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The Impact of Strategic Management Accounting and Cost Structure on ABC Systems in Hotels

INTRODUCTION

With the aim of explaining the diversity of management accounting practices researchers have adopted contingency theory to demonstrate how specific aspects of an accounting system are associated with various contextual variables (Emmanuel *et al*, 1990). The contingency approach to management accounting is based on the premise that there is no universally appropriate accounting system applying equally to all organizations in all circumstances. Rather, it suggests that the particular features of an appropriate cost accounting system will depend upon the specific circumstances within an organization. The effectiveness of design of a cost system depends on its ability to adapt to changes in external circumstances and internal factors. Contingency theory suggests that a firm's strategy, organizational structure, as well as the environment dictate its choice of a control system (Chenhall, 2003). Any associated benefits or drawbacks are a function of the degree of alignment between the design of a firm's cost system and the specific set of circumstances the firm faces (Chenhall and Morris, 1986). Activity Based Costing (ABC) is considered to be one of the most important innovations in the field of cost and management accounting (Bjornenak and Mitchell, 1999; Bjornenak, 1997).

ABC systems use a simple two – stage approach that is similar to but more general than the structure of traditional cost systems (job order costing and process costing). Traditional costing systems use actual departments or cost centers for accumulating and redistributing costs. ABC systems instead of using cost centres for accumulating costs use activities; that is, rather than asking how to allocate a service department expense to a production department, the ABC system designer asks what activities are being performed by

the service department's resources. The resource expenses are assigned to activities based on how much of them are required or used to perform activities (Atkinson *et al.* 2001; Garrison *et al.*, 2000).

Both traditional and ABC systems vary in their level of sophistication but, as a general rule, traditional systems tend to be simplistic, mainly because they are inexpensive to operate, make extensive use of arbitrary cost allocations, have a low level of accuracy, high cost or errors, etc. On the contrary, ABC systems tend to be more sophisticated, since they are expensive to operate, make extensive use of cause and effect cost allocations, have a high level of accuracy, low cost of errors, etc (Drury, 2000). According to Drury (2000) ABC started to be applied originally in the manufacturing area and then was applied to the service and merchandising sectors of the economy. One of the prime uses of ABC, namely to eliminate non-value added activities of the entity. Furthermore, the implementation of ABC systems is costly and time consuming to develop in an organization. Kaplan and Cooper (1998) suggest that service companies are ideal candidates for ABC even more than manufacturing companies. Berts and Kock (1995) propose that ABC is suitable for market-oriented sectors such as the hospitality industry.

Evidence about cost accounting and its use in tourism enterprises and especially in hotels is rather limited (Pellinen, 2003). However, there is an active interest in hospitality management and particularly in cost and management accounting practices of hotels and tourism enterprises (Pavlatos and Paggios, 2009; Harris and Brown, 1998). Potter and Schmidgall (1999) assume that little innovation has occurred in hospitality cost and management accounting tools and there are many issues that deserve research attention. However, in recent years, important empirical research in management accounting for hotels and tourism has been published (Harris and Mongiello, 2006).

This study attempted to provide insights into the so-called "ABC paradox" (Gosselin, 1997). Despite the fact that academics and management accountants have showed a great deal of interest for ABC, surveys have

revealed that the diffusion process for ABC has not been intense. According to Gosselin, (1997) “It is the role of management accounting researchers to investigate the factors that might influence managers’ decisions to adopt ABC”.

This paper provides the first empirical evidence of the relation between ABC adoption and contingent factors in hotels. This study examines the extent to which different firm characteristics influence the choice of ABC systems in hotels on the basis of the principle “ABC suits best” (Anderson and Young, 1999), using a sample of 85 hotels in Greece. The importance here is the examination and identification of which different firm characteristics (e.g. size, cost, structure, competition) may affect the adoption of sophisticated cost systems, such as ABC, in the hospitality context and to spot any differences, with similar studies, to other industries.

Chenhall (2003) reports that there is a need for more research into service organizations, such as hotels, about cost system design and contextual variables, as these entities become increasingly important within most economies. The results from the analyses allow us to infer that cost structure and the extent of the use of strategic management accounting techniques do influence, to a certain extent, the decision to adopt ABC systems in hotels.

This study extends prior research in several ways. Firstly, it has provided additional insights into areas relating to factors influencing the adoption of ABC systems. More specifically, this research establishes the association between the extent of use of strategic management accounting techniques with the adoption of ABC systems, which to the best of our knowledge, has not been previously studied. Moreover, it has provided additional insights into areas relating to factors influencing the adoption of ABC systems in services.

The remainder of the paper is organized as follows. The next section briefly sets out the current research in management accounting practices in lodging industry and summarizes previous studies relating to this research. The research hypotheses are presented in Section 3. This is followed by details of the research methodology. The fifth section contains the survey results. Conclusions, limitations and implications for future research are presented in a final section.

LITERATURE REVIEW

Since the mid-1990s researchers have started to examine the contextual factors that influence the adoption and the implementation of ABC (see Gosselin 2007 for a review). Anderson (1995), Malmi (1999), Innes and Mitchell (1995), and Chenhall and Langfield-Smith (1998) report associations between environmental uncertainty and the adoption of ABC. Anderson (1995), Bjornenak (1997), Innes and Mitchell (1995), and Krumwiede (1998) noted that organizations that face more competition tend to adopt ABC. Bjornenak (1997), Malmi (1999) and Krumwiede (1998) demonstrated that firms with more product diversity adopted ABC while Krumwiede (1998) associated the complexity of the production process with ABC adoption and implementation. Bjornenak (1997) found that cost structure was positively associated with the adoption of ABC systems. He argued that companies with high overhead costs were among the first adopters of ABC, as compared to companies with total value added costs (direct labour and overhead). Many field studies and surveys have demonstrated that ABC is more frequent within large organizations rather than smaller ones (Innes *et al.*, 2000; Pierce and Brown, 2004; Bjornenak, 1997; Innes and Mitchell, 1995). Clark *et al.* (1999) have shown that there is a tendency for subsidiaries of multinational to adopt ABC. Moreover, Gosellin (1997) found a significant association between competitive strategy and the adoption of an Activity Management (AM) approach. According to Gosellin (1997) AM represents a new way to organize production and may also include an alternative method, ABC, to record manufacturing costs. It

requires information on activities and their contribution to organizational goals. He reported that prospectors are more likely to adopt one of the three AM approaches, followed by analyzers and defenders.

Within the hospitality context ABC has been studied in connection with customer profitability analysis (CPA). In particular, Dunn and Brooks (1990), Noone and Griffin (1999), Karadag and Kim (2006) and Harris and Krakhmal (2008) implement customer profitability analysis (CPA) in an activity-based costing (ABC) context. Noone and Griffin (1997) propose that ABC is the most effective and accurate costing method for Customer Profitability Analysis (CPA) in a hotel environment. According to Noone and Griffin (1999), customer profitability analysis (CPA) is a technique, which assesses the profit yield from market segments, primarily to provide management with information that will enhance long term yield decisions. It examines revenues, costs and profit by individual customer or customer group. By providing management with regarding the profitability of their customer base, it aims to guide long-term customer-related decisions, such as marketing and capacity management decisions, in order to yield a customer mix that will generate the greatest returns information. Noone and Griffin (1999) point out that CPA can utilise cost data that are reported per customer group and that these data can be sourced directly from many management systems. However, the key to CPA lies in the selection of an appropriate method of matching costs with customer groups. As overhead costs should be first identified and then allocated to the respective market segment and as ABC is capable of materialising the accurate matching of costs to customer groups, the integration of ABC and CPA is regarded very promising in the decision making process.

More recently, Kostakis *et. al* (2011), introduced a methodology for activity-based modelling of customer profitability analysis (CPA) in hotels. It proposes a methodology for defining and effectively addressing cost drivers in the hotel industry. This study combines three methods (association rule mining - ARM, simulation and ABC) for the purpose of making accurate cost estimations. The methodology provides

more accurate accounting information with regards to the various market segments in the hotel industry in a CPA context.

Nevertheless the use of ABC in the hotel industry is limited (Tai, 2000) with an informal survey by Graham (quoted in Tai, 2000) identifying no hotels in Europe to have adopted this approach. Tai interviewed a range of industry personnel in order to identify the reasons for this and found that, although there was considerable knowledge of the theory of ABC, there was a low understanding of how it might be used in hotels (Burgess and Bryant, 2001). Despite the aforementioned results, Pavlatos and Paggios (2009b; 2009c) found that Activity Based Costing diffusion in the hospitality industry in Greece is considered very satisfactory.

Pavlatos and Paggios (2009c) found that ABC systems in hospitality industry are not excessively detailed, as they include a small number of cost drivers and calculate the cost of a rather small number of activities, such as housekeeping, check in/out, reservation, food production/service, marketing and general administration. For the hotels that have adopted ABC, the survey showed that they apply it throughout all the core areas of management accounting especially in pricing decisions and customer's profitability analysis. The non – users, reported that the main reasons for rejecting it is the satisfaction of the existing cost accounting system and the high cost of an ABC implementation.

HYPOTHESES DEVELOPMENT

Importance of cost data

The importance a firm assigns to cost data and the extent to which these data are used for decision-making purposes is a factor that may influence the adoption of an ABC system (Cagwin and Bouwman,

2002). Kaplan and Cooper (1998) reported that more detailed and accurate cost information about individual products became the driving force for effective managerial planning, controlling and decision-making. Al-Omiri and Drury (2007) found that the importance of cost information was a significant variable influencing the cost system sophistication. Furthermore, Cagwin and Bouwman (2002) found that the importance of costs was a significant variable affecting the success of ABC implementation. Moreover, Pavlatos and Paggios (2009a) conclude that the level of cost-system functionality in hotels is positively associated with the extent of the use of cost data. In view of the above, the following hypothesis is tested:

H1: There is a positive relationship between the importance of cost data and the adoption of ABC systems.

Cost structure

According to Al-Omiri and Drury (2007) “A review of European surveys relating to cost structures of firms by Brierley *et al.* (2001) indicated that direct material costs tend to be higher than indirect costs. They conclude that if indirect costs make up a relative small proportion of total costs in some industries it may not be worthwhile investing in sophisticated accounting methods to allocate indirect costs. In such cases direct costing may be appropriate or, if indirect costs are assigned to cost objects, traditional costing systems may not result in reporting seriously distorted costs”. Kaplan and Cooper (1998) and Brignall (1997) believe that firms with high indirect costs, such as hotels, should assign these costs using ABC systems, since traditional costing systems are likely to report distorted costs. Thus, for the purpose of this work the following hypothesis is tested:

H2: There is a positive association with the proportion of indirect costs within a hotel’s cost structure and the adoption of ABC systems.

Level of price competition

According to Al-Omiri and Drury (2007) “As early as 1972, Khandwalla found that market competition is associated with greater use of management controls. Cooper (1988) argued that as competition increases more reliable and accurate cost information may be needed. More recently, Mia and Clarke (1999) found that the level of competition is determinant of the use of Management Accounting System (MAS). A MAS is defined as a system that provides cost information used in strategic and operating decision-making including sourcing, product pricing and mix, and customer profitability decisions, as well as in operating decisions, including process improvement, product design, and performance measurement and evaluation decisions. They argued that as competition increases, there is a greater chance that a competitor will exploit any costing errors made. Moreover, Pavlatos and Paggios (2009b) found that hotels which have adopted some new developed management accounting practices face a higher percentage of indirect cost, higher sales revenue, and higher price competition than those that have not adopt them. Anderson (1995), Bjornenak (1997), Innes and Mitchell (1995), Al-Omiri and Drury (2007) and Krumwiede (1998) noted that organizations that face more competition tend to adopt ABC. In addition, Anderson (1995), Innes and Mitchell (1995), Gosselin (1997), Malmi (1999) and Chenhall and Langfield-Smith (1998) found an association between environmental uncertainty and the adoption of ABC. Based on the above the following hypothesis is tested:

H3: There is a positive association between the level of price competition and the adoption of ABC systems.

Size

Size has been found to be an important factor influencing the adoption of more complex administration systems (Moore and Chenhall, 1994). Many field studies and surveys demonstrated that the adoption of ABC tend to be more frequent in large organizations (Innes and Mitchell, 1995; Bjornenak, 1997; Malmi,

1999; Krumwiede, 1998; Pierce and Brown, 2004; Armitage and Nicholson, 1993; Innes *et. al.*, 2000, Gosselin, 2007; Brown et al. 2001; Groot, 1999). A possible reason for this is that larger organizations have relatively greater access to resources to experiment with the introduction of more sophisticated accounting systems. Pavlatos and Paggios (2009b) report similar results in the hospitality industry.

Therefore, the following hypothesis is tested:

H4: There is a positive association between the company's size and the adoption of ABC systems.

Extent of the use of strategic management accounting techniques

ABC is often linked to other strategic and business initiatives that are likely to complement and enhance each other, rather than being individually necessary and sufficient for improvement (Al-Omiri and Drury, 2007; Cooper and Kaplan, 1991). Krumwiede (1998) also reported that firms linked ABC to other improvement initiatives because of their need for more accurate product/activity costs. Thus, initiatives may act as catalysts for replacing simplistic costing systems with more sophisticated ones (Innes and Mitchell, 1990; Al-Omiri and Drury, 2007).

Recently, Chenhall (2008) recognized management accounting innovations as strategic management accounting “to connect the strategies to value chain and link activities across the organization that relates to cost objects” (p. 525). Guilding *et al.* (2000) provided an original distillation of SMA techniques and also criteria for viewing a particular accounting technique as “strategic”. Furthermore, in the hospitality context, Collier and Gregory (1995) found that hotels are becoming increasingly involved with strategic management accounting tools, both in planning and in ad-hoc exercises on the market conditions and competitor analysis. Therefore, the following hypothesis is tested:

H5: There is a positive association between the extent of the use of strategic management accounting techniques and the adoption of ABC systems.

RESEARCH METHODOLOGY

The survey instrument was sent to 146 large Greek hotels, which are included in the ICAP database (Gallup's subsidiary in Greece). The selection criteria used for sampling purposes (judgment sample) were the sales revenues and the number of employees for year 2008. The collection of data lasted for four months, from June to September 2009. The questionnaire, accompanied by a cover letter where a brief reference to the scope of the study was made, was addressed to the Chief Financial Officers (CFO) of each firm. It should be noted that the questionnaire was accompanied also by one glossary that explained the terminology of ABC. The survey revealed that all the respondents had knowledge of ABC.

Before starting the dissemination of the survey instrument, the questionnaire was pilot tested. Interviews were conducted with the senior financial managers of five large hotels. The pilot test did not reveal any shortcomings regarding either the content or the phrasing of the questions. A total of 85 firms fully completed and returned the questionnaire, yielding a 58% response rate. Companies that did not express interest in the research replied that the main reasons for not taking part in the survey were the lack of time and the fact that answering questionnaires was not one of their top priorities. The questionnaires were answered by Chief financial officers who have firm knowledge of the management accounting information used within their companies and have the primary responsibility for product costing, planning and control decisions.

Tests for non-response bias were performed to determine (a) whether the distribution of the 196 organizations in the response ($n = 85$) or non-response ($n = 61$) categories was independent of available

demographic characteristics (sales revenues, number of beds, category, geographical area, management status) and (b) whether early (n= 72) and late respondents (n= 13) provided significantly different responses. Chi-square tests indicated no significant differences in the demographic characteristics. Hotelling's T^2 statistic also indicated no significant differences in the multivariate means of early versus late respondents.

The variable 'Importance of cost data' was measured according to the model developed by Reeve (1995) and modified by Krumwiede (1996; 1998). This tool used a five item seven-point Likert scale anchored by (1) 'strongly disagree' to (7) 'strongly agree'. This scale measured the importance of cost data within the hotel. A factor analysis is shown in Table 1. It revealed that all five items loaded on a single factor. The Cronbach alpha for the five-item measure is 0.87. The variable 'Cost structure' of the hotel was measured by indirect costs as a percentage of total costs. This measure was similar to others that appear in the literature (Brierley *et al.*, 2001).

'Level of price competition' was measured by Swenson (1995) using a single item seven-point Likert scale anchored by (1) 'strongly disagree' to (7) 'strongly agree', in which respondents were asked to indicate the price competition for their company. 'Size' was measured using the log annual sales turnover (€ million).

The variable 'Extent of use of strategic management accounting techniques' was measured using a tool developed for the purpose of this study; this instrument is similar to others that appear in the relevant literature (Cadez and Guliding, 2008). It was slightly adapted to be understandable in the hospitality context based on information from the interviews with four managers who specialize in management accounting in hotels. It comprises of a six-item seven-point Likert-scaled instrument anchored by (1) 'to no extent' to (7) 'to a great extent', in which respondents were asked to indicate the extent of the use of strategic management accounting techniques. A factor analysis, as shown in Table 2 revealed that all items loaded on a single factor

with an eigenvalue of 3.738 explain 53.4% of the variance in the underlying variable. The Cronbach alpha of 0.85 suggests that its internal consistency is satisfactory. Table 3 provides descriptive statistics for the variables.

Table 1: Factor analysis of importance of cost data

Items	Factor Loadings	Eigenvalue	Percent of variance
Product cost must be accurate to compete in your market	0.872	5.133	64.16
Cost data are important because of your cost reduction efforts	0.768		
Cost data are an important factor in pricing decisions	0.813		
The firm performs many special cost studies	0.683		
Capital expenditures are based on “strategic reasons” instead of cost issues	0.790		

Table2: Factor analysis of the use of strategic management accounting techniques

Items	Factor Loadings	Eigenvalue	Percent of variance
Benchmarking	0.854	3.738	53.4
Life cycle costing	0.718		
Strategic pricing	0.698		
Competitive position motoring	0.627		
Competitor cost assessment	0.741		
Strategic costing (strategic cost management)	0.632		

Table 3: Descriptive statistics of the variables in the study

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Actual Minimum</i>	<i>Actual Maximum</i>
Importance of cost data	85	22.95	4.146	15	32
Cost structure (% of indirect costs)	85	46.93	7.662	30	63
Level of price competition	85	5.21	0.873	3	7
Sales revenue for the year 2005 (€ mil)	85	9.85	12.25	3.3	99.5
Extent of use of strategic management accounting techniques	85	16.10	5.030	8	26

‘ABC systems adoption’ was measured using a binary (dichotomous) variable by Bjørnenak (1997) and Al- Omiri and Drury (2007). Respondents identify whether firms were ABC adopters or ABC non-adopters.

Table 4 provides a correlation matrix of the independent variables in the study. None of the correlation coefficients are high, thus suggesting that multicollinearity is not an issue. Lewis-Beck (1990) reported that intercorrelations need to be 0.8 or above before they are of any concern.

Furthermore, the correlation between importance of cost data and extent of the use of strategic management accounting techniques data ($r = 0.45$, $p \leq 0.01$) is not sufficient to expect that multicollinearity would affect the results of the research. A rotated varimax factor analysis shows that each predictor loads principally on a separate factor, based on the decision heuristic cut-off of 0.400 providing evidence of their independence. Williams *et al.* (1990) noted that intercorrelations among variables derived through a factor analysis results from the items comprising any one factor not loading exclusively on that factor. Consequently, they indicated that factor intercorrelations can be greater than zero.

Table 4: Spearman correlation matrix for the independent variables

Variable	STRUC	SIZE	COMP	IMPORT	SMA	N
Cost structure (STUC)	1					85
SIZE	0.241*	1				85
Level of price competition (COMP)	0.188	-0.015	1			85
Importance of cost data (IMPORT)	0.172	0.184	-0.007	1		85
Extent of use of strategic management accounting techniques (SMA)	0.261**	0.185	0.249*	0.361**	1	85
NOTE: * indicates Correlations is significant at the .05level (2 tailed)						
**indicates Correlations is significant at the .01 level (2 tailed)						

RESEARCH FINDINGS

The survey revealed that only 23.5% of the hotels have adopted ABC while 74.5% of the sample (65 firms) reported not to.

In order to test the hypotheses specified in Section 3 the following model was applied:

$$Y = b_1 + b_2 \text{IMPORT} + b_3 \text{STRUC} + b_4 \text{COMP} + b_5 \text{SIZE} + b_6 \text{SMA} + e$$

where Y: the dichotomous variable of ABC adoption and ABC non- adoption. Therefore, binary logistic regression was used and was applied to 85 hotels that have established formal costing systems. The above model contains 6 independent variables.

Table 5 presents the results of the binary logistic regression. The two final columns of the table present the collinearity statistics. It can be seen that the variance inflation factors are well below the generally accepted critical threshold of 10 (an indication of high levels of multicollinearity) and tolerances are above 0.2 (represent a more conservative estimate that multicollinearity may be a problem - Hair *et al.*, 1998).

The variables “Cost structure” and “Extent of the use of strategic management accounting techniques” are positively associated with ABC adoption as expected. The Chi-square statistics shown in Table 5 is comparable to the overall F-statistics in multiple regression. The model is significant at the 0.000 level. The Hosmer and Lemeshow goodness of fit value (0.735) measures the correspondence of the actual and predicted values of the dependent variable. This statistic tests the hypothesis that the observed data are significantly different from the predicted values. Thus, a non- significant statistics indicates that the model does not differ significantly from the undeserved data (Hair *et al.*, 1998). Nagelkerke R square (0.59) attempts to quantify the proportion of explained “variation” in the logistic regression model. It is similar in intent to the R^2 in a linear regression model (Norusis, 2000). The final entry in Table 5 indicates that the model correctly classified 87% of the respondents as adopters and non-adopters.

Table 5 also indicates that the following variable is statistically significant: Cost structure ($p < 0.01$) and the Extent of the use of strategic management accounting techniques ($p < 0.01$). On the contrary, the variables ‘Importance of cost data’, ‘Level of price competition’, and ‘Size’ are not statistically significantly associated with ABC adoption. Thus, we summarize that statistical analysis showed that only H2 and H5 hypothesis are supported, while H1, H3 and H4 are not supported by the data (Table 5).

Table 5: Logistic regression analysis with the dichotomous variable ABC/non –ABC as the dependent variable (N=85)

								Collinearity statistics	
	Expected sign	B (Logistic coefficient)	Standard error	p- value	Exp.B	Test hypothesis of	Tolerance	VIF	
Importance of cost data	+	0.393	0.514	0.444	1.482	H1 (no supported)	0.582	1.718	
Cost structure (% of indirect costs)	+	0.170	0.058	0.004	1.185	H2 (supported)	0.826	1.211	
Level of price competition	+	-0.658	0.524	0.209	0.518	H3 (no supported)	0.886	1.129	
Size (log annual sales in € million)	+	0.000	0.000	0.720	1.000	H4 (no supported)	0.869	1.151	
Extent of the use of strategic management accounting techniques	+	1.722	0.787	0.016	3.529	H5 (supported)	0.495	2.022	
Constant		-6.656	3.673	0.070	0.001				
Chi-square				0.000					
Hosmer – Lemeshow goodness of fit				0.735					
Durbin Watson				1.897					
Cox & Snell R square				0.441					
Nagelkerke R square				0.588					
Per cent correctly classified				87%					

DISCUSSION AND CONCLUSIONS

Evidence was presented to support the acceptance of two of the five hypotheses presented. The adoption of ABC systems is significantly positively associated with the cost structure. Statistical analysis showed that those hotels that experience higher proportions of fixed cost have adopted ABC systems. Cost structure is a variable that often appears in the literature as being the dominant motive for implementing ABC systems.

Kaplan and Cooper (1998) suggest that services are ideal candidates for ABC even more than manufacturing companies. Their justification for this statement is that most of the costs in services organizations are fixed and indirect. In contrast, manufacturing can trace important components (such as direct materials and direct labour) of cost to individual products. Therefore indirect costs are likely to be a much smaller proportion of total costs. Service organizations also supply most of their resources in advance and fluctuations in the usage of activity resources by individual services and customers does not influence short term spending to supply the resources. Such costs are treated by traditional costing systems as fixed and irrelevant for most decisions. This resulted in a situation where profitability analysis was not considered helpful for decision-making. Cost increases could also be absorbed by increasing the prices of services to customers. Little attention was therefore given to developing cost systems that accurately measured the costs and profitability of individual services (Drury, 2000).

I also found that the adoption of ABC systems is significantly positively associated with the extent of the use of strategic management accounting techniques. Hotels that use more strategic management accounting tools, such as benchmarking, lifecycle costing, strategic costing, competitive position motoring, competitor cost assessment and strategic costing, are more likely to be ABC adopters. Hence, it appears that there is a relation between ABC and the extent of the use of strategic management accounting techniques. This finding confirms Krumwiede (1998) who reported that companies linked ABC to other improvement initiatives because of their need for more accurate product and activity costs.

This finding confirms the results presented in Cagwin and Bowman (2002). They argue that ABC systems often provide more and better information about processes; thus ABC is most beneficial if initiatives are employed concurrently. This relationship has not been examined in previous relevant studies, where only the relationship between the adoption of ABC systems and a firm's characteristics has been studied. Therefore, we conclude that the level of usage of strategic management accounting techniques is positively

associated with the adoption of sophisticated cost accounting systems, such as ABC systems and less with the use of simplistic or traditional accounting systems.

I also found that Strategic Management Accounting (SMA) is being used in services and especially in hotels. This finding is consistent with Collier and Gregory (1995) and Anderson and Guilding (2006) that supported the importance of strategic management accounting tools for hotels. They reported that the adoption of SMA is consistent with the open and relatively homogeneous nature of the industry and the high degree of competitiveness among the hotel groups in the market. Case study research may be a more appropriate research method for examining how the extent of using strategic management accounting tools could affect the cost system design.

Interestingly, structural determinants, including size (sales revenues), the intensity of the competitive environment, and the importance of cost data were not significant variables affecting the adoption of ABC systems. The lack of significance of those contingent factors is surprising, given that these variables are often presented in the literature as influential for the ABC adoption (e.g. Gosselin, 1997; Bjørnenak 1997; Hoque, 2000; Cagwin and Bowman, 2002; Al-Omiri and Drury, 2007). It is possible that the questionnaire used too simplistic measures; these measures failed to take into account the precise ways that influence the adoption of ABC systems.

Business with high fixed cost structures (e.g. hotels) tend to be “market – oriented”, whereas those with low fixed cost structures, such as manufacturing tend to be “cost – orientated” (Harris and Brown, 1998; Kotas, 1982). Thus, the presence of high fixed costs and the reliance on consumer demand normally makes it essential for management to be revenue-driven and focus on product differentiation in order to achieve a “fair” share of profit (Graham and Harris, 1999). This might explain why the variable “Importance of cost data” is not statistically significant in the model.

The findings presented in this paper are subject to a number of limitations. First of all, the survey instrument was sent to 146 large Greek hotels. Because those sampled hotels are all large based on their sales and number of employees, there may not be significant variations across sampled hotels. Such homogeneity in size certainly works against finding a significant result for 'size' variable. Also, such homogeneity may also work against finding a significant result for 'price competition' since those homogeneous hotels may face similar price competitions. Another factor that may affect these results is the noisiness of the measures. A mail survey prevents an assessment of the respondent's actual knowledge of the cost accounting system, although the surveys were mailed to chief financial managers. A mail survey also prevents the respondent from effectively clarifying his or her understanding of the questions. The major limitation of this research is that a classification for ABC usage that makes a distinction between the adoption and the implementation was not used. For this reason, it was assumed that all the respondents have actually implemented a full ABC system, while the exact features of the ABC implementation are not known.

Furthermore, the sample size was small (less than 100 firms) and I could not split it for validation purposes into analysis and holdout samples. The more functional cost systems group contains a little more than the minimum size of 20 observations required for logistic regression (Hair et al., 1998). Thus, I develop the function on the entire sample and then I use the function to classify the same group used to develop the function. This procedure results in an upward bias in the predictive accuracy of the function, but is certainly better than no testing the function at all. Finally, the variable "level of price competition" was operationalized as single items measures. If that variable were measured as a sum of questions, the measurement would be more useful and stronger (Foster and Swenson, 1997). ABC systems adoption was operationalized as a binary variable. The use of a Likert scale would probably result in less noise.

The study contributed to the current knowledge in cost and management accounting practices in hotels. The results provide the first empirical evidence of the relation between ABC adoption and contingent factors in hotels. This study extends prior research in several ways. Firstly, it has provided additional insights into areas relating to factors influencing the adoption of ABC systems. More specifically, this research establishes the association between the extent of use of strategic management accounting techniques with the adoption of ABC systems. Finally, it has provided additional insights into areas relating to factors influencing the adoption of ABC systems in services.

Future research should consider incorporating other important variables that have been omitted from other studies and are likely to influence the adoption of ABC systems. The most notable omitted variables are organizational variables, such as top management support, satisfaction of the existing cost accounting system, lack of a perceived need by management accounting function to develop ABC systems and lack of relevant employees' skills. An interesting extension of this work would be to investigate why adoption rates in the hospitality industry are comparatively lower than other industries in Greece (see Cohen *et al.*, 2005 for a review). Finally, interviews with hotel managers could help understand their motivations to adopt ABC (ABC supporters) and the extent to which they are satisfied with the current accounting practices (ABC deniers).

The research conclusions of this study have important implications for both professionals and managers. The study indicates that managers recognize the importance of receiving sophisticated cost information during the decision making process. Moreover, those who may benefit from this research are the designers of cost management systems, who can understand the factors that influence the adoption of sophisticated management accounting systems, such as ABC system, in hotels.

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