



Activity-based costing in the U.K.'s largest companies: a comparison of 1994 and 1999 survey results

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This paper reviews the results of two U.K. surveys of activity-based costing (ABC) in the U.K.'s largest companies. These provide an opportunity to assess the changes that have occurred in the ABC adoption status of companies over a recent 5-year period. For the ABC users, some comparative information is provided on the nature of the ABC systems in use, their designers, the uses to which they have been put and the levels of success and importance that participants attribute to them. For the non-users, the reasons for their lack of commitment to ABC are explored.

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1. Introduction

Activity-based cost/management (ABC)¹ has now maintained a high profile status as an important management accounting innovation for well over a decade (Bjornenak and Mitchell, 1999). However, despite a strong and durable advocacy (Cooper, 1988; Cooper and Kaplan, 1991, 1992, 1998; Kaplan, 1992), several reservations have been expressed concerning (a) the substance of its practical attraction (Bjornenak, 1997; Gosselin, 1997; Malmi, 1999), i.e. that it may be a fad or fashion, engendering a bandwagon effect rather than a genuine and useful technical enhancement, (b) its decision-making relevance (Noreen, 1991; Bromwich and Hong, 1999), i.e. that several restrictive (and practically unlikely) conditions must apply before the ABC information can legitimately be used to generate relevant costs for decisions, and (c) the problematic and costly design, implementation and operation of the systems required for ABC

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¹In this paper, ABC is used to encompass both activity-based costing and activity-based cost management.

in an organizational context (Cobb *et al.*, 1992; Malmi, 1997). These qualifications may contribute to an explanation of the relatively low adoption rates that have been consistently observed for ABC in surveys conducted in different countries (e.g. Lukka, 1994; Armitage and Nicholson, 1993; Ask and Ax, 1992), and imply that even practical experience of ABC may not necessarily lead to its permanent adoption. However, most survey research to date has produced only snap-shot evidence of the extent of ABC adoption at one location and at one point in time. Survey replication in the same location has been uncommon and consequently little is known about how the adoption of ABC has actually progressed at a general level over time.

This paper provides some empirical evidence of current general trends in the practical consideration, adoption and use of ABC. It is based on the results of two surveys of the U.K.'s largest companies undertaken in 1994 (Innes and Mitchell, 1995, 1997a, 1999). These surveys are used to determine and assess the nature and significance of changes during this period in ABC adoption rates and patterns of use.

2. The study design

To ensure comparability, the 1999 survey mirrored² the design of the 1994 study reported in Innes and Mitchell (1995, 1997a). It was conducted in January and February 1999 and involved two mailings. The second included a non-response sheet³ requesting a reason when the questionnaire was not returned. A total response⁴ of 44.9% was achieved. This, as shown in the Table 1 breakdown, represented a slightly lower overall return compared with that achieved 5 years earlier, and fewer usable responses were also obtained (22.8% in 1999, compared to 33.2% in 1994).

The usable questionnaires were provided by finance directors/company secretaries (54 respondents) and accounting staff (102 respondents), with other business staff (21 respondents) providing the remainder. Respondents had, on average, 9.4 years experience of employment in their organization. The usual limitations of survey-based research are acknowledged by the authors.⁵

²Both studies were based on the Times 1000 publication. Changes in this text occurred between the dates of the two surveys and affected them as follows. First, the choice and ranking of companies changed from a turnover- to a capital-employed basis. Second, financial companies and mutuals were listed separately in 1994, but in 1999, financial companies were integrated into the listing. Consequently, the surveys were constituted as follows: 1994, top 1000 non-financial companies plus top 60 financial companies and mutuals (investment management firms were excluded); 1999, top 1000 companies (non-financial and financial), but excluding investment management firms.

This means that the 1999 survey has a small bias towards larger companies. Note also that the previous *Management Accounting Research* paper by Innes and Mitchell (1995) was based only on the non-financial companies in the 1994 survey. This paper supplements the results reported in that study with the responses of the financial companies, which were published separately (Innes and Mitchell, 1997a), some additional late responses to the survey, which missed the cut-off date for the original write-up, and a few previously unusable responses, which were salvaged by subsequent investigations.

³The non-response sheet returns indicated that 72 respondents (9.3%) did not consider ABC applicable to their organization. A further 30 respondents (3.9%) had a standard policy of non-response to questionnaires, while 21 respondents (2.7%) cited lack of time as the reason for non-response. The remaining 16 respondents (2.0%) had not responded due to significant corporate changes, e.g. the company in liquidation.

⁴While this paper is based on the total response to each of the surveys, some additional analysis, based only on those who responded to both surveys ($n = 64$), has also been undertaken. The results of this are reported in Innes *et al.* (forthcoming).

⁵Some further discussion of this issue is contained in Innes and Mitchell (1997b), which was a response

Table 1
Survey response analysis

	1999 survey		1994 survey	
	<i>n</i>	%	<i>n</i>	%
Usable responses	177	22.9	352	33.2
Unusable responses	32	4.1	27	2.5
Non-response sheet	139	17.9	165	15.6
Total	348	44.9	544	51.3

3. Results

Adoption rates

Table 2 indicates that both use of and interest in ABC has shown no increase over the past 5 years. Indeed, the proportion of ABC users and those currently considering its use have both fallen to 17.5% and 20.3% from 21.0% and 29.5%, respectively. In addition, a slightly higher proportion claimed to have rejected ABC after assessment in 1999, and there was also a higher percentage of companies that had not even considered its use. Statistical testing⁶ indicated no significant difference in (1) the aggregate rate of ABC adoption and (2) the distribution of those categorized as having at some time considered ABC, i.e. the first three categories in Table 2. However, the proportion of respondents that had given ABC no consideration to date is significantly larger in 1999 than in 1994. This apparent anomaly (it being logically impossible to 'un'-consider ABC) may be due to either (1) different companies responding to both surveys or (2) changes in the structure of companies, or in personnel, occurring between the surveys. But in either case, it is likely to have only a relatively minor limiting impact⁷ on the statistical analyses subsequently undertaken to compare the 1994 and 1999 survey results.

The pattern of adoption based on corporate sector and size is displayed in Table 3. A much higher rate of adoption is apparent in the financial sector, and this is statistically highly significant for both survey results. A fall in adoption rates is apparent in all three sectors (manufacturing, service, financial), but when tested, none of these sectoral reductions represented a statistically significant change in the adoption rate. However, a statistically significant size effect (i.e. larger companies are more likely to adopt ABC) was once again found in 1999.

The extent of the adoption of activity-based techniques varied from all applicable

to some supplementary research undertaken by Dugdale and Jones (1997) on the 1994 survey (Innes and Mitchell, 1995).

⁶Details of the tests employed, test statistics and corresponding *p*-values have been omitted from the text, but are available from the authors upon request.

⁷The reasons for this are as follows. Firstly, the chi-squared test of homogeneity of the proportions that had or had not considered adoption of ABC in the 1994 and 1999 surveys had a *p*-value of 0.013 (i.e. the anomaly is significant at 5%, but not massively so). Secondly, the anomaly is concentrated in one of three sectors (non-manufacturing). Thirdly, of the 64 companies that responded to both surveys, three claimed not to have considered ABC adoption in 1999, despite asserting that they had in fact done so in 1994. If this lapse in 'corporate memory' is taken into account, it would require only two fewer of the 1999 respondents (81 instead of 83) not to have considered ABC adoption for the anomaly to cease to be significant.

Table 2
ABC adoption status

	1999 survey		1994 survey	
	<i>n</i>	%	<i>n</i>	%
Currently using ABC	31	17.5	74	21.0
Currently considering ABC adoption	36	20.3	104	29.6
Rejected ABC after assessment	27	15.3	47	13.3
No consideration of ABC to date	83	46.9	127	36.1
Total	177	100.0	352	100.0

Table 3
The relationship between company sector and size and ABC adoption

	1999 survey			1994 survey		
	Total	ABC users		Total	ABC users	
	<i>n</i>	<i>n</i>	%	<i>n</i>	<i>n</i>	%
Sector						
Manufacturing	84	12	14.3	233	36	15.5
Non-manufacturing	66	8	12.1	82	18	22.0
Financial	27	11	40.7	37	20	54.0
Total	177	31	17.5	352	74	21.0
Size						
Smallest 50%	88	9	11.4	177	28	15.8
Largest 50%	89	22	32.8	175	46	26.3
Total	177	31	17.5	352	74	21.0

parts of the organization down to few applicable parts, and is summarized in Table 5, subdivided according to the stage of the adoption, i.e. whether it was in pilot form only, in parallel with another costing system or as the sole costing system.

In summary, adoption positions on ABC have not changed significantly over the period either in total or by sector. Firms in the financial sector and larger firms continue to have higher adoption rates.

Design and implementation issues

Table 4 reveals a continuity in those participating in the ABC system design, with in-house company accountants retaining a dominant involvement and consultants participating in almost half of the adoptions. In general, other disciplines had a reduced part to play in ABC design, but only in the case of marketing was a statistically significant fall in involvement apparent.

A variety of software was used by respondents, with a significant increase in the proportion (58%, $n = 18$) using specialized commercial packages (1994: 24%, $n = 18$). In terms of scale, the median system was designed to cost 40 (1994: 14) cost objects, was based on 52 (1994: 25) activities, which were concentrated into 22 (1994: 10) cost pools, and utilized 14 (1994: 10) activity cost drivers.

As might be expected from a later survey, the ABC adopters had a longer average of 5.4 years (1994: 3.7 years) experience of ABC implementation. However, as can be seen from Table 5, the proportion of adopters who used ABC in all or in most

Table 4
Participants in ABC system design

Participants	1999 survey		1994 survey	
	<i>n</i>	% of ABC users	<i>n</i>	% of ABC users
In-house accountants	28	90.3	66	89.2
Consultants	15	48.4	32	31.1
Systems	7	22.6	21	28.4
Production	5	16.1	22	29.7
Marketing	Nil	Nil	12	17.6

Table 5
*Areas of use and form of use of ABC system**

Areas of use of ABC	<i>n</i>	Form of use of ABC		
		In pilot testing only	In parallel with their previous costing system	As their sole costing system
1999 survey				
All applicable areas	7	1	1	5
Most applicable areas	9	1	2	6
Few areas	14	5	7	2
Total	30	7	10	13
1994 survey				
All applicable areas	18	4	3	11
Most applicable areas	26	7	11	8
Few areas	23	6	14	3
Total	67	17	28	22

* Some ABC users (1994: *n* = 7; 1999: *n* = 1) did not answer the questions relevant to this table.

applicable parts of the organization suffered a modest decline. Some further evidence of the tentativeness of ABC implementation was apparent (1) from its application being considered as a 'pilot testing' form by around one quarter of the adopters in both surveys, (2) from the reluctance to adopt it as the sole costing system by the majority in 1994 and 1999, and (3) from the fairly stable and substantial proportion of adopters who were using it in parallel with their previous costing system. Thus, 'committed' ABC users, i.e. those using it as their sole costing system in most or all applicable areas of the business, remained low in 1999 (6.2% of respondents, *n* = 11), but did exhibit a small increase on 1994 (5.4% of respondents, *n* = 19).

ABC system use

The adopters were questioned about their uses of the ABC system. As in 1994, all had multiple purposes for adoption (see Table 6). The distributions do not differ significantly.

Table 7 specifies the different purposes to which the ABC systems were being put to use and indicates respondents' views of the importance and success of each type of application. Although small changes are apparent in the popularity ranking, cost reduction, pricing, performance measurement/improvement and cost modelling remain the most common applications, with over 60% use by the adopters. In no case has there been any statistically significant change in the specific uses made of ABC and nor are

Table 6*Number of ABC system users*

Number of purposes	Number of users			
	1999 survey		1994 survey	
	<i>n</i>	%	<i>n</i>	%
7 to 9	10	32	14	19
4 to 6	15	48	45	61
1 to 3	6	20	15	20

there statistically significant changes in the importance of each individual application between surveys. The importance ratings have increased in 8 out of 10 cases, but this ratio is suggestive of a trend, rather than being statistically significant. In each survey, a number of respondents (5 in 1999 and 7 in 1994) reported the use of ABC for other applications, and rated these uses as very important. The manufacturing service and finance sectors were all represented in this group in each survey. The uses mentioned in 1999 were: statutory reporting, investment appraisal, product profitability NPV models, strategic development and operational staff awareness. The uses mentioned in 1994 were: for comparison at regulatory review periods, product profitability, product costing, transfer pricing, branch contribution, business process engineering and engineering work management.

Significant improvements in the success rating were ascribed to two purposes: stock valuation and output decisions. The success ratings have increased in 8 out of 9 cases, and this ratio is statistically significant. Moreover, the respondents' assessment rating of the overall success of their organizations' ABC systems exhibited a marginal increase from a 3.8 to a 3.9 rating. These results indicate that there is a broad, ongoing consistency in the pattern of ABC application, and that among users it has achieved an enhanced perception of success.

ABC success

(a) Prior research findings

The success of ABC systems has been a prominent topic of investigation in recent U.S.A. survey-based research studies. These have specifically focused on the factors that can be associated with successful ABC applications. Shields (1995) discovered that users' perceptions of ABC success were linked to six behavioural and organizational variables: top management support; integration with competitive strategy initiatives, such as TQM and JIT; performance evaluation and compensation; non-accounting ownership of the ABC project; training provided in designing, implementing and using ABC; and the provision of adequate resourcing. Technical characteristics of the system, such as the type of software adopted and the development of stand-alone systems, had no association with success. McGowan and Klammer's (1997) results confirmed that three of the factors identified by Shields (top management support, performance evaluation links, and adequacy of training and training resources) were significant 'explanators' of participants' perceptions of how effective ABC implementation had been. In addition, their research suggested that user involvement in the implementation, and their perceptions of the quality of information produced by the system, correlated positively with the degree of satisfaction they expressed with ABC implementation. Finally, Foster and Swenson (1997) found that the variables with the highest explanatory power

Table 7
ABC applications

Purpose	Adopters				Importance rating		Success rating	
	Number 1999	% 1999	Number 1994	% 1994	Average (SD)		Average (SD)	
					1999	1994	1999	1994
Cost reduction	28	90.3	66	89.2	4.4 (0.8)	4.5 (0.6)	4.0 (0.8)	3.8 (0.8)
Product/service pricing	25	80.6	51	68.9	4.4 (0.9)	4.3 (0.9)	4.1 (0.8)	3.8 (0.8)
Performance measurement/ improvement	23	74.2	45	60.8	4.3 (0.6)	4.3 (0.7)	3.9 (0.8)	3.7 (0.8)
Cost modelling	20	64.5	46	62.2	4.3 (0.6)	4.1 (0.8)	4.0 (0.8)	3.7 (1.1)
Budgeting	17	54.8	42	56.8	4.4 (1.07)	4.2 (0.7)	3.9 (1.0)	3.7 (0.9)
Customer profitability analysis	16	51.6	38	51.4	4.5 (1.00)	4.1 (1.1)	4.2 (0.8)	3.9 (0.7)
Output decisions	16	51.6	35	47.3	4.1 (0.9)	3.8 (1.2)	4.2 (0.8)	3.7 (0.8)
New product/ service design	13	41.9	26	35.1	4.2 (1.08)	3.8 (1.2)	3.8 (1.1)	3.8 (0.9)
Stock valuation	5	16.1	16	24.2	3.9 (1.8)	3.2 (1.5)	4.6 (0.5)	3.6 (1.0)
Other applications	5	16.1	7	9.5	5.0 (0.0)	4.8 (0.4)	N/A	N/A
Overall success							3.9 (0.8)	3.8 (0.7)

Note: Both importance and success rating were derived from 5-point scales, where 5 = very important/successful and 1 = very unimportant/unsuccessful.

with respect to ABC success were: integration with performance evaluation linked to compensation, links to quality initiatives, top management support, implementation training and resource adequacy. Thus, the U.S.A. research findings have evidenced a high degree of consistency in identifying the factors that apparently influence ABC success. Less research has been done on ABC success in the U.K. but Friedman and Lyne (1999) have used the case-study method to investigate, from a long-term perspective, the factors associated with its success and failure. Their results are largely supportive of the U.S.A. studies, and they conclude that ABC success is associated with the following factors: a clearly recognized need for it at the outset; broad-based support for it, including specifically that of top management; accountants working closely with other specialists with respect to ABC development and use; the embedding of ABC in organizational structure and practice; its adequate resourcing; and its synergistic links with other activities, such as TQM.

(b) The survey findings on the relationship between individual ABC users and the overall success of ABC

From the data gathered in both 1994 and 1999, it was possible to undertake an appraisal of ABC success and the comparative investigation of factors underlying ABC success in a U.K. context. Ratings of ABC success within the adopting companies remained high across the wide spectrum of applications. In addition, the overall success of ABC was rated on average at 3.9 (from a 5-point scale, where 5 is very successful and 1 is very unsuccessful) by the 1999 respondents (3.8 in 1994) and 25 of them (of the 28 who answered the question) considered that the investment made in ABC had been financially beneficial to their organizations. To explore the factors underlying these assessments, an examination was made of the association between the overall success rating awarded to ABC and the success ratings given to the various individual purposes for which ABC had been employed. Table 8 contains the results. The test statistic focuses on the linear-by-linear⁸ aspect of the association and its use is broadly equivalent to, but more appropriate than, use of the correlation coefficient for ordinal data (which is the type of data obtained from the Likert scales employed in these questions). Large values of the test statistic indicate a high degree of association, as do small *p*-values. The rank column indicates the relative strength of association for each individual purpose (from 1 = highest to 9 = lowest), and helps to identify changes in the pattern of association from the 1994 to the 1999 survey.

In the 1994 survey, respondents associated overall success very significantly (i.e. at the 1% level) with Budgeting, Cost Modelling, Cost Reduction and Cost Management, and Activity Performance Measurement and Improvement, and significantly (i.e. at the 5% level) with Customer Profitability, New Product or Service Design and Stock Valuation. In the 1999 survey, respondents associated overall success very significantly with New Product or Service Design, Customer Profitability Analysis, Cost Reduction and Cost Management, Cost Modelling, and Activity Performance Measurement and Improvement, and significantly with Product or Service Pricing and Product or Service Output Decisions. The high significance accorded to performance measurement and improvement in both surveys mirrors the importance attributed to this variable in the U.S.A. research. The majority of the purposes were therefore seen as significant aspects of overall success in both periods. The exceptions are: (1) Budgeting, which conspicuously declined in importance from a rank of 1 to a rank of 9, and from very significant to not statistically significant; (2) Stock Valuation, which decreased in importance from a rank of 6 to a rank of 8, and from statistically significant to not

⁸A more detailed explanation of the linear-by-linear aspect of the association is as follows. Analysis of the frequency counts of observations falling into each cross-classification category in a contingency table has moved on from the traditional Pearson statistic (Sum of Observed minus Expected squared over Expected). The more powerful General Log-linear Analysis procedure estimates maximum likelihood parameters of log-linear models using a Poisson or a multinomial distribution and measures the goodness of fit of a log-linear model using the deviance, which is related to the test statistic for the likelihood ratio test of the null hypothesis that there is no association between the factors that were used to produce the cross-classification. When the table is bigger than 2 rows by 2 columns, the deviance can be decomposed into components to test various other null hypotheses, in an analogous way to factorial analysis in the analysis of variance of normally distributed data. If the factor levels are ordered (e.g. Success Rating with levels: Very successful, Fairly successful, Neutral, Fairly unsuccessful, Very unsuccessful), then one can examine whether each such factor has a linear effect, i.e. whether the expected cell frequencies are log-linearly related to success rating. If there are two factors that have ordered levels, then the reduction in deviance due to fitting the two-factor interaction between their linear components is known as the Mantel-Haenszel chi-squared test statistic. Generally speaking, the significance value is more important than the actual value of the statistic.

Table 8*Overall and specific success rating association*

Purpose	1999 survey			1994 survey		
	Lin- by Lin	p-value	Rank	Lin- by Lin	p-value	Rank
Cost Reduction and Cost Management	10.45	0.001	3	8.87	0.003	3
Product or Service Pricing	5.77	0.016	6	0.36	0.546	9
Activity Performance Measurement and Improvement	8.15	0.004	5	6.94	0.008	4
Cost Modelling	10.01	0.002	4	9.65	0.002	2
Budgeting	0.08	0.782	9	12.83	0.000	1
Customer Profitability Analysis	13.00	0.000	2	4.15	0.042	7
Product or Service Output Decisions	5.27	0.022	7	1.63	0.202	8
New Product or Service Design	16.25	0.000	1	4.75	0.029	5
Stock Valuation	0.30	0.584	8	4.26	0.039	6

Table 9*Tests of between-subjects effects-dependent variable: overall success rating*

Source	1999 survey			1994 survey		
	Mean square	F-ratio	Sig.	Mean square	F-ratio	Sig.
Top management support	7.89	18.56	0.000	15.98	61.26	0.000
Consultants involved	0.07	0.17	0.683	0.13	0.50	0.484
In-house accountants involved	0.72	1.69	0.210	0.00	0.00	0.985
Production personnel involved	0.03	0.07	0.796	0.41	1.59	0.213
Systems personnel involved	0.19	0.45	0.511	0.02	0.06	0.806
In manufacturing sector	0.04	0.09	0.762	0.10	0.40	0.532
In finance sector	0.90	2.12	0.162	0.02	0.08	0.780
How long ABCM has been used	0.25	0.60	0.449	0.13	0.48	0.490
Error	0.43			0.26		

Note: The adjusted *r*-squared value was 0.445 for the 1999 survey and 0.501 for the 1994 survey.

significant; (3) Product or Service Pricing, which increased in importance from a rank of 9 to a rank of 6, and achieved statistical significance; and (4) Product or Service Output Decisions, which also increased in importance from a rank of 8 to a rank of 7, and reached statistical significance.

(c) The survey findings on top management support and the overall success ratings of ABC

The relationship between the overall success rating and various possible explanatory variables gathered in both surveys is tabulated in Table 9. These comprised the impact of top management support, consultants involved in the implementation, user involvement in the implementation, experience with ABC (as measured by the length of time it has

been in use) and the corporate sector of the respondent. The results of both the 1994 and 1999 survey show that the support of top management has a strong impact on explaining the success rating of ABC, and in this respect, the results are consistent with the U.S.A. findings reviewed above. None of the other dependent variables add significantly to it. Although membership of the finance sector does not have a significant effect, it does tend to increase the success rating in the 1999 survey. It is notable, and supportive of the findings of Shields (1995), that there is no evidence that the involvement of accountants in the design of the ABC system has a beneficial effect.

(d) The impact of quality variables on ABC success

The relationship between the overall success variable and the eight independent variables in Table 9, together with other variables representing the use of ABC, in measuring quality and its association with TQM programmes was also investigated using a stepwise regression. Only those respondents with experience of an ABC/quality link were included. For the 1999 survey, this resulted in an adjusted *r*-squared of 0.796 on 23 observations, which identified the significant regressors as (1) top management support, with *p*-value⁹ 0.000 000 083,¹⁰ (2) being in the manufacturing sector, with *p*-value 0.000 98, and (3) a quality measurement linked variable, with *p*-value 0.0204. Thus, top management support, and to a lesser extent being in the manufacturing sector, play highly significant parts in explaining the variation in overall success. The contribution due to the quality measurement variable is seen to be a modest one because the improvement in the adjusted *r*-squared value due to its presence is 0.042. The results for the 1994 survey had an adjusted *r*-squared of 0.699 on 38 observations, with the following significant regressors: (1) top management support, with *p*-value 0.000 000 0004, (2) the total quality management link variable, with *p*-value 0.028, and (3) production personnel being involved in the design of the system, with *p*-value 0.038. In this case, top management support also makes a highly significant contribution to explaining the variation in overall success. However, the contribution due to the quality measurement linked variable is an even more modest one because the improvement in adjusted *r*-squared value when it is introduced to the model is 0.031. Some support, albeit at a modest and not strictly statistically significant level, is therefore also evident for the Shields (1995), Foster and Swenson (1997), McGowan and Klammer (1997) and Friedman and Lyne (1999) findings that the success of ABC is associated with its use in quality management policies.

Non-adopters

The views of those respondents not currently using ABC were also explored. Non-users fell into the three categories listed below.

(i) Conscious decision to reject ABC (*n* = 27)

Over half of these respondents (*n* = 20, i.e. 74%) justified their explicit rejection of ABC on the basis of its perceived administrative and technical complexity and its need for new systems continuously generating activity data. Many claimed these

⁹The use of stepwise regression means that *p*-values quoted by the statistical package are not valid, because the variables identified as significant are the best of a large number of possible choices.

¹⁰The *p*-values quoted are, in one sense, conservative, since they are appropriate for a two-sided alternative, whereas it could be argued *a priori* that top management support and quality measurement are likely to have a beneficial effect on overall success.

factors would cause the costs of implementation and use to exceed any benefits subsequently derived from it. Others ($n = 7$) questioned the technical credibility of ABC, referring to it as another arbitrary allocation method and, in some cases, citing business characteristics (e.g. small product line variety, low overhead costs) as justifications. These views are similar in nature to those expressed in the 1994 survey, although there is a notable increase in the proportion who consider ABC implementation to require an unduly heavy resource commitment (from 28% in 1994 to 37% in 1999).

(ii) Still considering ABC ($n = 36$)

The assessment period of these firms averaged 2.01 years (1994: 1.58 years). The major benefits perceived by this grouping for ABC comprised improvement in product cost/profitability information ($n = 16$, 44%), better cost control information ($n = 11$, 31%), a knowledge of customer profitability ($n = 9$, 25%), superior decision-making information ($n = 14$, 11%) and improvements in performance measurement ($n = 3$, 8%). Their views on factors constraining ABC adoption were primarily based on the costly demands that ABC development would place on staff and other resources ($n = 13$, 36%), the prioritization of other competing initiatives ($n = 8$, 22%), the need to address difficult technical issues, such as the identification of cost drivers, and the need to provide accurate cost apportionment ($n = 7$, 19%), and behavioural problems, such as changing well-established practice and employee suspicion about the motives for using ABC ($n = 5$, 14%). These benefits and reservations were similar to those expressed in the 1994 survey.

(iii) Not considered ABC ($n = 83$)

Only 58 respondents answered this question. The most common reasons given for making no assessment of ABC were its lack of relevance/suitability to the respondents' business ($n = 22$, 38%), the existence of a cost/cost management system that operated satisfactorily ($n = 18$, 31%), the absence of the necessary expertise and resources to undertake an assessment ($n = 9$, 16%) and the lack of top management interest/support ($n = 4$, 7%). Only 11 (13%) of these respondents claimed to have plans to formally consider ABC for adoption in the future. These reasons were again similar in nature and scale to those given in the 1994 survey.

4. Conclusions

The rate of ABC adoption (see Table 2) and the pattern of ABC use by adopters (see Tables 5 and 6) have shown few statistically significant changes between 1994 and 1999. Adoption of ABC has also remained significantly higher among larger companies and among those from the finance sector. However, the proportions of ABC users and of those currently assessing it have fallen, the percentage rejecting it has risen slightly, while a statistically significant increase has been apparent in those currently giving no consideration to it. These results are indicative of no growth in the popularity of ABC, and are consistent with both a levelling off in interest in it and the adoption of it over this 5-year period.

The survey results on ABC users provide some conflicting evidence on their experiences. Although 17.5% ($n = 31$) of respondents claimed to be using ABC in 1999, almost half of them ($n = 14$) used it in only a few applicable parts of their organization, and several others ($n = 7$) had merely used it in pilot studies. When respondents falling in either or both of these categories are excluded, only 7.9% ($n = 14$) are left as reasonably extensive and committed users of ABC. This represents a reduction on the comparable 1994 figure of 9.7%. In addition, some of these users (1999: $n = 3$; 1994: $n = 14$) retained their original costing system and used ABC in parallel with it. These results reveal, in a majority of cases, a somewhat tentative ABC implementation, which is not suggestive of a strong positive experience with the technique. In contrast, it remains the case that virtually all of those making some use of ABC express very positive views on both its importance and success in general and specific applications within their organizations. Explanation of this apparent difference in user commitment to ABC is important in the assessment of ABC and the understanding of the nature and rate of its diffusion. It therefore merits further research.

Experience (even if tentative) of ABC does appear to influence perceptions of its worth. While users judged that the financial benefits outweighed its costs, the opposite concern was common among non-users. To those who had considered and rejected it, and those who were still considering it, the potential complexity and cost were major deterrents to its adoption. This confirms previous research (Cobb *et al.*, 1992). The more positive views of those experienced in ABC suggest that this barrier is one of expectation rather than reality. Similarly, it was only among the non-users of ABC that any doubts about its technical credibility were expressed. A number of those who had rejected ABC after consideration justified their decision on the arbitrariness remaining inherent in the product cost information generated by any system that involved allocation. In contrast, the decision-relevant concerns identified by Noreen (1991) and Bromwich and Hong (1999) were not prevalent among those using ABC for the decision-making purposes outlined in Table 7. Thus, both in respect to success and financial worth, and in their assessments of its technical reliability, users and non-users are distinguished in terms of their views on ABC. This is perhaps to be expected, as it may be consistent with a cognitively dissonant¹¹ reaction by users. Confirmation of this would require more investigation, particularly of the role played by respondents *vis-à-vis* their company's ABC system. Thus, the sources of and motives for the positive and negative perceptions of ABC, held respectively by users and non-users, do provide another opportunity for future research, which might help to explain the processes of ABC assessment and its culmination in acceptance or rejection. These surveys provide some points of reference for this, as they do reveal that cost reduction and product or service pricing have been the most popular activity-based applications in both 1994 and 1999. They also suggest that perceptions of overall ABC success are closely related to views held on the success of specific applications such as performance evaluation and improvement. In addition, success is significantly associated with top management

¹¹The concept of cognitive dissonance is one that has already been suggested as a basis for explaining accounting behaviour (Report of the Committee on the Behavioural Science Content of the Accounting Curriculum, 1971). It is based on the idea that participants in an activity will possess more positive views on it than non-participants. They will also exhibit some biased discrimination in their judgement of pertinent evidence, favouring positive material, while criticizing, ignoring or downplaying negative items. For example, smokers are less negative than non-smokers about its deleterious health effects and are less likely to accept the research findings that suggest it can damage health in a life-threatening way.

support for ABC and, to a lesser extent, with its use to support quality initiatives. These explanatory links confirm, in a U.K. context, several of the findings of previous U.S.A. studies.

Finally, on the question of whether ABC represents a fad or fashion (Bjornenak, 1997; Gosselin, 1997; Malmi, 1999), this survey evidence is inconclusive. It does show that some firms have now been committed to it for around a decade, and that the average experience of users exceeds 5 years. On the other hand, for many, ABC adoption appears to be, at best, experimental and the clear majority of respondents have not been attracted enough to adopt it. Rejection rates have also risen. Between 1987 and 1994 there was a considerable growth (from nil to over 20%) in ABC adoption in the U.K.'s largest companies. This rate of growth has not been maintained and, indeed, by 1999, some reduction in ABC use is apparent. Whether this marginal fall in adoption rates of ABC revealed in the 1999 survey represents a blip in an underlying growth trajectory (an indicator of where the long-term adoption rate will settle) or a precursor to a decline (which will show ABC as a short-lived, 'faddish' phenomenon) will require further research in the future to ascertain whether users remain loyal to ABC.

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References

- Armitage, H. M. and Nicholson, R., 1993. Activity-based costing: a survey of Canadian practice, *Issue Paper No. 3*, Society of Management Accountants of Canada.
- Ask, U. and Ax, C., 1992. Trends in the Development of Product Costing Practices and Techniques—A Survey of Swedish Manufacturing Industry. Paper presented at the European Accounting Association Conference, Madrid, 22–24 April.
- Bjornenak, T., 1997. Diffusion and accounting: the case of ABC in Norway, *Management Accounting Research*, **8**, 3–17.
- Bjornenak, T. and Mitchell, F., 1999. *A Study of the Development of the Activity-based Costing Journal Literature 1987–1998*, Working Paper, University of Edinburgh.
- Bromwich, M. and Hong, C., 1999. Activity-based costing systems and incremental costs, *Management Accounting Research*, **10**, 39–60.
- Cobb, I., Innes, J. and Mitchell, F., 1992. *Activity-Based Costing—Problems in Practice*, London, CIMA.
- Cooper, R., 1988. The rise of activity-based costing—part two: when do I need an activity-based costing system? *Journal of Cost Management*, Summer, 45–53.
- Cooper, R. and Kaplan, R. S., 1992. Activity-based systems: measuring the costs of resource usage, *Accounting Horizons*, September, 1–13.
- Cooper, R. and Kaplan, R. S., 1991. Profit priorities from activity-based costing, *Harvard Business Review*, May–June, 130–135.
- Cooper, R. and Kaplan, R. S., 1998. *Cost and Effect*, Boston, Harvard Business School Press.
- Dugdale, D. and Jones, C., 1997. How many companies use ABC for stock valuation? A comment on Innes and Mitchell's questionnaire findings, *Management Accounting Research*, **8**, 233–240.

- Foster, G. and Swenson, D. G., 1997. Measuring the success of activity-based cost management and its determinants, *Management Accounting Research*, **9**, 109–142.
- Friedman, A. L. and Lyne, S. R., 1999. *Success and Failure of Activity-based Techniques: A Long Term Perspective*, London, Chartered Institute of Management Accountants.
- Gosselin, M., 1997. Bandwagon Theories: Some Explanations for the Activity Based Costing Paradox. Paper presented at the EIASM Workshop on Manufacturing Accounting, Edinburgh, 5–7 June.
- Innes, J and Mitchell, F., 1995. A survey of activity-based costing in the U.K.'s largest companies, *Management Accounting Research*, **6**, 137–153.
- Innes, J. and Mitchell, F., 1997a. The application of activity-based costing in the United Kingdom's largest financial institution, *The Service Industries Journal*, **17(1)**, 190–203.
- Innes, J. and Mitchell, F., 1997b. Survey research on activity-based costing: a reply to Dugdale and Jones, *Management Accounting Research*, **8**, 241–249.
- Innes, J., Mitchell, F. and Sinclair, D., (forthcoming). Activity based costing—is it rising or falling in popularity? *Management Accounting*.
- Kaplan, R. S., 1992. In defence of activity-based cost management, *Management Accounting (US)*, Nov., 58–63.
- Lukka, K., 1994. Cost Accounting Practice in Finland. Paper presented at the European Accounting Conference, Venice, 6–8 April.
- Malmi, T., 1997. Towards explaining activity-based costing failure: accounting and control, in a decentralised organisation, *Management Accounting Research*, **8**, 459–480.
- Malmi, T., 1999. Activity-based costing diffusion across organizations: an exploratory empirical analysis of finnish, *Accounting Organisations and Society*, **24**, November, 649–672.
- McGowan, A. S. and Klammer, T. P., 1997. Satisfaction with activity-based costing cost management implementation, *Management Accounting Research*, **9**, 217–237.
- Noreen, E., 1991. Conditions under which activity-based costing systems provide relevant costs, *Journal of Management Accounting Research*, **3**, 159–168.
- Report of the Committee on the Behavioural Science Content of the Accounting Curriculum, 1971. *The Accounting Review*, **XLVI (Supplement)**.
- Shields, M., 1995. An empirical analysis of firms' implementation experiences with activity-based costing, *Journal of Management Accounting Research*, **9**, 148–166.