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AN EMPIRICAL STUDY OF ACTIVITY-BASED SYSTEMS IN IRELAND

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ABSTRACT

A survey of large manufacturing, service and financial sector organisations was conducted to investigate the current state of adoption of activity-based systems in Ireland. The findings showed higher rates of adoption than previously reported, fewer companies still considering implementation, and a high and relatively stable proportion of companies that have not considered implementation. Adoption rates were also higher than those reported in comparable studies elsewhere. Companies that have rejected activity-based costing/management (ABC/M) and those still considering ABC/M identified cost-benefit issues as a major consideration and tended to adopt a narrower view of ABC/M benefits than the range of uses reported by ABC/M users. There was also evidence of misconceptions among some of the non-adopters regarding the suitability of ABC/M systems in particular operating environments. Reported usage in specified areas of application was strongly correlated with perceived success in those areas, while usage and success in specified areas showed varying degrees of correlation with perceived overall success levels. In total, the findings do not support suggestions in the literature that ABC/M adoption rates in Ireland are low by international standards, but they do provide tentative evidence that adoption of ABC/M may be approaching a relatively settled state in the Irish corporate sector.

INTRODUCTION

Generally recognised as having been 'born' in studies of local US manufacturing sites in the early 1980s (Jones and Dugdale, 2002), activity-based costing (ABC) has been described as one of the most important management accounting innovations of the twentieth century (Johnson, 1990). Whereas initial emphasis was placed on the calculation of more accurate product costs, activity-based information offers scope for use in a wide range of areas to support the achievement of competitive strategies, referred to as activity-based management (ABM).

As for most management accounting innovations, there has been considerable interest among academics and researchers in the extent to which organisations have adopted ABC, and surveys have shown varying degrees of adoption over time and across international boundaries. Most survey research has not specifically addressed ABM, some has been confined to manufacturing organisations, and researchers have also paid comparatively little attention to the majority of companies that have consistently been shown as not having adopted ABC.

BACKGROUND

ABC systems have featured prominently in the literature of the past two decades, having been studied from a wide range of perspectives. These include the drivers of adoption (Anderson, 1995; Gosselin, 1997; Anderson and Young, 1999; Malmi, 1999), factors associated with successful implementation (Innes and Mitchell, 1995; Shields, 1995; Foster and Swenson, 1997; McGowan and Klammer, 1997; Innes, Mitchell and Sinclair, 2000; Cotton, Jackman and Brown, 2003) and outcomes that have been associated with ABC adoption (Bhimani and Pigott, 1992; Friedman and Lyne, 1997; Kennedy and Graves, 2001; Cagwin and Bouwman, 2002). The rise of ABC adoption has been likened to a 'bandwagon hitched to a juggernaut' (Jones and Dugdale, 2002, p. 121), or a socio-technical expert system constructed in a world characterised by high levels of risk that may cause it to 'rush out of control at any moment' (p. 122). Assessing the success of ABC systems has been shown to be a complex matter. Malmi (1997) concluded that success cannot depend on actions prompted by the ABC system, but on the ability of the system to make a correct diagnosis of the situation. Piper and Walley (1990) argued that many of the successes attributed to ABC systems are in fact due to a combination of factors and that some of the reported ABC successes are therefore cases of 'logical fiction'.

The potential advantages of using activity-based information have received widespread publicity and activity-based approaches have steadily gained increased prominence in academic and professional courses, conferences and seminars over the last two decades. It is therefore reasonable to assume that few practising accountants are unaware of its existence and claimed advantages, and that many have gained an understanding of its technical implementation. During the same period, the opportunity cost of having poor information and the reduced cost of operating more sophisticated cost information systems have increased the demand for more accurate product costs (Holzer and Norreklit, 1991).

Against this background, adoption rates revealed by surveys of company practice have been lower than might be expected, and there has been no discernible upward trend, as anticipated following the results of some of the earlier surveys. Two UK surveys, conducted in 1995 (Innes and Mitchell, 1995) and 1999 (Innes et al., 2000), provided a comprehensive set of findings regarding the existing state of ABC adoption and the trend in adoption rates over the period. Based on a similar sample of the largest UK manufacturing, service and finance companies, the two studies showed a drop in ABC adoption from 21 per cent in 1995 to 17.5 per cent in 1999, and a fall in the proportion of companies currently considering

ABC adoption from 29.6 per cent to 20.3 per cent. Consistent with this, there was an increase both in the companies who had considered and rejected ABC (from 13.3 per cent to 15.3 per cent) and in those who have not given ABC any consideration (36.1 per cent to 46.9 per cent). Other UK surveys have reported fairly consistent adoption rates of 21 per cent (Evans and Ashworth, 1996), 22 per cent (Banerjee and Kane, 1996) and 23 per cent (Drury and Tayles, 2000).

In the first replication of Innes and Mitchell (1995) and Innes at al. (2000) outside the UK, Cotton et al. (2003) reported findings based on a sample of companies in New Zealand. It was found that adoption rates were broadly similar, with implementation rates for New Zealand companies being slightly lower than those reported in the UK. Fewer companies were found to be considering ABC and fewer companies also had rejected ABC after assessment. A further difference was found regarding adoption rates among company sectors, with a higher rate of adoption in manufacturing and non-manufacturing sectors and a lower rate in the financial sector.

Survey findings have also been reported in a wide range of countries around the world. A survey of manufacturing firms in Norway reported that 40 per cent of companies had adopted ABC (Bjornenak, 1997), while a survey of manufacturing and service companies in Belgium reported an adoption rate of 19 per cent (Bruggeman, Slagmulder and Waeytens, 1996) and a similar survey in France reported an adoption rate of 33 per cent (Lebas, 1996). Virtanen, Malmi, Vaivio and Kasanen (1996) reported that adoption rates in Finland increased from 6 per cent in 1992 to 24 per cent in 1995. Danish research showed that although ABC was common among multinational subsidiaries, usage was very low among indigenous companies (Israelsen, Andersen, Rohde and Sorensen, 1996). Low adoption levels were also reported in Germany (Scherrer, 1996), Sweden (Ask, Ax and Jonsson, 1996), Italy (Barbato, Collini and Quagli, 1996), Spain (Saez-Torrecilla, Fernandez-Fernandez, Texeira-Quiros and Vaquera-Mosquero, 1996), Australia (Joye and Blayney, 1990; Corrigan, 1996) and Greece (Ballas and Venieris, 1996). Survey findings from US companies showed that 27 per cent of responding manufacturing companies had implemented ABC, while a further 37 per cent planned to implement it (Shim and Stagliano, 1997). A similar survey in Canada showed an adoption rate of 23 per cent among the manufacturing companies surveyed (Armitage and Nicholson, 1993).

One of the early surveys of ABC adoption in Ireland was reported in Clarke (1992), who surveyed 320 large manufacturing companies and reported that 14 per cent of respondents had implemented ABC and a further 34 per cent intended to do so within the next two years. Nulty (1992) also surveyed manufacturing companies and reported a considerably higher ABC adoption rate of 33 per cent. O'Dea and Clarke (1994) used semi-structured interviews in a study of sixteen multinational companies in Ireland to examine attitudes and experience in relation to new management accounting techniques and concluded that there was virtually no use of ABC. Following a survey of management accounting practices, Pierce and O'Dea (1998) reported that in a ranking of techniques based on frequency of usage, ABC ranked behind all ten established techniques included in the study and

five of the other "new" techniques. They also found that adoption rates for large companies were significantly higher than for small companies. In a follow-up study, ABC adoption rates in Ireland were found to be significantly lower than those reported in a sample of Canadian companies, even when company size was taken into account (Richardson, Barker, Pierce and O'Dea, 2003).

Further recent research evidence was reported by Clarke, Thorley Hill and Stevens (1999), based on a survey of large manufacturing firms in which only 12 per cent were found to be using ABC and a further 20 per cent of firms stated that they were currently considering its adoption. Adoption was found to be positively correlated with company size and adoption rates were higher among multinational subsidiaries than Irish indigenous companies. The relatively low rate of ABC adoption was attributed to the marginalisation of management accountants, brought about by a combination of supply and demand factors.

Research to date has identified the most important areas of application of activity-based information among adopters of ABC as understanding cost behaviour (Bruggeman et al., 1996; Clarke et al., 1999), improved accuracy (Bruggeman et al., 1996; Clarke et al., 1999), cost reduction (Bruggeman et al., 1996; Lebas, 1996; Cotton et al., 2003), better process design (Lebas, 1996), cost management (Clarke et al., 1999; Innes et al., 2000; Cotton et al., 2003), performance measures (Clarke et al., 1999; Innes et al., 2000; Cotton et al., 2003), product/service pricing (Clarke et al., 1999; Innes et al., 2000; Cotton et al., 2003) and cost modelling (Innes et al., 2000; Cotton et al., 2003).

Although these surveys specifically addressed ABC, it is clear from the range of applications that the reported uses of activity-based data go well beyond more accurate costings. ABM has been described as involving 'management decisions that use activity-based costing information to satisfy customers and improve profitability' (Horngren, Datar and Foster, 2003, p. 148). A more appropriate focus for studies of this nature is therefore ABC/M, which has been described as an umbrella term for the use of both ABC and ABM (Cokins, 1999).

A particular difficulty has been identified in prior research regarding what constitutes success in the context of an activity-based system. Shields (1995) noted that the literature offered little guidance in this area, and there was little consensus among ABC experts. Shields offered suggestions of possible success measures, including top management not rejecting the system, use of ABC information by non-accountants and gaining competitive advantage/providing additional profits. Shields concluded that the most appropriate way to measure success was 'to let the respondent rate the degree of success with whatever definition he or she deemed relevant' (p. 154). An alternative measure of success that has been widely used is user satisfaction (Innes and Mitchell, 1995; Swenson, 1995; Foster and Swenson, 1997; McGowan and Klammer, 1997; Innes et al., 2000; Cotton et al., 2003). Usage frequency has been used as a measure of ABC success by Innes and Mitchell (1995), Foster and Swenson (1997) and Innes et al. (2000). Other approaches to the measurement of success include the extent to which ABC/M information leads to a change in decisions (Innes and Mitchell, 1995; Foster and Swenson, 1997), the extent to which ABC/M information leads to financial benefits (Shields, 1995;

Foster and Swenson, 1997) and the importance attached to ABC/M information (Innes and Mitchell, 1995; Innes et al., 2000). Consistent with earlier studies, this research seeks to establish respondents' perceptions regarding adoption, usage and success of ABC/M systems.

RESEARCH QUESTIONS

The research questions addressed by the study are as follows:

1: *What is the current state of ABC/M adoption rates among large Irish companies and how do these compare with recent findings?*
2: *For ABC/M users, what is the perceived level of usage and success across a range of specified applications?*
3: *For companies that are considering ABC/M, what would be the main purposes for which ABC/M would be used and what are the main factors against adoption of ABC/M?*
4: *For companies that have rejected ABC/M, what are the main reasons for the rejection decision?*
5: *For companies that have never considered ABC/M, what are the main reasons for not having considered it?*

RESEARCH DESIGN

A survey was conducted of the top 500 companies (excluding financial services companies) and the top 50 financial services companies from the 2001 *Business & Finance* listings of top Irish companies. A questionnaire was designed using a series of questions taken directly from Innes et al. (2000) in those areas where direct comparison was required, and additional questions to address other aspects of the study. The questionnaire was sent by post to a named individual in each company, identified from professional accounting institutes' listings as holding a position as head of management accounting, head of finance or chief executive. Anonymous questionnaires were despatched in June 2002 and reminders were sent to the full sample three weeks later.

Response rate

Table 1 shows the usable response rate.

TABLE 1: SURVEY RESPONSE RATE

Total questionnaires sent	550
Returned to sender	(13)
'Not appropriate'	(11)
	526
Usable responses	122
Response rate	23.2 %

Twenty-four unusable responses were received, either in the form of the questionnaire being returned to sender or contact from the recipient to say that the survey was not applicable to them.

Tests for non-response bias were carried out as recommended in the literature by comparing responses of early and late respondents, on the basis that the latter are more likely to resemble non-responses (Moser and Kalton, 1979). No significant differences were found in the rate of adoption of ABC/M. Size of organisations was also compared using two alternative criteria, given that company size has previously been associated with ABC/M adoption (an association supported by the current findings, as reported in **Table 5**), and no significant differences were found[1]. It was therefore concluded that there was no evidence of non-response bias.

Respondents

Most of the responding companies were from the manufacturing sector (51.6 per cent), with 11.5 per cent from the financial services sector and 36.9 per cent from other non-manufacturing sectors. Multinational companies accounted for 49.2 per cent of respondents, while 44.3 per cent were indigenous Irish companies and 6.5 per cent indicated that they were publicly owned. The size of respondent companies, in terms of annual turnover and numbers employed, is shown in **Table 2**.

TABLE 2: SIZE OF RESPONDENT COMPANIES

Approximate size: annual turnover			**Approximate size: numbers employed**		
Less than €5m	1	(0.8%)	Less than 100	12	(9.8%)
€5m–€25m	3	(2.5%)	100–250	25	(20.5%)
€25m–€50m	11	(9.0%)	250–500	33	(27.0%)
€50m–€100m	36	(29.5%)	500–1,000	29	(23.8%)
€100m–€250m	31	(25.4%)	1,000–2,000	15	(12.3%)
More than €250m	40	(32.8%)	More than 2,000	8	(6.6%)
Total	122	(100.0%)	Total	122	(100.0%)

Questionnaires were completed by financial controllers/accountants (33.6 per cent), finance directors (25.4 per cent), management accountants (8.2 per cent), other finance personnel (14.7 per cent) and other personnel (18.1 per cent). Respondents had spent an average of 8 years with their current employer and an average of 4.9 years in their current position.

RESULTS

Results are reported below for each of the research questions.

1: *What is the current state of ABC/M adoption rates among large Irish companies and how do these compare with recent findings?*

The adoption status of ABC/M among responding companies is shown in **Table 3**, together with comparative figures from Innes et al. (2000) and Innes and Mitchell (1995). Comparative figures are also shown for the most recently reported Irish findings, Clarke et al. (1999), and the only published replication of the Innes et al. study, Cotton et al. (2003).

TABLE 3: ADOPTION STATUS OF ABC/M

	This study		Clarke et al. (1999)		Innes et al. (2000)		Innes & Mitchell (1995)		Cotton et al. (2003)	
Status (Note)	n	%	n	%	n	%	n	%	n	%
CURR USE	34	27.9	24	11.8	31	17.5	74	21.0	60	20.3
CONSID	11	9.0	42	20.6	36	20.3	104	29.6	33	11.1
REJECT	13	10.7	26	12.7	27	15.3	47	13.3	32	10.8
NO CONS	64	52.4	112	54.9	83	46.9	127	36.1	171	57.8
Total	122	100.0	204	100.0	177	100.0	352	100.0	296	100.0

Note: CURR USE = Currently using ABC/M; CONSID = Considering ABC/M adoption; REJECT = Assessed and rejected ABC/M; NO CONS = No consideration of ABC/M to date.

In comparison to the other surveys, the main differences in the findings are (i) a higher proportion of companies who have adopted ABC/M[2] and (ii) a lower proportion of those who are considering ABC/M, although this figure is only slightly below that reported in the recent New Zealand findings. The proportion of respondents who have assessed and rejected ABC/M is consistent with Cotton et al. (2003), but lower than the earlier findings presented in the other three surveys. Consistent with earlier findings in Ireland and recent New Zealand findings, more than half of the respondents have given no consideration to ABC/M.

ABC/M adoption rates by industry sector are shown in **Table 4.** The results show higher levels of ABC/M adoption among manufacturing companies than in the previous studies included in **Table 4**, and compared to Irish and UK manufacturing companies the level is significantly higher (Chi-squared 18.530, p-value 0.000). Usage among non-manufacturing companies is comparable with that reported in the most recent UK and New Zealand research (Chi-squared 0.34, p-value 0.807). While reported adoption rates in the financial services sector are below those reported in the UK (Chi-squared 1.833, p-value 0.176), they are above those reported in New Zealand (Chi-squared 2.917, p-value 0.088).

TABLE 4: ABC/M ADOPTION RATES BY INDUSTRY SECTOR

	This study			Clarke et al. (1999)			Innes et al. (2000)			Innes & Mitchell (1995)			Cotton et al. (2003)		
	Total	ABC/M Users		Total	ABC users		Total	ABC users		Total	ABC users		Total	ABC users	
(Note)	n	n	%	n	n	%	n	n	%	n	n	%	n	n	%
MAN	63	22	34.9	204	24	11.8	84	12	14.3	233	36	15.5	102	26	25.5
SER	45	8	17.8	*	*	*	66	8	12.1	82	18	22	169	32	18.9
FIN	14	4	28.6	*	*	*	27	11	40.7	37	20	54	25	2	8.0
Total	122	34	27.9	204	24	11.8	177	31	17.5	352	74	21	296	60	20.3

Note: MAN = Manufacturing; SER = Non-manufacturing; FIN = Financial services.

** Not included in the Clarke et al. (1999) study.*

Adoption rates based on company size classification, using two alternate size criteria of annual turnover and numbers employed, are shown in **Table 5**.

TABLE 5: ABC/M ADOPTION RATES BASED ON COMPANY SIZE CLASSIFICATION

Approximate size: annual turnover	Total sample	ABC/M adopters	ABC/M adopters Adoption rate %	Approximate size: numbers employed	Total sample	ABC/M adopters	ABC/M adopters Adoption rate %
	n	n			n	n	
Less than €5m	1	0	0.0	Less than 100	12	1	8.3
€5m–€25m	3	0	0.0	100–250	25	5	20.0
€25m–€50m	11	1	9.1	250–500	33	8	24.2
€50m–€100m	36	7	19.4	500–1,000	29	9	32.1
€100m–€250m	31	13	41.9	1,000–2,000	15	6	40.0
More than €250m	40	13	34.0	More than 2,000	8	5	62.5
Total	122	34	27.9	Total	122	34	27.9

The results show that companies with larger turnover are more likely to adopt ABC/M (Chi-squared 8.104, p-value 0.044) and that companies with larger numbers of employees are more likely to adopt ABC/M (Chi-squared 7.417, p-value 0.060)

Adoption rates based on company ownership classification are shown in **Table 6**.

TABLE 6: ADOPTION RATES BASED ON COMPANY OWNERSHIP CLASSIFICATION

	Total sample		ABC/M adopters		ABC/M adopters as
	n	%	n	%	% of owner category
Indigenous Irish	54	44.3	17	50.0	31.5
Multinational	60	49.2	15	44.1	25.0
Other	8	6.5	2	5.9	25.0
Total	122	100.0	34	100.0	27.9

The results show that ABC/M adoption rates are higher among indigenous Irish companies than multinationals, although not significantly higher (Chi-squared 0.591, p-value 0.442). This conflicts with findings reported in Pierce and O'Dea (1998), indicating higher usage by multinationals of a large majority of specified management accounting practices, including ABC/M, for which a statistically significant difference was reported.

Prior research in the UK reported a dominant role played by in-house company accountants in the design and implementation of ABC systems, with a strong involvement by consultants and a less significant role being played by other disciplines (Innes et al., 2000). The current study asked respondents how much involvement each of the categories listed in **Table 7** had in implementing their

activity-based system and the results are summarised in **Table 7** (5-point scale where 1 = very little involvement and 5 = very heavy involvement).

TABLE 7: INVOLVEMENT IN IMPLEMENTATION OF ACTIVITY-BASED SYSTEM

	n	Mean	SD
In-house accountants	34	4.24	1.05
Information systems personnel	32	3.69	1.20
External consultants	28	3.43	1.32
Senior executives	33	3.39	1.03
Production personnel	26	3.08	0.84
Sales/marketing personnel	28	3.00	1.41
Distribution personnel	26	2.81	1.10
Purchasing/procurement personnel	28	2.71	1.18
Research & development personnel	16	1.88	1.36

The results are broadly similar to those reported in UK research, with in-house accountants playing the dominant role. However, in this study, by contrast with the UK studies, the companies' information systems personnel also played a particularly important role. Consistent with this is the fact that the most popular software was in-house developed software (47 per cent), whereas specialised commercial packages provided the software for the majority of adopters in the UK (Innes et al., 2000). The average time period for which adopters have used ABC/M is 9.5 years, compared to 5.4 years reported by Innes et al. (2000).

Of the 34 adopters of ABC/M, 18 indicated that they use ABC only, while 16 reported that they use both ABC and ABM, analysed by industry sector as shown in **Table 8**.

TABLE 8: ADOPTION OF ABC AND ABM BY INDUSTRY SECTOR

	ABC only		Both ABC and ABM		Total	
	n	%	n	%	n	%
Sector						
Manufacturing	11	61.1	11	68.8	22	64.7
Non-manufacturing	5	27.8	3	18.8	8	23.5
Financial services	2	11.1	2	12.5	4	11.8
Total	18	100.0	16	100.0	34	100.0

Adopters of ABC/M are therefore almost evenly split between those who reported adoption of ABC only and those who reported implementation of ABM, and this is consistent across industry sectors. Adopters of ABC only (n= 18) were compared to adopters of ABC and ABM (n= 16) using the t-test for differences in means[3]. Significant differences were mostly concentrated in two areas, i.e., involvement in implementation of the system and application of the system, as reported in **Table 9**.

TABLE 9: COMPARISON OF USERS OF ABC AND USERS OF ABC/M

	ABC users		ABC/M users		p-value
	n	Mean	n	Mean	t-test
Involvement in implementation of ABC/M system:					
Senior executives	17	2.94	16	3.88	0.0070
Sales/marketing personnel	13	2.31	15	3.60	0.0129
Information systems personnel	17	3.18	15	4.27	0.0071
Research & development personnel	9	1.11	7	2.86	0.0258
External consultants	14	2.86	14	4.00	0.0186
Application of the ABC/M system:					
Frequency of use in reward system	17	2.29	16	3.88	0.0011
Frequency of use in introducing JIT/speed initiatives	16	2.06	14	3.21	0.0137
Frequency of use in introducing quality initiatives	16	2.31	15	3.47	0.0135
Visibility of link with JIT/speed initiatives	16	2.00	15	3.07	0.0173
Visibility of link with performance evaluation/rewards	18	2.89	15	4.00	0.0157

Higher levels of perceived usage across a wide range of applications and higher visibility of links with those applications are consistent with the concept of ABM and are not therefore surprising. What is noteworthy, however, is the significantly higher involvement of a wide range of personnel in the implementation process when the system is intended for use in a wide variety of applications. These include senior management, external consultants and managers from a broad range of business functions. Also noteworthy is the fact that no significant difference was found for two important groups shown in **Table 7** to be heavily involved in the implementation process, i.e., in-house accountants and production personnel. Involvement of these two groups in the implementation of the system does not vary significantly between systems intended for costing purposes only and systems designed for a wider range of ABM applications.

2: *For ABC/M users, what is the perceived level of usage and success across a range of specified applications?*

Respondents were requested to indicate the frequency of use of the ABC/M system for specified purposes on a 5-point scale ranging from 1 = never to 5 = always. They were also asked to indicate the level of success that they ascribed to the ABC/M system in relation to each of those specified areas of application, on a 5-point scale ranging from 1 = very unsuccessful to 5 = very successful. Results are summarised in **Table 10**, together with comparative figures from two UK surveys that measured the degree of importance attached to the application of ABC in the specified areas, on a 5-point scale, and the level of success in each area, using a scale identical to that used in the current survey.

TABLE 10: USE/IMPORTANCE AND SUCCESS OF ABC/M IN SPECIFIED AREAS OF APPLICATION

	This study		Innes et al. (2000)		Innes & Mitchell (1995)	
	Usage Mean (SD)	Success Mean (SD)	Importance Mean (SD)	Success Mean (SD)	Importance Mean (SD)	Success Mean (SD)
Stock valuation	3.2 (1.8)	4.2 (1.1)	3.9 (1.8)	4.6 (0.5)	3.2 (1.5)	3.6 (1.0)
Product/service pricing	4.0 (1.2)	4.1 (1.1)	4.4 (0.9)	4.1 (0.8)	4.3 (0.9)	3.8 (0.8)
Output decisions	3.6 (1.3)	4.0 (1.2)	4.1 (0.9)	4.2 (0.8)	3.8 (1.2)	3.7 (0.8)
Cost reduction/mgt	3.8 (0.9)	3.9 (1.2)	4.4 (0.8)	4.0 (0.8)	4.5 (0.6)	3.8 (0.8)
Budgeting	4.2 (1.2)	4.3 (1.1)	4.4 (1.1)	3.9 (1.0)	4.2 (0.7)	3.7 (0.9)
New product/service design	3.6 (1.4)	3.9 (1.1)	4.2 (1.1)	3.8 (1.1)	3.8 (1.2)	3.8 (0.9)
Cust. profitability analysis	4.2 (1.1)	4.1 (1.1)	4.5 (1.0)	4.2 (0.8)	4.1 (1.1)	3.9 (0.7)
Activity perf. meas./imp.	3.9 (1.1)	3.9 (1.2)	4.3 (0.6)	3.9 (0.8)	4.3 (0.7)	3.7 (0.8)
Cost modelling	4.0 (1.0)	4.0 (1.0)	4.3 (0.6)	4.0 (0.8)	4.1 (0.8)	3.7 (1.1)
Outsourcing decisions*	2.9 (1.3)	3.6 (0.9)				
Process/operating mgt.*	3.3 (1.2)	3.7 (1.0)				
Restructuring decisions*	2.9 (1.2)	3.4 (1.0)				
Forecasting*	3.4 (1.4)	3.7 (1.2)				
Cap. investment decisions*	3.2 (1.4)	3.8 (1.0)				
Performance measures*	3.7 (1.4)	4.1 (1.0)				
Strategic planning*	3.4 (1.2)	3.7 (1.2)				
JIT/speed initiatives*	2.6 (1.3)	3.1 (1.0)				
Quality initiatives*	2.9 (1.3)	3.3 (1.0)				
Reward system*	3.1 (1.5)	3.6 (1.2)				
Other	1.5 (0.7)	2.0 (1.4)	5.0 (0.0)	n/a	4.8 (0.4)	n/a
Overall success		4.1 (1.0)		3.9 (0.8)		3.8 (0.7)

* *Not included in prior studies*

The correlation of usage and perceived success for all 20 applications takes an extremely high value (Pearson coefficient = 0.917; p = 0.000), suggesting that, in general, usage and success are very strongly linearly related. Correlation between importance and success was much weaker in both the Innes et al. (2000) study (Pearson coefficient = 0.577; p = 0.104) and the Innes and Mitchell (1995) study (Pearson coefficient = 0.537; p = 0.136). For the nine applications common to all three studies, usage in the current study was strongly correlated with importance in both the Innes et al. (2000) study (Pearson coefficient = 0.928; p = 0.000) and the Innes and Mitchell (1995) study (Pearson coefficient = 0.777; p = 0.014). However, for the common areas of application, insignificant correlations were found for perceived success in comparison with both the Innes et al. (2000) study (Pearson

coefficient = 0.437; p = 0.239) and the Innes and Mitchell (1995) study (Pearson coefficient = -0.276; p = 0.471). Although the statistical analysis suggests that there is little agreement across the three studies insofar as perceived success in the nine common applications is concerned, there is agreement in specific areas of application between the current study and Innes et al. (2000), where the same mean score was reported for three of the nine applications and a difference of 0.1 was reported for a further three applications.

The same measure of overall success was used in all three surveys, and mean scores reported at the bottom of **Table 10** indicate consistently high overall ratings for users of ABC/M systems. (A mean score of 4.0 was reported by Cotton et al. (2003) for the same measure of overall success.) Ranking of success ratings by specific area of application is shown in **Table 11**.

TABLE 11: RANKING OF ABC/M SUCCESS RATINGS IN SPECIFIED AREAS OF APPLICATION

	This study		Innes et al. (2000)		Innes & Mitchell (1995)	
	Success Mean (SD)	Success Ranking	Success Mean (SD)	Success Ranking	Success Mean (SD)	Success Ranking
Budgeting	4.3 (1.1)	1	3.9 (1.0)	7	3.7 (0.9)	5
Stock valuation	4.2 (1.1)	2	4.6 (0.5)	1	3.6 (1.0)	9
Product/service pricing	4.1 (1.1)	3	4.1 (0.8)	4	3.8 (0.8)	2
Customer profitability analysis	4.1 (1.1)	3	4.2 (0.8)	2	3.9 (0.7)	1
Performance measures*	4.1 (1.0)	5				
Output decisions	4.0 (1.2)	6	4.2 (0.8)	2	3.7 (0.8)	5
Cost modelling	4.0 (1.0)	6	4.0 (0.8)	5	3.7 (1.1)	5
Cost reduction/mgt	3.9 (1.2)	8	4.0 (0.8)	5	3.8 (0.8)	2
New product/service design	3.9 (1.1)	8	3.8 (1.1)	9	3.8 (0.9)	2
Activity performance meas/imp.	3.9 (1.2)	10	3.9 (0.8)	7	3.7 (0.8)	5
Cap. investment decisions*	3.8 (1.0)	11				
Strategic planning*	3.7 (1.2)	12				
Outsourcing decisions*	3.6 (0.9)	13				
Process/operating mgt*	3.6 (1.0)	14				
Forecasting*	3.6 (1.2)	15				
Reward system*	3.6 (1.2)	16				
Restructuring decisions*	3.4 (0.9)	17				
Quality initiatives*	3.3 (1.0)	18				
JIT/speed initiatives*	3.1 (1.0)	19				

** Not included in prior studies*

Consistent with the low correlation between success ratings in the three studies reported above, there is no clear pattern in the rankings. Budgeting scored a

noticeably higher success rating than that recorded in either of the UK surveys and performance measures, not separately measured in the UK surveys, also scored a high success rating. Consistent with UK findings, high ratings were awarded for customer profitability analysis and product/service pricing, while the high ranking for stock valuation is consistent only with the Innes et al. (2000) study.

3: *For companies that are considering ABC/M, what would be the main purposes for which ABC/M would be used and what are the main factors against adoption of ABC/M?*

Non-users of ABC/M classified themselves as either currently considering ABC/M, having considered and rejected ABC/M, or never having considered it. Companies that are still considering adopting ABC/M have spent an average of 1.3 years considering adoption (n = 11) and identified the main purposes for which ABC/M would be used as shown in **Figure 1**.

Figure 1: Purposes for which ABC/M would be used

Efficiency, value-based reporting
More in-depth analysis (especially product GP), value adding decisions
Fulfilment of request by corporate to identify value added
Identification of cost drivers
Measuring profitability by agency, improving basis for quoting for new business
To understand cost drivers to impact and influence product cost through design
Facilitate pricing strategy and product line performance on profitability and efficiency
Accuracy of product cost, improved product profitability, evaluation of capital investment
More accurate costings, product/customer/market profitability

The same respondents identified the main factors against adoption of ABC/M as shown in **Figure 2**.

Figure 2: Factors against adoption of ABC/M

Lack of support from group office
Cost, complexity, timeliness of ABC information
Lack of experience/training/resources
Resources required to design and implement properly
Lack of software support/integration with ERP system, corporate policy on absorption costing
Unsure about cost-benefit
Human resource availability
Too much effort, too few benefits, might not like the answers
Perceived complexity, lack of knowledge of resources required

4: *For companies that have rejected ABC/M, what are the main reasons for the rejection decision?*

Companies that reported having considered and rejected ABC/M (n = 13) identified reasons for the rejection decision as summarised in **Figure 3**.

Figure 3: Reasons for rejecting ABC/M

It would not give us any more control than we already have
No significant difference in the product costs on an ABC basis vs. current methods (DLH)
Too onerous – may consider again when technology is more developed
Nature of business – machine hours cover 80 per cent of overheads, other 20 per cent can be apportioned more easily by allocation
Mature, high volume, low margin industry – no flexibility to change product range
Each product is individually tailored – costs would outweigh benefits
All shipments are inter-company, transfer price is market price less 40 per cent but not below standard cost
Too cumbersome to implement. Current system seen as a better management tool
Complexity of product range. Difficulty in establishing the key cost drivers
Given the nature of activity, difficult to justify implementation because of indeterminate benefits
Trial implementation showed that benefits would not outweigh the costs and time involved

5: *For companies that have never considered ABC/M, what are the main reasons for not having considered it?*

Respondents from companies that never considered ABC/M (n = 64) identified a long list of reasons for not having done so and these are summarised in **Figure 4**.

Figure 4: Reasons for never having considered ABC/M

Current system okay, manufacturing process is simple, easy to track costs
Lack of knowledge/experience regarding management accounting techniques
Satisfied with current system
The cost of setting up and maintaining such a system would outweigh the benefits
It is not relevant to our lending business
Have not been in role long enough to consider ABC
Not appropriate – homogenised product produced
Main cost is head count related – therefore most costs allocated on that basis alone
Our business has a high proportion of costs that are contractually fixed
Deemed to be more manufacturing related than retail
The costing system is standardised on a global basis
Simple business structure, marketing a simply costed product to very few large corporations
We are purely a service company
Competitive nature of markets dictates revenue/pricing
Dictated by corporate requirements and type of business
Size of organisation
We produce a single product and we are currently using a standard cost system

DISCUSSION

The findings should be interpreted in the context of the limitations of survey research which have been well documented (Moser and Kalton, 1979; Marsh, 1982; Fowler, 1993), most notably the potential for non-response bias, the inability to probe using follow-up questions and the risk of inconsistent interpretation of terminology. However, testing showed no evidence of non-response bias and care was taken to identify a named individual at a senior level in every organisation who would be familiar with management accounting terminology and their company's cost information system. A further limitation arises from the fact that the data represent the perceptions of responding accountants regarding usage, success and involvement in the implementation of the systems and those perceptions may not accurately reflect reality. A particular strength of the research was that the data were collected using well established scales and in a format that facilitated direct comparison with earlier research conducted using a similar approach.

Higher overall rates of ABC/M adoption were reported than in any of the previous studies for which direct comparisons were made. This was particularly evident among manufacturing companies, where an adoption rate of almost 35 per cent was recorded, which contrasts with an adoption rate of almost 12 per cent reported by Clarke et al. (1999) for a similar sample of Irish manufacturing companies. However, the adoption rate among financial services companies of almost 29 per cent was noticeably lower than that reported in other studies of financial services companies (Innes et al., 2000 reported an adoption rate of almost 41 per cent, while Innes and Mitchell, 1997 reported 54 per cent). Fewer respondents were still considering adoption of ABC/M than reported in Clarke et al. (1999) (9 per cent compared to 21 per cent). Compared to the Clarke et al. (1999) findings, a higher proportion of respondents have considered adoption of ABC/M (48 per cent compared to 45 per cent), and of those who have considered it, a higher proportion have reached a final decision. Consistent with previous findings (Clarke et al., 1999; Innes et al., 2000), adoption rates were significantly higher among large organisations, using two different measures of company size.

These combined findings suggest that a sizeable number of the Clarke et al. (1999) respondents who reported in the mid-1990s that they were considering ABC may have subsequently adopted the technique. Furthermore, the data summarised in **Table 11** and **Figures 1** to **4** suggest an expansion of the range of applications that have been identified as being associated with activity-based systems and that the perceived ability of the system to add value through these applications may be a major factor in the adoption decision.

The overall profile of the results lines up more closely with the findings of Cotton et al. (2003) than any of the other findings with which comparisons were made (**Table 3**). The Cotton et al. study also replicated Innes et al. (2000) and was carried out more recently than the other studies. Having been conducted in New Zealand, the Cotton et al. sample is likely to resemble the sample of companies used in the current study in terms of company size to a greater extent than the UK samples. The previous Irish findings (Clarke et al., 1999) are based on data

collected in the mid-1990s and the current findings therefore suggest a significant change in adoption rates during the intervening period.

Regarding the introduction of ABC/M systems, there was evidence of a dominant role played by in-house accountants in the design and implementation of the systems, consistent with the findings of Innes et al. (2000). However, the role of in-house information systems personnel has increased relative to the input of external consultants and consistent with this, the importance of in-house developed software has increased relative to the use of specialised commercial software packages.

Approximately half of ABC/M users reported using ABC only and this was broadly consistent across industry sectors. A comparison of the two groups showed a number of significant differences between users of both ABC and ABM, and those who use ABC only (**Table 9**). In particular, those using ABC and ABM reported significantly greater input from a wide range of personnel at the implementation stage, including top management, external consultants and managers from a diverse range of business functions. This widespread involvement at the implementation stage was perceived to be associated with a broad range of applications for the activity-based system. Regardless of the range of uses, both in-house accountants and production personnel were seen as having heavy involvement in the implementation of the system. This reflects the fact that, although other groups are seen to have significantly increased involvement when ABC systems are upgraded to ABM status, involvement of accounting and production personnel tends to be seen as remaining at a constant level, regardless of the range of applications associated with the ABC system.

Reported usage of ABC/M was strongly correlated with perceived success across all applications in the study. For those application areas common to all three studies, reported usage was also strongly correlated with reported importance in both the Innes et al. (2000) and Innes and Mitchell (1995) studies; however, for perceived success in the common areas of application, there was low correlation between the current findings and both UK studies. Regarding perceived success in specified areas of application, the most prominent difference related to the high success rating for budgeting, compared to that reported in both UK studies (**Table 11**). At a time when traditional budgeting systems have been heavily criticised to the point of advocating their complete abandonment (Hope and Fraser, 1997; 1999), it is particularly interesting to note the increased level of perceived success in the use of activity-based information for budgeting purposes.

Companies not currently using ABC/M fell into three different categories, i.e., those that are still considering it (n = 11), those that have considered and rejected it (n = 13) and those that have never considered it (n = 64). For all three categories, there was a high degree of consistency in terms of factors militating against adoption/consideration of ABC/M, the most prominent of which related to cost/benefit considerations. Respondents from the three groups were clearly concerned about the level of resources and cost required to implement what they saw as a more complex system. At the same time, a high level of uncertainty was expressed regarding the potential benefits that would result from implementation

of ABC/M. In assessing likely benefits, some respondents revealed an extremely narrow view of ABC/M (e.g., "it would not give us any more control"), while others freely admitted lack of any detailed knowledge of the technique. A further theme related to particular characteristics of the responding company (e.g., "nature of business") and their status within the group ("dictated by corporate requirements").

Whereas the rejectors of ABC/M revealed a narrow interpretation of potential uses and benefits, those currently considering the technique showed awareness of a much wider range of applications (**Figure 1**), consistent with the range of applications reported by current ABC/M users (**Table 10**). In particular, those considering implementation of ABC/M consistently focused on the need for more accurate cost drivers to identify value added and provide accurate profitability analysis as the main reason for considering its introduction.

The findings do not support the conclusions of Clarke et al. (1999) that ABC/M adoption rates in Ireland are low in comparison to those reported in other countries. The overall adoption rate of 27.9 per cent is high in comparison to findings reported elsewhere, and the adoption rate of 34.9 per cent in manufacturing companies is significantly higher than the 11.8 per cent adoption rate reported by Clarke et al. for a sample of manufacturing companies in Ireland (**Table 4**). However, the findings provide some support for the contention of Clarke et al. that there may be a lack of knowledge and awareness among management accountants in Ireland regarding the importance and operation of ABC/M systems. For example, reasons given for never having considered ABC/M (**Figure 4**) reflected a mistaken perception that ABC/M is not suitable for organisations involved in service industries, including financial services, or where a competitive market dictates the pricing of products or services. Respondents from ABC/M adopters and from companies considering adoption, on the other hand, showed a much greater awareness of the potential benefits of ABC/M.

Given the relatively high adoption rates revealed by the findings, comparatively low numbers still considering adoption, and the consistently high proportion of companies that have not considered ABC/M, it seems unlikely that there will be significant further adoption of ABC/M systems in the foreseeable future.

CONCLUSION

By replicating the well established work of Innes et al. (2000) and Innes and Mitchell (1995) in the UK, and drawing comparisons with the only published replication of Innes et al. outside the UK (Cotton et al., 2003), the study provides the most comprehensive findings to date in relation to adoption of ABC/M in Ireland. In addition, the study sought to highlight trends by direct comparison with earlier research, and to obtain specified information from non-ABC/M adopters. The findings showed higher rates of ABC/M adoption than those reported in prior studies and adoption rates were particularly high among manufacturing organisations. The study also showed a much reduced proportion

of companies who are considering ABC/M, suggesting that a large majority of those wishing to consider it have now done so and reached a final decision. Investigation of these changes and trends was outside the scope of the study but offers potential for future studies using a case-based approach, which has already been shown to provide valuable insights into the ABC adoption decision and implementation process (Kaplan, 1987; Anderson, 1995).

The high correlation between reported usage and perceived success of ABC/M systems may suggest that overall usage levels are a reliable indicator of overall success of those systems. An alternative explanation is the possibility that accountants' assessment of success is primarily driven by their perceptions of frequency of use. While there is some support in the literature for equating usage frequency with user satisfaction, the accuracy of accountants' assessments of usage frequency is still questionable. Future research should therefore include input from relevant managers in order to elicit management's perspective on usage and success levels.

Regarding the role played by accountants, there was a striking contrast between the dominant role played by accountants during the implementation process in companies that have adopted ABC/M and the lack of awareness about ABC/M displayed by accountants in some of the non-ABC/M companies. There is an important role for researchers in acquiring and disseminating knowledge of successful ABC/M implementations, and an equally key role for education and training in ensuring that current and future generations of accountants possess up-to-date knowledge and skills that place them in a position to initiate and implement appropriate systems changes.

Consistent with prior findings in Ireland and elsewhere, more than half of the responding companies have not given any consideration to possible implementation of ABC/M to date. Given that ABC/M has been prominent in the literature since the 1980s, this is unlikely to be due to lack of awareness and is more likely to be indicative of an acceptable level of satisfaction with existing systems in those companies. Combined with the low numbers now considering a change to ABC/M (over 90 per cent of respondents have either accepted, rejected or are not considering ABC/M), this suggests that there is unlikely to be significant further adoption of ABC/M in the foreseeable future. In this sense, the evidence suggests that adoption of ABC/M may be approaching a relatively settled state in the Irish corporate sector.

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NOTES

1 Tests of whether early responders differed from late responders in terms of size of organisation (measured either by turnover or by number of employees), or by use of ABC and/or ABM showed no evidence of non-response bias. Results are summarised below:

Variable	Test used	Null Hypothesis	p-value
Turnover	Student's t	Means are equal	0.129
Turnover	Mann-Whitney	Medians are equal	0.127
Number of Employees	Student's t	Means are equal	0.289
Number of Employees	Mann-Whitney	Medians are equal	0.206
Use ABC and/or ABM	Chi-squared	Proportions are equal	0.549
Use ABC and/or ABM	Likelihood Ratio	Proportions are equal	0.419

2 The current study requested information regarding adoption of ABC and ABM, whereas the other studies included in **Table 3** dealt only with ABC. However, this did not contribute to a higher reported frequency in the current study, since all ABM users also confirmed they have adopted ABC.

3 Similar results were obtained using the non-parametric Wilcoxon test for differences in medians.

REFERENCES

Anderson, S.W. (1995). 'A Framework for Assessing Cost Management System Changes: The Case of Activity Based Costing Implementation at General Motors, 1986-1993', *Journal of Management Accounting Research*, Vol. 7, pp. 1-51.

Anderson, S.W. and Young, S.M. (1999). 'The Impact of Contextual and Process Factors on the Evaluation of Activity Based Costing Systems', *Accounting, Organizations and Society*, Vol. 24, pp. 525-559.

Armitage, H. and Nicholson, R. (1993). *Activity-Based Costing: A Survey of Canadian Practice, Issues Paper No. 3*, Hamilton, Ontario: The Society of Management Accountants of Canada.

Ask, U., Ax, C. and Jonsson, S. (1996). 'Cost Management in Sweden: From Modern to Post-Modern', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 199-217.

Ballas, A, and Venieris, G. (1996). 'A Survey of Management Accounting Practice in Greek Firms', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 123-139.

Banerjee, J. and Kane, W. (1996). 'Report on CIMA/JBA Survey', *Management Accounting (UK)*, October, p. 37.

Barbato, M.B., Collini, P. and Quagli, A. (1996). 'Management Accounting in Italy', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 140-163.

Bhimani, A. (ed.) (1996). *Management Accounting: European Perspectives*, Oxford: Oxford University Press.

Bhimani, A. and Pigott, I. (1992). 'Implementing ABC: A Case Study of Organizational and Behavioural Consequences', *Management Accounting Research*, Vol. 3, No. 2, pp. 119-132.

Bjornenak, T. (1997). 'Diffusion and Accounting: The Case of ABC in Norway', *Management Accounting Research*, Vol. 8, No. 1, pp. 3-17.

Bruggeman, W., Slagmulder, R. and Waeytens, D. (1996). 'Management Accounting Changes: The Belgian Experience', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 1-30.

Cagwin, D. and Bouwman, M.J. (2002). 'The Association Between Activity-Based Costing and Improvement in Financial Performance', *Management Accounting Research*, Vol. 13, pp. 1-39.

Clarke, P.J. (1992). 'Management Accounting Practices in Irish Manufacturing Businesses: A Pilot Study', *The Irish Accounting and Finance Association Proceedings*, pp. 17-34.

Clarke, P.J., Thorley Hill, N. and Stevens, K. (1999). 'Activity-Based Costing in Ireland: Barriers to, and Opportunities for, Change', *Critical Perspectives on Accounting*, Vol. 10, pp. 443-468.

Cokins, G. (1999). 'Using ABC to become ABM', *Journal of Cost Management*, Vol. 13, No. 1, pp. 29-35.

Corrigan, J. (1996). 'ABC Not Easy in Australia: Survey', *Australian Accountant*, June, pp. 51-53.

Cotton, W.D.J., Jackman, S.M. and Brown, R.A. (2003). 'Note on a New Zealand Replication of the Innes et al. UK Activity-Based Costing Survey', *Management Accounting Research*, Vol. 14, No. 1, pp. 67-72.

Drury, C. and Tayles, M. (2000). *Cost System Design and Profitability Analysis in UK Companies*, London: Chartered Institute of Management Accountants.

Evans, H. and Ashworth, G. (1996). 'Survey Conclusions: Wake up to the Competition', *Management Accounting (UK)*, May, pp. 16-18.

Foster, G. and Swenson, D.W. (1997). 'Measuring the Success of Activity-Based Cost Management and its Determinants', *Journal of Management Accounting Research*, Vol. 9, pp. 109-142.

Fowler, F.J. (1993). *Survey Research Methods*, Thousand Oaks, California: Sage Publications.

Friedman, A.L. and Lyne, S.R. (1997). 'Activity-Based Techniques and the Death of the Beancounter', *The European Accounting Review*, Vol. 6, No. 1, pp. 19-44.

Gosselin, M. (1997). 'The Effect of Strategy and Organisational Structure on the Adoption and Implementation of Activity-Based Costing', *Accounting, Organizations and Society*, Vol. 22, pp. 105-122.

Holzer, H.P. and Norreklit, H. (1991). 'Some Thoughts on the Cost Accounting Developments in the United States', *Management Accounting Research*, Vol. 2, No. 1, pp. 3-13.

Hope, J. and Fraser, R. (1997). 'Beyond Budgeting: Breaking through the Barrier to the Third Wave', *Management Accounting*, December, pp. 20-23.

Hope, J. and Fraser, R. (1999). 'Beyond Budgeting: Building a New Management Model for the Information Age', *Management Accounting*, January, pp. 16-21.

Horngren, C.T., Datar, S.M. and Foster, G. (2003). *Cost Accounting: A Managerial Emphasis* (11th edition), New Jersey: Prentice Hall International Inc.

Innes, J. and Mitchell, F. (1995). 'A Survey of Activity-Based Costing in the UK's Largest Companies', *Management Accounting Research*, Vol. 6, No. 2, pp. 137-153.

Innes, J. and Mitchell, F. (1997). 'The Application of Activity-Based Costing in the United Kingdom's Largest Financial Institutions', *The Service Industries Journal*, Vol. 17, No. 1, pp. 190-203.

Innes, J., Mitchell, F. and Sinclair, D. (2000). 'Activity-Based Costing in the UK's Largest Companies: A Comparison of 1994 and 1999 Survey Results', *Management Accounting Research*, Vol. 11, No. 3, pp. 349-362.

Israelsen, P., Andersen, M., Rohde, C. and Sorensen, P.E. (1996). 'Management Accounting in Denmark: Theory and Practice', in Bhimani, A. (ed.), *Management Accounting: European Perspectives*. Oxford: Oxford University Press, pp. 31–53.

Johnson, H.T. (1990). 'Beyond Product Costing: A Challenge to Cost Management's Conventional Wisdom', *Journal of Cost Management*, Fall, pp. 15–21.

Jones, C.T. and Dugdale, D. (2002). 'The ABC Bandwagon and the Juggernaut of Modernity', *Accounting, Organizations and Society*, Vol. 27, No. 1/2, pp. 121–163.

Joye, M.P. and Blayney, P.J. (1990). *Cost and Management Accounting Practices in Australian Manufacturing Companies: Survey Results*, Monograph No. 7, The Accounting and Finance Foundation, The University of Sydney.

Kaplan, R.S. (1987). John Deere Component Works. Harvard Business School Case Series, 187-107/108, Cambridge, MA: Harvard Business School Press.

Kennedy, T. and Graves, J.A. (2001). 'The Impact of Activity-Based Costing Techniques on Firm Performance, *Journal of Management Accounting Research*, Vol. 13, pp. 19–45.

Lebas, M. (1996). 'Management Accounting Practice in France', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 74–99.

Malmi, T. (1997). 'Towards Explaining Activity-Based Costing Failure: Accounting and Control in a Decentralized Organization', *Management Accounting Research*, Vol. 8, No. 4, pp. 459–480.

Malmi, T. (1999). 'Activity-Based Costing Diffusion Across Organizations: An Exploratory Empirical Analysis of Finnish Firms', *Accounting, Organizations and Society*, Vol. 24, No. 4, pp. 649–672.

Marsh, C. (1982). *The Survey Method: The Contribution of Surveys to Sociological Explanation*, St Leonards, NSW: Allen & Unwin.

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.

Moser, C.A. and Kalton, G. (1979). *Survey Methods in Social Investigation*, Aldershot: Gower.

Nulty, R. (1992). *Cost Management Techniques – A Survey of Current Practices in Irish Industry*. Dublin: Price Waterhouse in association with the Industrial Development Authority.

O'Dea, T. and Clarke, P. (1994). 'Management Accounting Systems: Some Field Evidence from Sixteen Multinational Companies in Ireland', *The Irish Accounting Review*, Vol. 1, No. 1, pp. 199–216.

Pierce, B. and O'Dea, T. (1998). 'An Empirical Study of Management Accounting Practices in Ireland', *The Irish Accounting Review*, Vol. 5, No. 2, pp. 35–65.

Piper, J.A. and Walley, P. (1990). 'Testing ABC Logic', *Management Accounting (UK)*, September, pp. 37–42.

Richardson, A.W., Barker, T., Pierce, B. and O'Dea, T. (2003). 'A Comparison of Canadian and Irish Views on a Set of Traditional and Advanced Management Accounting Techniques', *The Irish Accounting Review*, Vol. 10, No. 2, pp. 53–74.

Saez-Torrecilla, A., Fernandez-Fernandez, A., Texeira-Quiros, J. and Vaquera-Mosquero, M. (1996). 'Management Accounting in Spain: Trends in Thought and Practices', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 180–198.

Scherrer, G. (1996). 'Management Accounting: A German Perspective', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 100–122.

Shields, M. (1995). 'An Empirical Analysis of Firms' Implementation Experiences with Activity-Based Costing', *Journal of Management Accounting Research*, Vol. 7, pp. 1–28.

Shim, E. and Stagliano, A. (1997). 'A Survey of US Manufacturers on Implementation of ABC', *Journal of Cost Management*, March/April, pp. 39–41.

Swenson, D. (1995). 'The Benefits of Activity-Based Cost Management to the Manufacturing Industry', *Journal of Management Accounting Research*, Vol. 7, pp. 167–180.

Virtanen, K., Malmi, T., Vaivio, J. and Kasanen, E. (1996). 'Drivers of Management Accounting in Finland', in *Management Accounting: European Perspectives*, Bhimani, A. (ed.), Oxford: Oxford University Press, pp. 54–73.