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The Impact Of Activity Based Costing On Firm Performance: The Australian Experience

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The objectives of this exploratory study are to develop a scale that best capture the perception of the practitioners related to activity-based (ABC) costing, and subsequently, develop a model that predicts the impact of perception of ABC on overall firm performance. The Cronbach's alpha shows apparent superiority of the scale. The factor analysis finds four dimensions, namely, overall performance, strategic cost allocation method, increased efficiency and increased effectiveness having the factor loadings of over ±0.3. The regression results are positive and significant at the 5% level. This study suggest that the developed scale can have significant implications to capture the perception of ABC and that the perception of ABC in terms of strategic cost allocation method, increased efficiency and increased effectiveness has significant effect on firms' performance.

Field of Research: Activity Based Costing implementation, Strategic cost allocation method

1. Introduction

Traditional costing systems have worked well for many decades and may continue to be useful today to value inventory and measure the cost of goods sold. However, practitioners are facing various challenges using the traditional costing systems in today's competitive environment. Cost and Management Accountants in a globalize world are now expected to be team players in such areas as product development, profitability analyses, quality process and improvements, and the evaluation of overall company performance (Welfle and Keltyka, 2000). As a strategic cost management tool, activity-based costing (ABC) plays a vital role. The ABC (activity-based costing) model has revolutionized costing systems (Johnson and Kaplan, 1987). The activity-based costing (ABC) is a method of analyzing business operations that leads to cost identification (e.g. direct cost and indirect cost) and cost classifications based on activities (Johnson and Kaplan, 1987). Implementation of ABC reduces costs and improves the resource allocation. It may result in improving resource allocation consistent with strategic objectives and budget surplus (Zaman, 2007). ABC has reportedly helped many organizations to better manage their business activities when combined with total quality management and business process re-engineering (Adams,

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1996). In the mid 1990s, a survey of Australian manufacturers reported that only twelve percent of the top five hundred companies adopted ABC and twenty-nine percent planned to implement in near future. The report also revealed that forty-five percent did not consider ABC implementation and fourteen percent rejected to implement ABC (Lagfield-Smith et al. 2003; Booth and Giacobbe, 1997 quoted in Zaman, 1997).

The popularity of the activity-based costing (ABC) in the mid-1980s and the subsequent evolution (Bromwich and Bhimani, 1989) versus revolution (Johnson and Kaplan, 1987) debate has enriched both the management accounting literature and practice. However, research has emphasized on assessing the integrity of the ABC process (for example, Banker and Johnston, 1993; Bromwich and Bhimani, 1989; Foster and Gupta, 1990; Maher and Marais, 1998; McGowan and Klammer, 1997; Noreen, 1991; Roth and Borthick, 1991); examining its application and implementation in a single case study situation (for example, Cooper and Kaplan, 1999); assessing the degree of interest and adoption (for example, Nicholls, 1992; Armitage and Nicholson, 1993; Innes and Mitchell, 1995, 1997; Malmi, 1999); factors impacting the success of implementation (for example, Anderson, 1995; Shields, 1995; Foster and Swenson, 1997; Anderson and Young, 1999); and examining the impact of ABC on stock performance (for example, Kennedy and Affleck-Graves, 2001).

The literature has left a gap in measuring the perception of activity-based costing (ABC) and its impact on the overall performance of the organizations. Studies support that managers are enthusiastic about the benefits of ABC due to its high level of quality (Innes, 1999). It is also argued that the behavioral issues of the relevant staff play a vital role to the successful implementation of ABC (Shields, 1995). Therefore, the research questions of this study are—how executives perceive activity-based costing in terms of strategic cost allocation method, and firms' efficiency and effectiveness? And to what extent the implementation of ABC affects the overall performance of the organization? This study is an exploratory study in the context of Australia. The subsequent sections are arranged in following way. The next section discusses objectives and methodology; the following sections discuss empirical findings, implications and conclusion.

2. Objectives and Methodology

The objectives of this study are as follows. First, to develop a scale that can measure the perception of ABC, and second, to develop a regression model that predicts the impact of ABC on overall firms' performance.

2.1 Perception Of ABC: The Item Generation

This is an exploratory study, in nature. A preliminary study was conducted on the seventeen Australian companies listed by the ABC Learning Centers Ltd, (Australia 30/06/2006 Annual Report), already using activity based costing.

The respondents for this study were the finance directors, chief financial officers, and cost and management accountants, and other senior executives from all of the seventeen selected companies. An ethical clearance was obtained from the Central Queensland University's Research Services Office before sending the questionnaire to the participants. Each participant was contacted either by phone, email or both to obtain his or her consent to participate in the survey before sending the questionnaire through post mail or email. During the telephonic conversation, we asked several question relating to activity-based costing. Of them

(a) how activity-based costing implementation has influenced overall firm performance?
(b) how do the executives perceive the firm performance? were worth mentioning.

Based on this interview, we construct fourteen items. These fourteen items served as the key for measuring the perception of ABC.

2.2 Data Collection

The data gathering instrument employed for this study is a structured questionnaire. Fourteen items are arranged on a five point Likert type scale expressed as 1= Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, and 5 = Strongly Disagree. One hundred seventy questionnaires with prepaid envelop are sent off through post mail to seventeen organizations. Followed by gentle telephone reminders, eighty-two usable responses are received. Thus, we receive 47% response. The collection of data for this study is governed by the policies of the National Health and Medical Research Council (NHMRC) and the Central Queensland University. In order to preserve the rights and safety of the participants, rules on ethics and confidentiality in collecting data are followed. In addition, details of variables and the questionnaire design to test research questions in the questionnaire have been outlined.

2.3 Data Analysis

Data are analyzed through SPSS version 16. First, we calculate the descriptive statistics. The descriptive statistics give an overview of the collected data and they are reported in table 1. Second, we utilize reliability analysis using Cronbach's alpha value. Prior to data collection, we discussed about each question of the questionnaire with the senior accounting or finance executives, and researchers and they are pretested. Thus, we ensure the content validity of the scales. The reliability analysis (table 1) shows the overall acceptability of the scales developed for the model. Third, we employ the factor analysis, using principal component method followed by Varimax with Kaiser Normalization, to find the factors or dimensions that explain variances by the data set (table 2). Lastly, we estimate regression model to predict the impact of ABC on overall firm performance. Therefore, we develop the following linear regression model.

$$OP = \alpha + \beta_1 \operatorname{Im}_{ABC^{SCAM}} + \beta_2 \operatorname{Im}_{ABC^{IE_1}} + \beta_3 \operatorname{Im}_{ABC^{IE_2}} + \varepsilon_t .$$

Where, *OP* = perception of the overall performance of the organization after implementation of the activity-based costing (ABC); $\operatorname{Im}_{ABC^{SCAM}}$ = perception of the impact of ABC as a strategic cost allocation method; $\operatorname{Im}_{ABC^{IE_1}}$ = perception of the impact of ABC in bringing increased efficiency; $\operatorname{Im}_{ABC^{IE_2}}$ = perception of the impact of ABC in bringing increased effectiveness; α, $\beta_{1\text{-}3}$, and ε_t are the intercept, the coefficients and the error term at time t of the regression model.

3. Results and Discussion

Table 1 shows the descriptive statistics and the reliability (alpha) scores. The descriptive statistics show that three items are having mean scores between 2.3 and 2.5; meaning that managers perceived that implementation of ABC can provide benefits to customers, can improve the overall revenue, and can give better financial return in terms of long-term customer relationships, respectively. The standard deviations for these items vary between 1.0 and 1.1. However, managers are neutral to the items; namely, implementation of ABC creates more value for our customers, and has increased the organization's profitability. The mean scores are 2.9 and 2.7, respectively. The standard deviations are 1.0 and 1.09. In contrast, managers have disagreed to the items that state that ABC helped customers to get a low priced product or service, and it has helped organizations to deliver a better quality product or service than before. The standard deviations are 0.27 and 0.50. However, managers have agreed to the rest of the items. The reliability analysis using the Cronbach's alpha (column 4, table 1) shows that the alpha values are ranging between 0.834 and 0.878. As a guideline, the α-value of 0.70 and above is considered to be the criteria for demonstrating internal consistency of new scales and established scales, respectively (Nunnally, 1988). Therefore, the alpha values for these items explain that there is a considerable degree of scale reliability.

Table 1: The results of the descriptive and the reliability analyses

Items (1)	Mean (2)	St.Dev. (3)	Cronbach's Alpha (4)
Enhanced capability of business performance.	2.0	0.88	0.848
Internal managerial efficiency increases.	1.1	0.39	0.859
Customers are benefited.	2.3	1.08	0.878
ABC has reduced overall production cost.	2.1	0.78	0.868
ABC has helped to identify major cost drivers for each of the products.	1.4	0.83	0.854
ABC has helped to separate costs for each category of products.	1.2	0.52	0.867
ABC has proven to be a valuable overhead cost allocation system to identify real cost of product or service.	1.4	0.83	0.854
ABC is a strategic cost management system.	1.5	0.75	0.841
ABC has helped us to create more value for our customers through identifying major input, output and process elements.	2.9	1.09	0.853
ABC has helped the customers to get a low priced product or service.	3.5	0.50	0.878
ABC has helped us to deliver better quality product or service than before.	4.0	0.27	0.868
ABC implementation has improved our overall revenue.	2.3	1.18	0.851
ABC implementation has increased the organization's profitability, significantly.	2.7	1.0	0.837
ABC implementation gives an organization better financial return in terms of long-term customer acceptability.	2.5	1.1	0.834

The results of the factor analysis show that four factors are having an Eigenvalues of at least one and they can explain 91.364% of total variance. Table 2 shows the rotated component matrix. This matrix shows the factor loadings of the items on the four extracted factors or dimensions and they all are above ±0.3. It is note worthy to mention that the decision to include a variable in a factor is based on factor loadings greater than ±0.3 (Hair et al., 1995). Based on the overall factor loadings, the dimensions are renamed. They are: overall performance (OP), strategic cost allocation method (SCAM), increased efficiency (IE_1), and increased effectiveness (IE_2). Overall performance has been viewed as the firm's capability to serve its customers, to generate revenue and to manage costs. ABC as a strategic cost allocation method has been viewed as its capacity to identify and separate major cost drivers, and overhead cost allocation system. Increased efficiency refers to the better business and managerial practices that lowers the customer cost. Increased effectiveness refers to the better business and managerial practices that helps organization to achieve its objectives.

Table 2: The results of the factor loadings (OP=overall performance, SCAM=strategic cost allocation method, IE_1=increased efficiency, IE_2=increased effectiveness)

Items	OP	SCAM	IE_1	IE_2
Enhanced capability of business performance.	0.454	0.350	0.728	0.304
Internal managerial efficiency increases.	0.494		0.576	
Customers are benefited.	0.559			-0.718
ABC has reduced overall production cost.				0.925
ABC has helped to identify major cost drivers for each of the products.		0.964		
ABC has helped to separate costs for each category of products.		0.935		
ABC has proven to be a valuable overhead cost allocation system to identify real cost of product or service.		0.964		
ABC is a strategic cost management system.	0.601	0.605		0.370
ABC has helped us to create more value for our customers through identifying major input, output and process elements.	0.728		0.330	
ABC has helped the customers to get a low priced product or service.			0.931	
ABC has helped us to deliver better quality product or service than before.		0.709		-0.527
ABC implementation has improved our overall revenue.	0.961			
ABC implementation has increased the organization's profitability, significantly.	0.953			
ABC implementation gives an organization better financial return in terms of long-term customer acceptability.	0.977			

To examine the effects of perceptions of SCAM, IE_1, and IE_2 on the perceptions of OP, we run regression. Based on the factor loadings (table 2), we separate the items according to their dimensionalities and compute the average using the following equation.

$$\frac{\sum_{x_i}^{x_n}(r)}{n}$$

Where, $x_{(i-n)}$ = corresponding items under each dimension, r = respondents' scores for the items and n = number of items loaded on the dimension. Thus, we get eighty-two data for each of the independent variables, namely, SCAM, IE_1, and IE_2 and one dependent variable OP. The regression results are presented in table 3.

Table 3: Results of the regression analysis

R	R^2	$\bar{R}^2$	Std. Error of the Estimate	Sig. F Change	Durbin-Watson
0.924	0.854	0.848	0.28762	0.000	2.425

The regression results show that the standardized Beta coefficients are 0.516, 0.270, and 1.062 for SCAM, IE_1, and IE_2, respectively and they all are significant at the 5% level. The constant and standard error of the estimate are 1.685 and 0.29, respectively. The results of the ANOVA (analysis of variance) test show that the p-value of the F statistic is less than 0.05, which indicates that the independent variables of this model can explain the variation in the dependent variable. The multiple correlation coefficient (R) is 0.924 implying that there is a strong relationship between the observed and the predicted values of the dependent variable. The R^2 is 0.854 implying that 85.4% of the variation in the dependent variable can be explained by this model. The adjusted R squared is 0.848, which also indicates a close reflect of the goodness of fit of the model in the population. The Durbin-Watson statistic is 2.425, slightly higher than 2, assuming that there is no serial correlation.

4. Implications and Conclusions

The results show robust findings in terms of scale reliability and validity, factor analysis, and regression analysis. Overall, the company executives find that ABC implementation has helped them finding the majors costs for each of the products thus it reduces the production cost and lowers the customers cost. ABC implementation also helps to increase the managerial efficiencies and effectiveness, and increases firms' revenue. This study suggests that the developed scale can have significant implications to capture the perception of ABC.

The factor analysis reveals that perception of ABC is comprised of four factors. They are overall performance, strategic cost allocation method, increased efficiency and increased effectiveness. The regression results are significant at the 5% level. These signifies that ABC as measures of strategic cost allocation method, increased efficiency, and increased effectiveness have positive and significant effect on overall firms' performance in Australia.

References

Adams, M. 1996. "Activity-based costing (ABC) and the life insurance company", *The Service Industries Journal*, vol. 16, pp. 511-526.

Banker, R.D. and Johnston, H.H. 1993. "An empirical study of cost drivers in the U.S. airline industry", *The Accounting Review*, vol. 68, pp.576-601.

Booth, P. and Giacobbe, F. 1997. "Activity-based costing in Australian manufacturing firms - key survey findings", *Management Accounting Issues* Report by the Management Accounting Centre of Excellence of ASCPA, no. 5, pp. 1-6.

Bromwich, M. and Bhimani, A. 1989. *Management Accounting: Evolution Not Revolution*. London, U.K.: Chartered Institute of Management Accountants.

Cooper, R. and Kaplan, R.S. 1999. *The Design of Cost Management System*. New Jersey, U.S.: Prentice Hall.

Foster, G. and Gupta, M. 1990. "Manufacturing overhead cost driver analysis", *Journal of Accounting and Economics*, vol 12, pp. 309-337.

Innes, J. 1999. "The use of activity-based information: a managerial perspective", *Management Accounting*, vol 77, pp. 80-81.

Johnson, T. and Kaplan, R.S., 1987. *The Relevance Lost: The Rise and Fall of Management Accounting*. Boston, M.A.: Harvard Business School Press.

Kennedy, T. and Affleck-Graves, J. 2001. "The impact of activity-based costing techniques on firm performance", *Journal of Management Accounting Research*, vol 13, pp.19-45.

Lagfield-Smith, K., Thorne, H. and Hilton, R.W. 2003. *Management Accounting*. McGraw-Hill, Australia.

Maher, M. and Marais, M.L. 1998. "A field study on the limitations of activity-based costing when resources are provided on a joint and indivisible basis", *Journal of Accounting Research*, vol 36, pp. 129-141.

McGowan, A.S. and Klammer, T.P. 1997. "Satisfaction with activity-based cost management implementation", *Journal of Management Accounting Research*, vol 9, pp. 217-237.

Noreen, E. 1991. "Conditions under which activity-based cost systems provide relevant costs", *Journal of Management Accounting Research*, vol 3, pp. 159-168.

Nunnally, J.C. 1988. *Psychometric theory*. Englewood Cliffs, NJ: McGraw-Hill.

Roth, H.P. and Borthick, A.f. 1991. "Are you distorting costs by violating ABC assumptions?", *Management Accounting*, vol 73, pp. 39-42.

Shields, M.D. 1995. "An empirical analysis of firms' implementation experiences with activity-based costing", *Journal of Management Accounting Research*, vol 7, pp. 1-28.

Welfle, B. and Keltyka, P. 2000. "The new challenge from management accountants", *Ohio CPA Journal*, vol. 59, pp. 30-36.

Zaman, M. 2007. "Activity-based costing (ABC) implementation in Australian universities: an exploratory study", *Proceedings of the 9th South Asian Management Forum,* 24-25 February, 2007, pp. 413-418. AMDISA: North South University, Bangladesh.

Zaman, M. 1997. "Implementation of ABC in some Australian Manufacturing", *CIMA in Focus*, vol: Aug.-Sept., pp. 6-8.