

The design and implementation of Activity Based Costing (ABC): a South African survey

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Abstract

Activity Based Costing (ABC) has been researched extensively in developed countries. Research on these issues in South Africa is limited. This article creates a better understanding of the design of ABC systems in South Africa, comparing ABC implementation in South Africa to that in several developed/developing countries. A quantitative methodology was adopted to evaluate the extent of ABC implementation. A survey-case study methodology was used to identify reasons for implementation/non-implementation, problems and critical success factors relating to implementation. The results show that the extent of ABC implementation in South Africa is lower than that found in developed countries, but the evidence is inconclusive. Nevertheless, the results suggest that the issues facing ABC implementers in South Africa are similar to those faced in many other countries. This study provides South African companies with a comparative framework of important variables to be considered in implementing ABC.

Key words

*Activity Based Costing (ABC) in South Africa
ABC in developed countries*

1 Introduction

The global business environment has changed rapidly in recent decades. Some of these changes include increased automation, the introduction of new management practices like Just-In-Time (JIT) and Total Quality Management (TQM) and the outsourcing of non-core activities. Furthermore, increasing levels of competition have been complemented by shortened product life cycles and a new kind of consumer that is both more quality-conscious and better informed than consumers were in the past. In this environment, product ranges have increased, direct labour costs have decreased and facilities costs have

increased (Ashton, Hopper & Scapens 1995; Bjornenak & Olson 1999; Jacobs 2005; Jayazeri & Hopper 1999; Mia & Clarke 1999; Van der Walt 2005; Van Weele 2005; Wilson 2005). These changes have increasingly influenced world class companies to adopt new strategies, innovations and more complex costing systems such as Activity Based Costing (ABC) in order to maintain a competitive advantage (Drury & Tayles 2005; Wilson 2005). Moreover, in this regard, Kaplan and Anderson (2004) suggest that firms in this environment that continue to use traditional overhead absorption techniques are likely to make erroneous cost management decisions that are potentially disastrous. Conversely, the employment of ABC has been estimated to reduce costs by between 3% and 5% and to increase revenue growth by between 5% and 15%.

ABC is now one of the most-researched management accounting areas in developed countries (Kaplan & Anderson 2004). The research topics in this area include the diffusion levels of ABC in various countries, the reasons for adopting ABC, the problems associated with ABC and the critical success factors relating to its successful implementation.

The empirical evidence from ABC research is problematic. Firstly, the extent of the diffusion or distribution of ABC in a range of developed countries varies widely: some countries report an increase in the use of ABC and other countries report the exact reverse. In some instances, moreover, researchers in the same country have reported widely different results (Baird, Harrison & Reeve 2007; Cohen, Venieris & Kaimenaki 2005; Drury & Tayles 2005; Roztock 2004). Secondly, the reasons for adopting ABC, the attendant problems and critical success factors appear to differ widely, according to different researchers, since different researchers often measure success in different ways (Baird *et al.* 2007; Cohen *et al.* 2005; Drury & Tayles 2005; Harrison & Killough 2006; Roztock 2004; Wouters, Anderson & Wynstra 2005).

In view of these contradictory findings, the same issues need to be investigated further in a South African context (Jacobs 2005). The objective of the study is therefore to contribute to a better understanding of the design of ABC systems in the context of a developing country. The two main objectives of the study were to determine the extent of ABC diffusion in South Africa and why the companies that have adopted ABC chose to do so. Additional questions investigated include the problems associated with ABC adoption and the critical success factors needed to ensure successful implementation.

The importance of the study is underlined by the need for South African companies to find ways to reduce costs in the new market-led environment (Jacobs 2005; Van der Walt 2005). This suggests that it may be a good idea for ABC to be more extensively adopted in South Africa, especially since this country is regarded as an economic powerhouse by the rest of Africa (South Africa Info reporter 2006). This implies that if ABC is successfully used to reduce costs and increase the competitiveness of firms in South Africa, it may serve as an impetus to other African countries to adopt ABC and modernise their management control systems. On the other hand, if the problems associated with implementing ABC in South Africa are excessive, relative to the benefits of implementing ABC, South African companies should be aware of this before attempting the costly exercise of implementing ABC. Finally, this study contributes to the ABC literature by providing a detailed comparative study of the issues and problems of cost system design in a developing country context.

The remainder of this article is set out as follows: in Section 2, literature pertaining to ABC is reviewed. In Section 3, the methodology and data are outlined. In Section 4, the

results are analysed and discussed. Finally, in Section 5, a conclusion is presented, and some suggestions for further research are made.

2 The ABC debate

ABC has been described as an improved method of allocating overhead costs, evaluating product profitability and managing operating costs, or alternatively as an approach to the costing and monitoring of activities which involves tracing resource consumption and costing final outputs (Kaplan & Anderson 2004; Sapp, Crawford & Rebschke 2005). In this regard, ABC has also been described as only one of three ascending levels of activity management in an organisational context. The two preceding levels include some form of activity analysis and activity cost analysis (Gosselin 1997). These preceding levels have firstly performed some form of activity analysis or moved one step up to use this information to cost activities. ABC is the final level of activity management that develops these prior steps to the point where cost pool overheads can be allocated to products and services (Baird *et al.* 2007).

The objective of this review section is first to develop a contingency-based theory approach to explain the emergence and extent of costing systems such as ABC before debating the research questions in a developed country context.

2.1 *The forces influencing the extent of ABC adoption*

A contingency theory approach has often been employed to explain the emergence and characteristics of management control systems (Anthony & Govindarajan 2002; Merchant 1998). Contingency theory suggests that the need for efficient organisational structures and processes and competent management accounting systems is contingent on a number of organisational and environmental characteristics (Waterhouse & Tiessen 1978). In this regard, Drury and Tayles (2005) describe how a range of contingency factors have influenced the need for more sophisticated costing systems in the last two decades. These contingency factors include deregulation, increased global competition, a drop in IT costs, increased privatisation, increased customer demands, greater product diversity, higher quality and the evolution of integrated information systems (Ashton *et al.* 1995; Bjornenak & Olson 1999; Dent, 1996; Drury & Tayles 2005; Guilding, Cravens & Tayles 2000; Jayazeri & Hopper 1999). These forces influence changes in the structure and nature of institutions (Waterhouse & Tiessen 1978; Williamson 2000). More specifically, organisations are required to respond to these forces in order to survive. In this regard, organisations are often required to invest in more accurate costing systems such as ABC (Cohen *et al.* 2005; Drury & Tayles 2005).

The contingency relationship between the need to invest in more sophisticated costing systems such as ABC and organisational variables influenced by the new environment can be illustrated by the following example. It is hypothesised that an increase in fixed costs due to an investment in capital-intensive technologies, influences the need for a more sophisticated overhead allocation technique. This is especially important where product diversity is high and different products use differential amounts of resources (Baird, Harrison & Reeve 2004). Similarly, an increase in competition means the cost of mistakes is more readily exploited by competitors, precipitating the need for more accurate costing systems to minimise the level of error (Mia & Clarke 1999). Furthermore, the new

environment is increasingly dominated by large organisations that are more difficult to manage because of their very size. Because of the number of activities that need to be coordinated, as well as the limited availability of resources, large firms tend to invest in more sophisticated costing systems than small firms do (Baird *et al.* 2004; 2007).

Finally, due to the fact that some industries are more exposed to the contingent factors discussed above, these industry sectors appear to be predisposed to using more advanced costing systems. The use of ABC is particularly suited to service companies, especially in the finance sector, because most of their costs are fixed, there are increasing levels of competition and a range of new innovations in products, services and customers has occurred (Ashton *et al.* 1995; Baird *et al.* 2007; Bjornenak & Olson 1999; Cohen *et al.* 2005; Dent 1996; Drury & Tayles 2005; Guilding *et al.* 2000; Jayazeri & Hopper 1999).

2.2 The extent of ABC implementation in developed countries

The evidence from surveys, as listed in Table 1, suggests that, over the last decade, the trend in developed countries has been an increase in the adoption of ABC (Baird *et al.* 2004; Cohen *et al.* 2005; Kaplan & Anderson 2004; Sapp *et al.* 2005; Wilson 2005). In the USA, UK, Australia, Greece and Ireland, for example, surveys between the early 1990s and 2005 have indicated an increasing extent of ABC adoption in each of these countries. In this regard, the extent of ABC adoption of a broad range of US companies has increased from 25% to 52% and that of UK companies has increased from 6% to 23%. Manufacturing firms in Ireland increased their ABC adoption from 12% to 27.9%, while Australian manufacturing firm adoption levels rose from 12% to 56%. Recent surveys from 2000 to 2005 suggest adoption levels of between 12.7% and 52% for four out of the five countries, and an Australian survey in 1998 suggests an adoption level of 56%.

Table 1 The extent of ABC implementation in developed countries

Year	Survey	USA	UK	Greece	Ireland	Australia
2005	Cohen <i>et al.</i> Manufacturing firms = 35.7% Services firms = 65.0% Retail firms = 30.8%			40.9%		
2004	Pierce & Brown (2004) Manufacturing firms = 34.9% Services firms = 17.8% Financial firms = 28.6%				27.9%	
2003	Kiani & Sangeladji (2003) Largest 500 US industrial companies	52%				
2001	Tayles & Drury (2001)		23%			
2000	Venieris, Kaimenaki & Cohen (2000)			12.7%		
2000	Innes, Mitchell & Sinclair Manufacturing firms = 14.3% Services firms = 12.1% Financial firms = 40.7%		17.5%			
1999	Clarke, Hill & Stevens Manufacturing firms				12%	
1998	Chenhall & Langfield-Smith Manufacturing firms					56%
1997	Booth & Giacobbe Manufacturing firms					12%
1995	Shim & Sudit US Fortune 1000 companies	25%				

continued

Year	Survey	USA	UK	Greece	Ireland	Australia
1994	Drury & Tayles Manufacturing firms		13%			
1993	Armitage & Nicholson Manufacturing firms	11%				
1992	Nicholls Wide cross-section of UK companies		10%			
1991	Innes & Mitchell Survey of CIMA members		6%			

However, a number of researchers dispute the claim that the use of ABC is increasing. These researchers claim that the diffusion of ABC has stagnated after high levels of initial interest and that many firms still rely on traditional systems such as traditional absorption costing (Cohen *et al.* 2005; Roztocki 2004). So, for example, Cohen *et al.* (2005) claim that ABC diffusion in the UK has dropped from 19.5% to 17.5% in the last ten years and that the extent of adoption in the USA only ranges between 17.7% and 24.4%. Furthermore, it has been claimed that Continental Europe has a diffusion level of less than 10% and Canada 23.1%. A range of estimates for Greece and Australia have been developed. In this regard, the differing levels of diffusion found for the same countries could be explained by confusion between the intention to adopt ABC versus the actual adoption of ABC, whilst the alleged declining level of diffusion could be due to the fact that the success rate of ABC is lower than was originally envisaged (Drury & Tayles 2005). Furthermore, the different forms of activity management used by many companies could also have contributed to the different results obtained by researchers (Baird *et al.* 2007). Finally, the use of ABC in the 1990s may have been exaggerated, with some firms claiming to use ABC as they hoped saying that they were using it would contribute to a better image (Drury & Tayles 2005).

2.3 *The reasons for the implementation of ABC in developed countries*

Some of the more widespread reasons for adopting ABC in various countries are set out in Table 2. These reasons include the need for more accurate costs to support both strategic and tactical decisions, for improved cost management capability and to understand the profitability of products and customers better. A further general reason for adopting ABC appears to be connected to budgeting and performance management purposes. Other reasons relating to at least three of the developed countries discussed above include a response to higher levels of competition or to increased levels of competitiveness, support for other management practices such as TQM and JIT, the creation of cost consciousness and the improvement of product and process design. Finally, isolated reasons include adopting ABC as a response to increased overheads (in the UK), or as a response to increased pressure from regulators or as a tool to evaluate the cost benefit of new technologies (in the USA).

The reasons for adopting ABC can be classified into six categories. These include cost accounting and cost management purposes, performance measurement purposes, decision-making reasons, general management reasons and the fostering of better relationships (Cohen *et al.* 2005; Harrison & Killough 2006). Cost accounting reasons include improved product costing, more accurate costing information and superior allocation of overheads. Cost management reasons focus on a better understanding of cost drivers, cost reduction and the development of budgets. Performance measurement reasons include motivation and

the measurement of product profits, departmental efficiency and activity management. ABC is also implemented to facilitate better decision-making, including the choice of products, activities and product mix, as well as pricing and outsourcing. General reasons include facilitating quality or support for TQM initiatives, and ensuring JIT synergies. Finally, ABC can be used to facilitate better relationships in respect of customer management and supplier evaluation (Cohen *et al.* 2005).

Table 2 Reasons for implementing ABC in developed countries – summary

Reasons for implementing ABC	USA	UK	Canada	Greece	Ireland	Australia
Calculating costs more accurately	Leahy (2004)	Innes, Mitchell & Sinclair (2000)		Cohen <i>et al.</i> (2005)	Pierce & Brown (2004)	Sohal & Chung (1998)
Managing costs	Kiani & Sangeladji (2003)	Nicholls (1992)	(Better Management 2005)	Cohen <i>et al.</i> (2005)	Pierce & Brown (2004)	Booth & Giacobbe (1997)
Ensuring product /customer profitability	Swenson & Barney (2001)	Innes & Mitchell (1995)	Better Management (2005)	Cohen <i>et al.</i> (2005)	Clarke <i>et al.</i> (1999)	Corrigan (1996)
Budgeting, performance measurement	Krumwiede (1998)	Innes & Mitchell (1995)		Cohen <i>et al.</i> (2005)	Clarke <i>et al.</i> (1999)	Sohal & Chung (1998)
Increasing competitiveness or coping with more competition	Swenson (1995)	Soin (1996)				Sohal & Chung (1998)
Supporting other management innovations such as TQM and JIT systems	Swenson (1995)			Cohen <i>et al.</i> (2005)		Wood (1996)
Providing behavioural incentives by creating cost consciousness among employees	Swenson & Barney (2001)	Soin (1996)				Booth & Giacobbe (1997)
Improving product quality via better product and process design	Kiani & Sangeladji (2003)	Innes <i>et al.</i> (2000)			Clarke <i>et al.</i> (1999)	
Responding to an increase in overheads		Nicholls (1992)				
Responding to increased pressure from regulators	Kiani & Sangeladji (2003)					
Evaluating and justifying investments in new technologies	Swenson (1995)			(Cohen <i>et al.</i> 2005)		(Sohal & Chung 1998)

2.4 The problems with and the reasons for not implementing ABC in developed countries

Despite the advantages of ABC over Traditional Management Accounting Systems (TMAS), the implementation of ABC in developed countries is often accompanied by many problems (Cohen *et al.* 2005). Problems relating to the adoption of ABC in developed countries include the difficulties of selecting, designing and maintaining an optimal ABC model (Better Management 2005; Gates 2005), the indifference of top-management and/or the resistance from employees and management (Cohen *et al.* 2005; Gates 2005; Kiani &

Sangeladji 2003; Leahy 2004; Roztocki 2004; Swenson 1995) and the fact that the complex nature of ABC makes its implementation and use time-consuming and expensive (Cohen *et al.* 2005). Furthermore, the need for expensive IT, the difficulty in accessing, reporting and disseminating ABC reports (Better Management 2005), and the competition of ABC with other innovations such as JIT and Advanced Manufacturing Technology often lead to the prioritisation of other innovations over ABC (Leahy 2004; Roztocki 2004; Swenson 1995). Other difficulties include the identification and selection of activities and cost drivers, the problems of accumulating the necessary data (Cohen *et al.* 2005), as well as a lack of resources such as a qualified work force, time and effort, which companies claim they cannot afford (Innes & Mitchell 1995; Kidwell *et al.* 2002; Krumwiede 1998).

The problems identified above suggest some of the reasons for companies' failure to adopt ABC. The main reasons for not implementing ABC therefore include the complexity and cost implicit in the design and implementation of ABC (Cohen *et al.* 2005; Innes & Mitchell 1995; Leahy 2004; Pierce & Brown 2004; Swenson 1995), executive orders from top management (Cohen *et al.* 2005) or a group policy that requires companies to implement systems of costing other than ABC (Cohen *et al.* 2005; Pierce & Brown 2004), other and higher priorities such as penetrating new markets and initiatives such as JIT and TQM, which compete with ABC for resources (Cohen *et al.* 2005). Other reasons for the non-adoption of ABC include the fact that companies are already satisfied with alternative costing systems (Cohen *et al.* 2005; Nguyen & Brooks 1997) that are more suitable to their type of business – often typified by a high direct cost content, few product lines and market-determined selling prices (Innes & Mitchell 1995; Nicholls 1992; Pierce & Brown 2004). A further reason for non-implementation may also be the fact that companies may take a long time to assess the costs and benefits of ABC (Cohen *et al.* 2005). Finally, some companies have not adopted ABC because of their perception that ABC is no more accurate than traditional systems, or that ABC is a passing fad not worth investing in (Kiani & Sangeladji 2003; Krumwiede 1998) or that these companies' financial managers acquired their qualifications before the advent of ABC (Cohen *et al.* 2005).

2.5 The critical success factors to remember in implementing ABC

A number of surveys have been performed to attempt to identify critical success factors relevant to the successful implementation of ABC. In this regard, empirical investigation has sought to link ABC success with a series of organisational and cultural factors. Organisational factors such as top management support, the necessary levels of training and performance measurement and compensation links have been hypothesised and empirically demonstrated (Baird *et al.* 2007).

In this regard, the most significant success factor appears to be top management support (Krumwiede 1998; McGowan & Klammer 1997; Roberts & Silvester 1996; Shields 1995; Shields & McEwen 1996). A second important success factor is the ability of a given company to link its performance evaluation system to ABC. Shields (1995) and Shields and McEwen (1996) argue that when ABC is linked to performance measurement and compensation, employees are motivated to ensure that ABC is successful. However, other empirical studies suggest that performance measurement linkages with ABC were not significant (Baird *et al.* 2007). A further critical success factor is training, as it helps employees to understand how ABC differs from TMAS and why ABC is superior (Baird *et al.* 2007; Krumwiede 1998; McGowan & Klammer 1997; Shields 1995). ABC links with

quality have also been cited as significant success factors, as well as the necessary cultural attributes such as outcome orientation, team orientation, attention to detail and the innovation level of the firm (Baird *et al.* 2007).

Other issues cited as important success factors include a lack of competing initiatives that could restrict the resources available to complete the ABC implementation (Gurses 1999; Shields 1995), as well as the availability of sufficient resources including money, time and the commitment of relevant personnel (Chongruksut 2002; Shields 1995). Non-accounting ownership is also vital to minimise resistance across the firm (Krumwiede 1998; McGowan & Klammer 1997; Roberts & Silvester 1996; Shields 1995). ABC implementation was also found to be easier to implement where the information technology (IT) of the implementing company has characteristics such as good sub-system integration, a user-friendly query capability and the necessary data (Gurses 1999). A summary of the critical success factors suggests they are mainly organisational and/or behavioural and not technological, as many would have expected (Shields 1995).

3 Methodology and data

A combination of a survey and a quasi-case study methodology was used in this study to test the four research questions. In order to test the first research question, namely, whether ABC has been implemented in South Africa to the same extent as in selected developed countries, a survey was conducted and simple descriptive statistics were used to analyse the data. The data were collected by using a telephonic and an e-mail survey of listed South African companies on the Johannesburg Securities Exchange (JSE) to answer a single question, namely: 'Has your company implemented ABC?' This sample was limited to 181 companies with registered offices in Gauteng. External validity was ensured, as the sample constituted 51% of the total population of listed companies. However, the fact that the sample only evaluated the extent of ABC implementation in listed companies in Gauteng could mean that the findings of the study are not applicable to all business organisations throughout South Africa.

A longitudinal survey of consultants and organisations was also used to test the second, third and fourth research questions, namely, the reasons for implementing ABC in South Africa, the problems and reasons for not implementing ABC in South Africa and the critical success factors involved in implementing ABC in South Africa. In this regard, the survey of each respondent had some characteristics of a case study methodology because of the semi-structured but open-ended nature of each interview, as well as the fact that complex, multiple facets needed to be investigated, as described by Yin (1994).

Further data were also collected from sources such as press releases, consultant reports and websites. The use of the semi-structured interview was preceded by a pilot study to ensure that the questions and objectives of the study were concise and that they were clear to the interviewees (Leedy & Ormrod 2001). The sample for this study consisted of ten ABC consultants who had done ABC-related consultancy work in Gauteng, South Africa, five JSE-listed companies that had implemented ABC and five JSE-listed companies that had not implemented ABC whereas rival companies had. The choice of a sample size of twenty was guided by the recommendations of Hurdley, Smith and Saker (2001), who suggest that a sample of ten to twenty experts is generally sufficient and that larger numbers may not add significant improvements to a study.

4 Results

In this section, the results for the four research questions are presented and discussed. These questions include the extent of ABC diffusion in South Africa, the reasons for adopting ABC, the problems with ABC and reasons for not adopting ABC and the critical success factors relating to ABC implementation.

4.1 The extent of ABC diffusion in South Africa

A survey of 181 responding JSE-listed companies was used to evaluate the extent of ABC implementation in South Africa. Of the 181 responding JSE-listed companies with registered offices in Gauteng, only 21 had so far implemented ABC. This gives an overall ABC diffusion rate of 12%. The diffusion rates of the various JSE sectors is summarised in Table 3 below. No evidence of ABC use was found in the AltX-AltX, development capital or venture capital sectors.

Table 3 Diffusion of ABC in Gauteng-based JSE-listed companies

JSE sector	Implementers	Respondents	%
AltX-AltX	0	10	0%
Basic industries	2	17	12%
Cyclical consumer goods and services	3	47	6%
Development capital	0	4	0%
Financials	6	48	13%
General industrials	1	9	11%
Information technology	1	15	7%
Non-cyclical consumer goods	4	7	57%
Resources	4	21	19%
Venture capital	0	3	0%
Total	21	181	12%

The results suggest that higher rates of ABC diffusion occur in the non-cyclical consumer goods sector (57%), resources (19%), financials (13%) and basic industries (12%) among the JSE sectors. Of the four non-cyclical consumer goods implementers, three were either beverage or food producers. High diffusion rates could be a result of high fixed manufacturing costs, wide product diversity and competition in the industry. All four of the implementing resource sector companies were mining companies. The high incidence of ABC in the latter sector can be attributed to the strong global competition, low profit margins and high fixed costs faced, due to the high capital investment required in this industry. Five of the six financial sector companies that had adopted ABC were banks. The high adoption rate amongst banks could be due to the size of these organisations, product diversity, competition and high fixed costs associated with banking.

The higher rate of incidence in certain industry sectors, like financials, confirms findings in surveys from abroad (Cohen *et al.* 2005; Drury & Tayles 2005). Innes and Mitchell (1991), Nicholls (1992) and Innes, Mitchell and Sinclair (2000) also noted a particularly high incidence of ABC adoption in financial sector companies.

The results indicate that the adoption rate of ABC in listed companies in Gauteng is 12%. Given that listed companies in Gauteng constitute 51% of all listed companies in South Africa, it is reasonable to infer that this rate is applicable to all listed companies within South Africa. These results are consistent with those obtained by Wessels (1999), who

observed that only 15.18% of listed companies in South Africa have attempted to implement ABC. However, these findings contradict the results obtained by Jacobs (2005), which indicated that the adoption rate of ABC in South Africa listed companies was 32%. The difference in these results could be attributed to the fact that the survey techniques differed or that one of the researchers may have included companies who only intended to use ABC in future in their diffusion rates (Drury & Tayles 2005) or that the respondents may have thought they were using ABC (Cohen *et al.* 2005; Drury & Tayles 2005; Hyvonen, Jarvinen & Pellinen 2006; Roztock 2004). Alternatively, it is possible that the decrease in ABC diffusion is following international trends in a number of countries, where the initial interest in ABC has dropped and diffusion has stagnated because ABC has not lived up to the expectations of success initially created (Baird *et al.* 2007; Cohen *et al.* 2005; Roztock 2004). Furthermore, respondents in previous surveys may have thought that a positive response about adopting ABC would give them a progressive image (Drury & Tayles 2005). Finally, the drop in ABC diffusion levels could reflect that the earlier adoption levels were influenced by the novelty of ABC or a type of bandwagon effect.

The finding of a low level of ABC adoption in South Africa confirms Dean's (1993) argument that innovation implementation in South Africa is normally ten years behind that found in developed countries. Furthermore, the lower level of adoption could also be explained by the fact that South African companies are generally smaller than those found in developed countries, with fewer resources for implementing an expensive exercise such as ABC (Dean 1993). In addition to this, ABC adoption in South Africa suffered from negative publicity after early implementations failed, due to a lack of expertise (Lakshmi 2003). A comparison of the 12% ABC diffusion displayed in the results versus the diffusion in a range of other countries would suggest that the level of ABC adoption in South Africa is lower than that in the US (17.7 to 52%), the UK (17.5% to 23%), India (20%) and perhaps Greece (12%-40.9%), but that it is similar to that in Continental Europe (< 10%) and higher than that in Japan at 7% (Better Management 2005; Booth & Giacobbe 1997; Chenhall & Langfield-Smith 1998; Clarke, Hill & Stevens 1999; Cohen *et al.* 2005; Innes *et al.* 2000; Kiani & Sangeladji 2003; Pierce & Brown 2004; Tayles & Drury 2000; Venieris, Kaimenaki & Cohen 2000). On the basis of these results, the level of adoption of ABC generally appears to be less than that in the majority of developed countries, with the exception of Continental Europe and Japan, but, because of the variations in the results, the evidence cannot be regarded as conclusive.

4.2 Reasons for the implementation of ABC in South Africa

In this section the reasons that South African companies have cited for implementing ABC (see Table 4) are considered. The ABC consultants indicated that the main reason for implementing ABC was related to cost. More specifically, most of the respondents in this category indicated that their listed clients had implemented ABC to obtain accurate costs, to control and minimise costs, to allocate costs correctly and to understand costs and cost setting activities. A large percentage of the respondents also indicated that their listed clients had implemented ABC to conduct customer and product profitability analysis in order to make correct profitability-related decisions. A small number of the respondents indicated that their listed clients had implemented ABC as a result of pressure from suppliers and competitors and in order to enhance pricing decisions or simplify negotiations. Similarly, one respondent indicated that ABC was implemented in response to corporate failures such as those of Enron and WorldCom or because of the increase in computing power due to availability of computers at low prices.

Table 4 Reasons for implementing ABC in South Africa versus reasons for implementing ABC in developed countries

Reasons for the implementation of ABC in developed countries	Reasons for the implementation of ABC in South Africa
To obtain detailed accurate costs in order to support strategic and operational decisions.	Nine ABC consultants and four JSE-listed companies indicated the need for accurate costs as a reason for adopting ABC.
To manage, control and reduce costs.	Nine ABC consultants and four JSE-listed companies indicated the need for better cost management as a reason for adopting ABC.
To understand product /customer profitability.	Seven ABC consultants and three JSE-listed companies cited understanding product/customer profitability as a reason for adopting ABC.
To increase competitiveness or cope with increased competition.	One JSE-listed company indicated that ABC was implemented to support its pricing of contracts and one ABC consultant confirmed that ABC had been implemented due to pressure from suppliers and due to pricing decisions and negotiations.
For budgeting purposes and better performance measurement.	One JSE-listed company stated that ABC had been implemented for budgetary purposes.
To improve the quality of their products by improving the product and process design.	Two JSE-listed companies cited the improvement of processes as a reason for implementing ABC.
To support other management innovations such as TQM and JIT systems.	Not cited by South African respondents as a reason for implementing ABC.
As a response to an increase in overheads.	Not cited by South African respondents as a reason for implementing ABC.
To provide behavioural incentives by creating cost consciousness among employees.	Not cited by South African respondents as a reason for implementing ABC.
To evaluate and justify investments in new technologies.	Not cited by South African respondents as a reason for implementing ABC.
In response to increased pressure from regulators.	Not cited by South African respondents as a reason for implementing ABC.
Not cited in overseas surveys as a reason for ABC.	One ABC consultant indicated corporate failures such as Enron and WorldCom as the impetus for implementing ABC.
Not cited in overseas surveys as a reason for ABC.	One ABC consultant indicated that implementing ABC was now possible because of an increase in computing power and lower computer prices.

Of the company respondents among the five JSE-listed companies that were interviewed, four indicated that their companies had implemented ABC for various costing purposes, for example, to obtain accurate product costs. Furthermore, three company respondents indicated that their companies had implemented ABC to determine their product and customer profitability accurately, and two of the respondents indicated that their companies had implemented ABC to improve their processes. Finally, two of the company respondents indicated that their companies had implemented ABC to support their pricing of contracts or to improve their budgeting process.

Six out of the 13 reasons appear to be common to both South Africa and the surveyed developed countries. These six reasons include a need for more accurate costs, for better cost management, for an understanding of product or customer profitability and for a suitable response to increased competition. Additional reasons held in common include the

use of ABC for budgeting and performance measurement and for improving product and process design. This could be due to an increase in the level of competitiveness in a global business environment which demands accurate costs and better profitability analyses (Lurey & Raisinghani 2001). Similar reasons may also be given due to the similarity of the changes that have occurred in both South Africa and abroad in the business environment such as advancements in IT, automation, a diversification of products, deregulation and globalisation which creates similar needs for companies all over the world (Waweru, Hoque & Uliana 2004). In addition, many South African companies originated in developed countries and may have adopted ABC for similar reasons as those companies that are found in developed countries. The two reasons given for implementing ABC that appear to be unique to South Africa are, firstly, a response to corporate failures such as those of Enron and WorldCom, and secondly, an increase in computing power due to availability of computers at low prices. These reasons could be due to unique perceptions in the South African business environment (Jacobs 2005). More specifically, the demise of apartheid could have created a sensitivity among South African companies to international incidents such as the collapse of Enron (Waweru *et al.* 2004).

One reason for implementing ABC in developed countries that was not cited in the South African survey was a response to an increase in overheads (Nicholls 1992). This observation, however, is disputed by the empirical study of Drury and Tayles (2005), which found no linkages between cost structure and the adoption of ABC. They argue that the adoption of automated technologies often increases facility sustaining costs and that these are treated in the same way by traditional overhead allocation systems. Alternatively, perhaps South African companies did not attribute the implementation of ABC to an increase in overheads because the overheads of companies in developed countries are higher than those of their counterparts in South Africa (South Africa Info reporter 2006). Another reason only cited in overseas studies suggested that ABC was a response to increased pressure from regulators (Kiani & Sangeladji 2003). In this regard, it is possible that companies in developed countries such as the USA could be more tightly regulated than South African companies (Cornelius 2005). Some of these regulations demand that a business operates transparently and efficiently, which indirectly demands more accurate costing that can only be provided by ABC (Cornelius 2005).

Other reasons not cited by South African respondents include the assumption that ABC provides a behavioural incentive for improving cost consciousness (Booth & Giacobbe 1997; Soin 1996; Swenson & Barney 2001) and that ABC is linked to quality (Clarke *et al.* 1999; Innes *et al.* 2000; Kiani & Sangeladji 2003). In this regard, it could perhaps be assumed that companies in developed countries are more consumer-focused and dedicated to quality than their South African counterparts (Mackenzie *et al.* 2006). Additional reasons not cited by South African respondents included the support of other management innovations such as TQM and JIT (Cohen *et al.* 2005; Swenson 1995; Wood 1996) and the evaluation and justification of investments in new technologies (Cohen *et al.* 2005; Sohal & Chung 1998; Swenson 1995). A further reason for ABC adoption only cited in overseas studies suggests that ABC adoption is a result of intense competition (Viviers, Saayman & Muller 2005). This is in line with the findings of Mia and Clarke (1999), but contradicts the findings of a study by Drury and Tayles (2005). In general, however, many of the reasons for the implementation of ABC in South Africa appear to be similar to those in the USA and other developed countries. It can therefore be concluded that South African companies are not very different to their overseas counterparts in respect of this important decision.

4.3 The problems of and reasons for not implementing ABC in South Africa

The principal reasons for or problems influencing the non-adoption of ABC are set out in Table 5. These included a wide range of technical or resource constraints, satisfaction with alternative systems, misconceptions about ABC, a lack of management support and other miscellaneous factors cited in the literature. The responses of both the consultants and the company respondents were compared to the findings in the literature. The numbers of a given response by the ten ABC consultants and ten company respondents are indicated in brackets. All ten company respondents were asked to provide their view of the principal problems with or reasons for not implementing ABC, whether they had implemented ABC or not.

A central problem or reason for the non-implementation of ABC was a lack of management support according to both the consultants (10) and the company respondents (3). A lack of management support and/or management and employee resistance is widely supported by the literature as a reason for not implementing ABC (Cohen *et al.* 2005; Gates 2005; Kiani & Sangeladji 2003; Leahy 2004; Swenson 1995). The next key problem cited by both the ABC consultants (9) and the companies (2) was that the implementation of ABC involved considerable difficulties with regard to the collection and accumulation of data. A key related problem, cited by both the consultants (5) and the company respondents (2), was the difficulty of defining cost pools, cost drivers and determining the level of detail. The literature confirms both the problems of data gathering and integration of ABC with other systems and that a firm's architecture is often a constraint. Furthermore, the literature indicates that determining the optimum level of aggregation and the choice of suitable cost drivers and groups of activities is often problematic (Better Management 2005; Cohen *et al.* 2005; Gates 2005; Kaplan & Anderson 2004; Leahy 2004; Pierce & Brown 2004; Wilson 2005).

Table 5 Problems with or reasons for not implementing ABC

Reason	Literature review	Consultant responses (n=10)	Company responses (n=10)
1 Technical			
▪ Too expensive including cost of IT	yes	5	1
▪ Does not add value	n/r	n/r	1
▪ Too detailed, time-consuming	yes	3	1
▪ Lack of skills, high staff turnover (ABC skills)	yes	4	n/r
▪ Difficulty with data	yes	9	2
▪ Difficulty configuring ABC with other systems, IT	yes	n/r	2
▪ Difficulty identifying suitable cost drivers	yes	3	2
▪ Difficulty defining cost pools, cost drivers	yes	5	2
▪ Lack of adequate systems, IT	yes	2	1
2 Satisfaction with other systems			
▪ Satisfaction with current system	yes	n/r	1
▪ ABC not suited to business sector	yes	n/r	1
3 Misconceptions about ABC			
▪ ABC only suited to manufacturing	yes	4	1
▪ Inadequate marketing of ABC	n/r	1	n/r
▪ Negative publicity about ABC	yes	2	n/r
▪ Takes time to assess, be accepted	yes	2	n/r
▪ Over expectation by clients	yes	2	n/r

continued

Reason	Literature review	Consultant responses (n=10)	Company responses (n=10)
4 Top Management			
▪ Top management decision/Group policy not to implement	yes	1	n/r
▪ Lack of top management support/employee resistance	yes	10	3
▪ Other priorities (TQM, JIT, AMT)	yes	3	n/r
5 Other			
▪ South African companies are doing so well they do not focus on cost	n/r	4	n/r
▪ South African companies still focus on financial accounting	n/r	1	n/r

The high level of cost was also cited by consultants (5) and company respondents (1) as a problem with or reason for not implementing ABC. The complex nature of implementing ABC makes it both a prolonged and expensive exercise (Cohen *et al.* 2005) and the need for expensive IT exacerbates this problem (Better Management 2005). A further problem cited by consultants (4) but not cited by company respondents was a lack of skills. The respondents mentioned that South African companies, in particular, experienced high levels of turnover in respect of skilled staff. A lack of resources, in particular of skilled staff, is an important reason for not implementing ABC (Innes & Mitchell 1995; Kidwell *et al.* 2002; Krumwiede 1998). A further reason for not implementing ABC cited by consultants (4) and companies (1) was that many South African companies thought ABC was only suited to manufacturing. This misconception is also widely cited in the literature (Kiani & Sangeladji 2003; Krumwiede 1998). The consultants (4) also suggested that South African companies may have thought they were doing so well that they did not need to focus on cost. Needless to say, this latter reason was not cited in the literature. Another reason for non-implementation cited by the consultants (3) was other priorities like TQM or JIT programmes. In this regard, management has often committed funds to other programmes (JIT, TQM) with higher priorities and a preoccupation with other priorities is widely supported by the literature as a reason for not implementing ABC (Cohen *et al.* 2005; Gates 2005; Kiani & Sangeladji 2003; Leahy 2004; Swenson 1995).

An additional reason cited by consultants (2) and companies (1) was a lack of adequate IT systems. It has been recorded that it is often difficult to link ABC output other Enterprise Resource Planning (ERP) systems (Leahy 2004). Negative perceptions about ABC were also cited by the consultants (2) as a reason for non-implementation, as well as the notion that ABC is still new in South Africa and will take time to become popular. In particular, the consultants suggested that some clients' expectations of ABC were unrealistic and that there has been inadequate marketing in this respect. A range of misconceptions appear to be a common reason for non-implementation. These included the perception that ABC is a passing 'fad', that ABC is only suited to the manufacturing sector, inadequate marketing and negative publicity (Kiani & Sangeladji 2003; Krumwiede 1998; Lakshmi 2003).

A common reason for non-implementation that was ignored by the respondents was that companies were satisfied with their current costing systems and/or felt that ABC was not suited to their business sector (Innes & Mitchell 1995; Nicholls 1992; Nguyen & Brooks 1997; Pierce & Brown 2004). In this regard, it is readily accepted that certain business sectors with low facilities costs, high direct costs and a limited product range are less likely to use ABC (Pierce & Brown 2004). A further unique reason was that South Africa

companies were still largely reliant on financial accounting-based data. Interestingly, Johnson and Kaplan (1991) include these reasons as a principal cause for the stagnation of management accounting in the 1980s. Finally, the reasons for not implementing ABC in South Africa may be related to the unique South African business environment which displays both first and third world characteristics, as well as to the lack of a distinct management accounting body in South Africa (Dean 1993; Jacobs 2005). In conclusion, however, many of the problems with or reasons for the non-implementation of ABC in South Africa appear to be similar to those cited in the ABC literature.

4.4 The critical success factors for implementing ABC in South Africa

This section identifies five critical success factors of ABC implementation in South Africa (see Table 6). Both sets of respondents, namely the consultants (7) and the companies (5), stressed that supporting systems and the IT architecture are critical, and they listed other technical factors, including the selection of the optimum groupings of activities and the choice of a suitable cost driver for each cost pool. Some degree of rationalisation (aggregation) was needed to ensure that an unmanageable ABC model was not chosen, as well as to ensure that the administration of the chosen ABC model after implementation was practical and feasible. Furthermore, five of the company respondents, but only four of the ABC consultants, indicated that top management support was a key success factor. Similarly, five company respondents indicated the importance of training personnel adequately, while only one consultant cited this as a critical success factor. A further crucial success factor stressed by four of the company respondents (but only by two ABC consultants) included the need to ensure that there are adequate resources of the right quality. Finally, five company respondents (seven of the ABC consultants) stressed the importance of ensuring non-accounting ownership.

Table 6 Critical success factors for ABC implementation

Critical success factors for ABC implementation in developed countries	Critical success factors for ABC implementation in South Africa
The support of top management (Krumwiede 1998; McGowan & Klammer 1997; Roberts & Silvester 1996; Shields 1995).	Top management commitment and buy-in for ABC principles (four ABC consultants and five JSE respondents)
Other major initiatives being implemented concurrently with ABC and competing with ABC for resources (Gurses 1999; Shields 1995).	Not cited
Ability of the company to link performance evaluation and ABC (Shields 1995).	Not cited
Training of staff (Krumwiede 1998; McGowan & Klammer 1997; Shields 1995).	Adequate training of personnel (one ABC consultant and five JSE respondents)
Non-accounting ownership of the ABC project to minimise resistance to ABC (Krumwiede 1998; McGowan & Klammer 1997; Roberts & Silvester 1996; Shields 1995).	Non-accounting ownership of the ABC project by means of using cross-functional teams during implementation (three ABC consultants and two JSE respondents)
Adequacy of resources available to the ABC project (Chongruksut 2002; Shields 1995).	Adequacy of resources, of right quality (two consultants and four JSE respondents)
Sophisticated IT system evidenced by good subsystem integration; user-friendly query capability; available sales, cost, and performance data (Gurses 1999).	Technical factors such as the selection of a suitable ABC model, correct software, reliable data and proper systems (seven ABC consultants and five JSE respondents)

A comparison of the critical success factors listed in Table 6 suggests that many universal factors influence the successful design and implementation of ABC. The support of top management, the necessary training for staff, the need to ensure non-accounting staff ownership and the need for adequate resources all appear to be universal critical success factors that were cited by both the South African company respondents and in the literature. With regard to other universal constraints, the South African ABC consultants particularly emphasised technical constraints such as the need to ensure proper IT back-up and compliance with other databases and management control systems, as well as the choice of the aggregation of cost pools and cost drivers. However, in contrast to the findings of Shields (1995) and Shields and McEwen (1996), the results of this study indicated that ABC linkage to performance evaluation and compensation was not a critical success factor for implementing ABC in South Africa.

Five of the seven critical success factors, however, appear to be universal and therefore it is reasonable to conclude that the critical success factors of ABC implementation and design in South Africa are largely the same as those in developed countries.

5 Summary and conclusion

The objective of the study was to contribute to the design and successful implementation of ABC in a South African context by testing four principal research questions. The first research question, namely to test the extent of ABC diffusion in South Africa, involved a survey of 181 JSE-listed companies in Gauteng. At a 12% diffusion level, the extent of ABC adoption generally appears to be less than that in the majority of countries surveyed abroad, but it is comparable to that in Continental Europe and slightly higher than that in Japan. The highest incidence of ABC adoption was noted in banking and mining companies. The high level of fixed costs, the size of banking and mining companies and the competition faced by these two types of company seem to confirm that ABC adoption is contingent on the size of the firm, the amount of competition faced by the firm and the level of fixed costs. A positive relationship between the size of the organisation and ABC adoption has been empirically established by Innes and Mitchell (1995), while the link between the intensity of competition and the sophistication of management control systems is supported by a study by Khandwalla (1972). Clarke *et al.* (1997), however, found that increased product lines and manufacturing overheads did not always lead to increased levels of adoption of ABC.

The answers to the second and third research questions, namely, why companies implement ABC versus the problems with and/or reasons for their not implementing ABC were derived from a series of in-depth interviews with ABC consultants and company respondents. The number of interviewees (20) was limited, but all the respondents were experts in the field of ABC or had considerable experience.

The results suggested that many of the reasons for ABC implementation or its non-implementation are universal. The usefulness of these results is that they can form a checklist of factors to consult in the context of the design of an ABC system in a South African context. In this regard, the increasingly global nature of 'the firm' appears to impose a homogeneous set of common denominators that are applicable to all companies. The usefulness of the results is that they highlight some of the pitfalls that the implementers of ABC in South Africa face and that may improve design and planning in this regard. The

explanations for some of the different reasons for (non-) implementation (in South Africa or in developed countries) can also be useful in explaining certain local idiosyncrasies. Finally, the critical success factors for ABC design and implementation appear to be largely universal and the survey provided confirmation of the findings in the literature in respect of the critical nature of a range of technical, as well as management and organisational variables. In particular, top management support for and mastering the technical problems of ABC were mentioned as critically important throughout the study. In this regard, the importance of organisation variables was specifically highlighted and a lack of top management buy-in was indicated as one of the main problems faced when implementing ABC in South Africa.

Further research in South Africa is suggested in order to determine the relationship between the use of ABC costing and financial performance, as well as to ascertain the new role of ABC in inter-organisational transactions. The prevalence of ABC in some industries as opposed to other should also be investigated to determine exactly why ABC is more suited to some industries than to others. Finally, future surveys investigating diffusion levels in South Africa could consider testing the adoption of ABC at different levels of activity management, namely, activity analysis, activity cost accounting and activity based costing.

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