Therefore, the entire model will be distinguished into two different parts. This is possible since there is not any direct association between SHC and organisational performance. Thus, the influence of SHC on the MCS design is examined firstly (the first four sets of hypotheses), and secondly, the relation between MCS and organisational performance is examined (fifth set of hypotheses). Overall statistics of these two distinct parts of the model are presented in table 5.

Table 5: Overall model fit

	Results of the First part of the Model	Results of the Second part of the Model
X^2 df=19	49.82 *insignificant*	44.94 *insignificant*
RMSEA	0.093<0.10	0.096<0.10
CFI	0.91 >0.90	0.92 >0.90
X^2-Normed=X^2/df	2.228<3	1.77 <3

The Comparative Fit Index of our first part of the model is 0.91, while that of the second one is 0.92. According to Kline (1998) when the CFI is greater than 0.90, it indicates good model fit. The X^2df=19 of 49.82 and 44.94 respectively are insignificant and thus, acceptable. Moreover, X^2-Normed=X2/dfs are accepted since they are equal to 2.228 and 1.77 respectively and less than 3. Finally, according to Kline (1998) the RMSEA when it is less than 0.10 indicates a good model fit. Although our result of 0.091 and 0.096 are marginally close to 0.10 are still acceptable. Thus, both parts of the model are fitted quite well.

To conclude, table 6 presents the overall structural equation model results estimated by using the indirect method. This method supports to retrieve the relationships between variables by following model's path outcomes (resulted from LISREL). Comparing these results with those of Widener's (2004) study (see table 6) very few divergences are revealed making the Widener's proposed model even stronger, holding also for a country with economy in transition like Greece. However, the results of the second set of hypotheses (H5a-H5c) are very important although contradicting at the first glance. Our opinion is that these 'contradicting' results are logical and due, mostly, as will be explained analytically in the next section, to the dissimilar characteristics between the Greek and US context.

Table 6: Structural equation model results

Hypotheses	Path from…to	Our results	Widener's results
H1a	Import…select	+ve, accepted	+ve, accepted
H1b	Import…Ntr	+ve, accepted	+ve, accepted
H1c	Import…Tr	-ve, accepted	***+ve, not accepted***
H2a	Beh…select	***-ve, not accepted***	+ve, accepted
H2c	Beh…Ntr	+ve, accepted	***-ve, not accepted***
H2b	Beh…Tr	-ve, accepted	-ve, accepted

H3a	FS…select	+ve, accepted	+ve, accepted
H3b	FS…Ntr	+ve, accepted	+ve, accepted
H3c	FS…Tr	-ve, accepted	***+ve, not accepted***
H4a	Spread…select	+ve, accepted	+ve, accepted
H4b	Spread…Ntr	+ve, accepted	+ve, accepted
H4c	Spread…Tr	-ve, accepted	***+ve, not accepted***
H5a	Select…OrgPerf	+ve, accepted	
H5b	Ntr… OrgPerf	***-ve, not accepted***	Not tested
H5c	Tr…OrgPerf	***+ve, not accepted***	

Examining the results in figure 3 and that of table 6, we can appraise how the developed hypotheses that have been derived from the existing theory are in correspondence to the outcomes of this empirical study. Thus, the following conclusions can be drawn:

- The importance of SHC, the firm-specificity, and the spread of SHC are positively correlated with the personnel controls (i.e., hypotheses H1a, H3a and H4a are accepted).
- Behavioural uncertainty is negatively correlated (although statistically insignificant) with personnel control (i.e., hypothesis H2a is not accepted).
- All four attributes of SHC are positively correlated with non-traditional results controls (i.e., hypotheses H1b, H2b, H3b and H4b are accepted).
- All four attributes of SHC are negatively correlated with traditional results controls (i.e., hypotheses H1c, H2c, H3c and H4c are accepted).
- Personnel controls are positively correlated with the organisational performance (i.e., hypothesis H5a is accepted)
- Non-Traditional results controls are negatively correlated to the organisational performance, but this relationship is statistically insignificant (i.e., hypothesis H5b is not accepted). This result indicates the special characteristics of the Greek context.
- Traditional results controls are positively correlated to the organisational performance (i.e., hypothesis H5c is not accepted). This result indicates that the Greek firms still depend on the traditional result controls for obtaining high organisational performance.

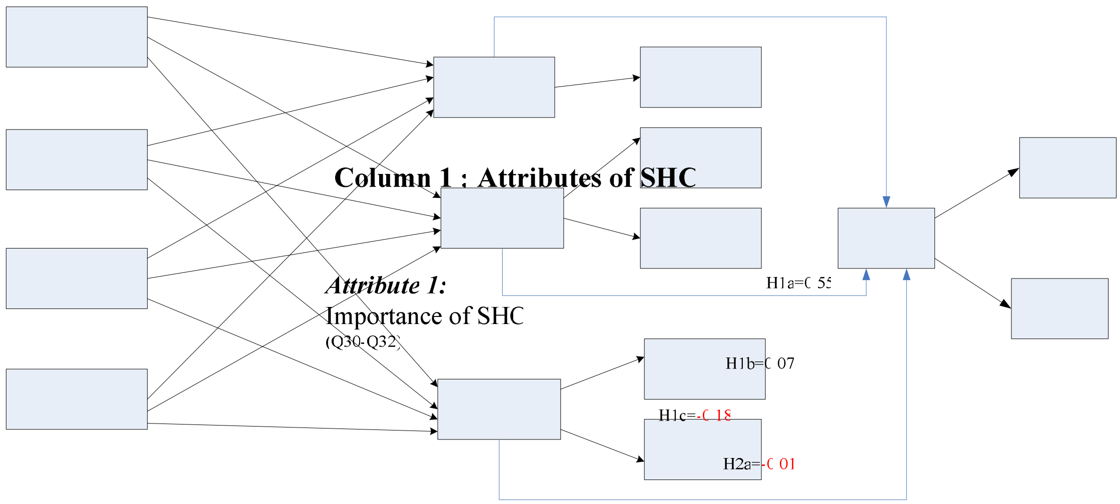

Figure 3: Theoretical framework/model , hypotheses and results

5. Discussion -Conclusions

This study examines the possible relationships between strategic choices, the design of the MCS and the organisational performance of Greek companies. A primary research has first been realised by Widener (2004) in a sample of 107 respondents in the USA. We tried to extend this study and implement it in the population of Greek listed companies, using a sample of 91 respondents.

It uses both transaction cost economics and contingency theory in order to develop a theoretical foundation capable of analysing the relationship between the four components of the SHC, the three components of the MCS, and the two components of organisational performance. This theoretical view tries to present the relationships between the strategy focused on human capital, the use / design of management control systems and the organisational performance in order to develop the proposed model and its related hypotheses.

Reported results reveal that strategic choices affect the design of personnel and non-traditional results controls within the MCS, but not the traditional component of MCS. These results are in agreement with those of Widener (2004) for the US companies.

Moreover, implicitly, the results suggest that firms are adding non-traditional and personnel controls to their traditional MCS. Finding a negative association with traditional controls, while finding a positive association with personnel and non-traditional controls, would imply that Greek managers are substituting non-traditional and personnel controls for traditional controls.

However, if we take into consideration the findings for the last three hypotheses (H5a, H5b and H5c), where organisational performance is positively influenced by personnel and traditional controls and negatively by non-traditional controls, we notice that these findings are in agreement with above made implicit suggestion.

We shall try now to explain these results further by analysing the context under which Greek firms are obliged to operate, as well as some of their characteristics that lead them to such behaviour. Our analysis will be primarily based on the work of Spanos, Prastacos and Papadakis (2001).

Greece represents an interesting context for the purposes of our investigation, since it is an example of an economy in transition. Having made remarkable progress towards macroeconomic convergence during the last few years, Greece has recently (2000) entered European Monetary Union (EMU) and thus sets the example for a number of candidate economies (e.g., Estonia, Czech Republic and Poland) that joined European Union (EU) recently.

The formation of the eurozone and the Single Market (SM) of almost 300 million consumers will inevitably sharpen competitive pressures throughout Europe. In short, today's European economic environment holds many opportunities as well as increased challenges. Innovation, flexibility, cost control, and, more generally, organisational change, are widely prescribed to constitute the main managerial imperatives for organisations competing in the EMU context. The literature on the context dimensions of organisational change can be summarised under the headings of change in strategy, structure and processes (Wittington *et al.* 1999). We shall try to describe briefly all these three dimensions that determine the context under which Greek companies compete for survival and sustainable competitive advantage.

First of all, Greek firms, both SMEs and large firms, have changed their competitive strategy by placing more emphasis on offering high quality product / services and on lowering costs. Innovation is less emphasized, even though it appears as an important strategy priority, mainly, for large firms (Spanos, Prastacos and Papadakis, 2001: 641). This should not be surprising in an environment with very few technological leaders and where Greece ranks 23rd out of 25 EU countries on the summary innovation index (The Innovation Scoreboard 2005). This strategic preference of SMEs on quality and cost imply that the roles of cost control and budgeting (traditional controls) become of primary importance. This is logical, particularly if one takes into account that price differentials and poor productivity have become increasingly apparent and challenged as they are no longer 'hidden' by complex exchange rate movements within the eurozone.

Several generic taxonomies of business unit strategies have been developed including entrepreneurial-conservative (Miller and Friesen, 1982); prospectors-analysers-defenders (Miles, Snow, Meyer and Coleman, 1978); build-hold-harvest (Gupta and Govindarajan, 1984); and product differentiation-cost leadership (Porter, 1980). Evidence from the strategy-organizational design research suggests that conservatives, defenders, harvest and cost leadership strategies find cost control and specific operating goals and budgets more appropriate than entrepreneurs, prospectors and product differentiation strategies (Chenhall and Morris, 1995; Dent, 1990; Simons, 1987). On the contrary, Chenhall and Langfield-Smith (1998b), in their research in Australia, found that while traditional control techniques were not expected to be associated with higher performing companies that followed differentiation strategies, they provided high benefits to all companies emphasizing this strategy. They concluded their research saying that it is apparent that traditional control techniques were not important in differentiating between high and low performers in either of the strategic orientations (cost leadership-differentiation). However, strategies are being complicated by the need for most organisations to be both low cost producer and to provide customers with high quality, timely and reliable delivery. Consequently, the extent to which these strategy typologies, which were developed in the 1970s and 1980s, maintain their relevance to contemporary settings is questionable. Relevant research concerning these contemporary settings is very limited (Chenhall, 2003). From this respect our research could be characterised as interesting and dare to say one of the few. Our results, more or less agree with those of Chenhall and Langfield-Smith (1998b), although in our case, traditional results controls were found to be positively related to performance, for all Greek companies (SMEs and large firms) following a competitive strategy by placing, simultaneously, more emphasis on offering high quality product / services and on lowering costs.

Concerning organisational structure we notice the following:

SMEs and large firms differ in developments pertaining to their internal organisation. More specifically, SMEs place more emphasis on formalisation precisely because of the generally poor organisation of activities characterising many of the small and family-owned firms in Greece. Moreover, although SMEs have increased decentralisation to some extent, this tendency is less pronounced in comparison to large firms, possibly because of the authoritative management style that prevails in small family-owned firms (Spanos, Prastacos and Papadakis, 2001: 643). On the other hand, the number of hierarchical levels (vertical hierarchy) is directly related to firm size. Large firms have reached their optimum size and are now striving for more efficiency, flexibility and horizontal communication by flattering their organisational structures. In contrast, SMEs appear to have increased management layers relative to the past, perhaps because they experienced significant growth and hence they require more levels to operate smoothly. Accordingly, there is an increase in middle-line management positions, although SMEs and particularly family-owned and managed lag considerably behind in terms of professional management. Top management in these firms usually have no managerial experience other than that in their own companies and no exposure to management practices in firms outside Greece.

Finally, concerning organisational processes, we could stress two important factors, the ICT (Information and Communication Technologies) and other modern techniques adoption, and the increased emphasis on human capital through the development of 'interpersonal skills' (i.e., communication and teamwork). It is generally acknowledged that ICT enables, and in many cases drives, dramatic changes in the operation of organisations and enhances coordination and control abilities throughout the firm (Grant, 1998). ICT enables a wide availability of organisational and market data that can be a crucial input for rapid and informed decision making at all levels. The control dimension, on the other hand, and more specifically, measurement and its interpretation against organisational goals (i.e., the traditional and especially non-traditional results controls) can also be fundamentally influenced by the increasing availability of ICT (Scott Morton, 1991). Investments in ICT, however, need to be accompanied by a corresponding emphasis on human capital, because controlling and coordinating ultimately translates into influencing individuals' behaviour.

In Greece, SMEs have generally adopted ICT, but to a lesser extent in comparison to large firms. This indicates that size is an important factor in ICT (and other modern control systems) adoption. It, also, appears reasonable since large firms, in comparison to SMEs, own by definition considerably more resources to allocate on new technologies and modern planning and control systems (Spanos, Prastacos and Papadakis, 2001: 644).

Concerning the emphasis on human capital, we could argue that both Greek SMEs and large firms strongly emphasize the importance of human capital. They are well aware of the critical importance of teamwork and open communication for organisational knowledge creation and sharing, and more generally for effective management. In this respect, they resemble leading firms worldwide that not only emphasize communication and teamwork skills as two critical constituents of organisational culture, but also use them as important criteria for evaluation and recruitment (Spanos, Prastacos and Papadakis, 2001: 645). This is one of the most important reasons for the adoption of personnel results controls by all Greek firms and the consequent positive influence of their organisational performance by these ex ante results controls.

Consequently, firms operating in Greece rely more on traditional results (budgets and cost controls) comparing their actual results with the setting targets. Independently of the company's reliance on intangible assets, such as human capital, Greek managers, generally, still employ traditional results controls to make strategic decisions. It seems that Greek companies continue to focus on a primary set of traditional results controls and then provide supplementary non-traditional results controls aligned with the company's strategy. Moreover, the positive association between both the traditional and personnel controls and the organisational performance, combined with the insignificant statistical association between non-traditional controls and organisational performance reveal that the Greek companies even though they treat SHC as a strategic resource they do not rely on non-traditional controls. This is something expected due mainly to the small size of the Greek firms and to the fact that the great majority of these SMEs are family-owned. Moreover, it should be added that non-traditional controls are less well known to the Greek managers. Only recently these non-traditional results have been taught by the Greek Universities and very few companies have managed to adopt them until today.

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