User Perceptions Of An Application Of Activity-Based Costing

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INTRODUCTION

It appears from the literature that the adoption of Activity-Based Costing methods is a growing trend in management accounting, although this has yet to be assessed empirically [Spicer 1992:1]. Any change depends on two prime factors - feasibility and motivation - and it must be admitted that computerisation has made the implementation and utilisation of a more complex costing method feasible. Many firms are being forced to reassess their cost accounting system in response to a recognition that the data being generated cannot assist with many of the analyses and decisions to be made [Cooper and Kaplan 1991b:267].

However useful traditional costing methods may or may not have been in the past it is evident that the economic, technical and business environment within which a costing system must operate has changed dramatically over recent years [Eiler, Goletz and Keegan 1982:133; Chenhall 1991].

Traditional costing methods are best suited to "situations with secure markets, large-scale production with unchanging specifications, and little pressure for a highly flexible response to changing market demands" [Chenhall, 1991:2]. In the absence of any need for flexibility, its simplicity and the inexpensive collection of data make traditional costing methods ideal but this setting for a management accounting system, of which the costing system is a part, is becoming less common.

Activity-Based Costing (ABC) is an alternative to traditional costing methods that is being widely advocated [eg Berliner and Brimson 1988; Cooper 1988a, 1988b, 1989a, 1989b; Cooper and Kaplan 1988, 1991a, 1991b; Clemens 1991; Cummings 1990, 1991a, 1991b; Drury 1990b; Harr 1990; Johnson and Kaplan 1987; Kaplan 1988; O'Guin 1990; Raffish 1991; Sharman 1990; Steimer 1990]. ABC is a means of tracing costs by the use of activity accounting. "Activity accounting is the collection of financial and operational performance information about significant activities of the business" [Berliner and Brimson 1988:6]. The costs may be traced to functions, positions of responsibility, divisions, products, etc by measuring the level of each activity that may be attributed to them. Cooper [1988a:45] claims that "it represents an evolutionary extension of the two-stage procedure that underlies most modern cost systems".

In addition to the traceability of costs to many diverse objects, among the many uses of its output is included the utilization, for control purposes, of the non-financial measures generated for ABC applications. Furthermore, "Under the cost management philosophy, accounting systems serve as catalysts for organizational change." [Frank et al 1989:22]. The adoption of a new costing method may therefore have far-reaching consequences.

One of the problems of teaching traditional management accounting methods has been the criticism that these methods were either not in widespread use or that those in use often produce data that is either irrelevant, unreliable or both (see Mills 1988; Drury 1990a, 1990b; Kaplan 1983; Berliner and Brimson 1988; Business editorial in The Economist 1990). Could the same be said of ABC?

Scapens [1988] states that "it is probably fair to conclude that in general terms current management accounting research is concerned with describing, explaining and understanding the nature of management accounting practice" [p10]. He also refers to a survey of Otley's, showing that studies on the interrelationship between organisation theory and management accounting appear to share a common goal, "namely, the
explanation of management accounting practice", and that "much of the work was 'armchair' theorising" [p5].

In keeping with this overview of management accounting research, recent research into Activity-Based Costing methods has focussed on various issues including: the difference in the costings obtained from ABC and traditional costing methods; the design of and process of change to an ABC system; and the use of ABC information in strategic management. Spicer provides a review of the relevant studies [1991:17-26]. In summary, he states: "Case study research on activity accounting systems has focused on describing and exploring how and why firms have experimented with and/or implemented these systems." [p18].

In the light of this existing body of research the purpose of this study is to examine overall the extent to which preparers and end-users of information from ABC (collectively referred to as users of ABC) are satisfied with this technique and the factors forming the basis of that belief. There are a number of claims with regard to ABC but there is little evidence regarding the beliefs of users, in particular the degree of satisfaction. "A guiding criterion for retaining existing techniques and practices (and indeed installing any new ones) was that managers would understand and use them." [Bright, Davies, Downes, Sweeting 1990:21]. Moreover, an illusion of control "results from managers believing that their assumptions concerning measurability, communication, and compliance are actually in use throughout an organization." [Dermer and Lucas 1986:471] (emphasis added).

Much research is based on the importance and nature of feedback (eg those studies covered in the review by Luckett and Eggleton 1991). Feedback is more than the provision of data, it includes the reading and cognition of the data.

Regardless of the academic arguments with regard to ABC, will it have the support of the people who directly influence its utilization? Is it just an alternative costing method or is it perceived as an improvement? Even if it is preferred, is it perceived as lacking in any way?

In addition to answering the questions posed above an attempt will be made to establish the influences on these perceptions, particular attention being paid to:

- whether the improvements sought were obtained;
- whether any new problems have been encountered;
- whether 5 identified deficiencies of traditional methods are eliminated or improved upon;
- whether objectives claimed for an ABC approach were achieved;
- whether the introduction of this information complemented other management tools; and
- whether users have greater or less confidence in the validity of decisions made using ABC data or previously generated data.

It is also proposed to evaluate the general attitude of the subjects toward this 'new' accounting methodology using attitude scaling questions.

Three recent studies that have a similar focus are also examined for consistency in findings.

RELEVANT PRIOR RESEARCH

Bailey wrote an article [1991] based on a consultancy project in which he studied the implementation of ABC in ten UK companies. A focus of the research was whether the firms had "been able to identify and utilise the benefits which, according to aficionados of the project, should emanate from such systems" [p30].
In the article it is acknowledged that results were affected by the sample size which was "restricted by the lack of availability of current users" [p30]. The results would also be limited by the research methodology: "The project was built on structured interviews with ten companies". Structured interviews limit the issues that may be pursued as anything new that is raised in the interview is outside the scope of the predetermined research instrument. The expression "interviews with ten companies" is also misleading. In each company one interviewee represented the view of "the company" although some of the issues are not matters of fact but of individual perception. Despite these limitations to the weight that may be given to the results the fact that the stated results complement the findings of the research of this paper must be of interest.

The results of a survey funded by CIMA are reported in a recent article by Innes and Mitchell [1991]. As with Bailey's research, the respondents 'represent' an organisation. All are management accountants (CIMA members). 720 questionnaires were sent out and 187 usable replies were received, of which only 11 "indicated that their organisations had decided to implement ABC. Only two of these claimed that full systems of ABC had been implemented, the other nine having only partial implementation" [p28]. "Two clear areas of perceived benefit stand out from the responses. First, the generation of better product cost information ... and, second, the provision of information which would improve cost control" [p29].

Unfortunately, although these respondents' responses "were universally positive", this article is more important for what it admits it cannot reveal than for what it can: "the negative response of organisations to ABC ... is an aspect worthy of closer study, as questionnaire-based research is limited in the depth of response and detail which can be obtained." This is the conclusion after various statements such as "unfortunately no elaboration ... was given" and "... without explaining why this was so" [p30]. Such statements demonstrate the problem with this research method for this kind of research.

The third of these recent investigations of ABC utilization is by Bhimani and Pigott (1992). Its aim is to study the possible behavioural and organisational consequencies of implementing ABC. In a firm that has adopted ABC the behavioural and organisational consequencies of the implementation are assessed with particular attention to unintended outcomes. Data collection was from documentation and three kinds of interview: seven 45 minute unstructured interviews with non-accounting staff at the manufacturing site; three meetings with the Chief Accountant and the Factory Accountant lasting a total of 6 hours; and interviews of the two external consultants. It is relevant that one of the co-authors is the company's Chief Accountant so the degree of independent analysis may be questioned. The later provision of additional information, as desired, could also be assumed.

The relevant findings of these studies are compared with the findings of this study below. Their results did not influence the conduct, findings or analysis of this project as the articles were not viewed until the analysis was substantially complete.

**BRIEF SUMMARY OF RESULTS**

By means of semi-structured interviews in a division of a large manufacturing company user support for ABC and influences on user perceptions were examined. It was found that all of the users were supportive of the introduction and future development of ABC related information. The anticipated resistance to change was overestimated. Two respondents do not accept the accuracy of the figures derived from ABC although they support the performance of the exercises and they, like the other respondents, expect to receive improved information in the future due to the recognised potential of ABC. In general, greater use of ABC applications is sought,
there is a heightened awareness among non-accounting people of costs, more respect for the accountants' role and an improvement in communication. Most respondents have greater confidence in decisions that are based on ABC information although some reservations about past decisions were voiced and some respondents consider other information more appropriate for certain decisions.

The influences on user perceptions of ABC appear to be based on whether the information is more useful and more reliable than information that was generated previously. For end-users, perceptions of usefulness are based on the visual presentation of the information, relevance to the decisions being made and understandability. In most cases these perceptions were positive. Some end-users are content to be told by 'the experts' that the information is reliable, some are satisfied from the instruction given and reading the reports that it is reliable, but some will seek much more detail with regard to the derivation of the costings before reservations are removed, especially if the costings do not agree with preconceptions.

Perceptions of the preparers of information, ie the data gatherers and assimilators, are also influenced by the user-friendliness of the model, the user-friendliness of the software, and the acceptability of the more tenuous assumptions made in constructing the model, given the individual's desired degree of accuracy.

There appears to be a difference between the perceptions of marketing/sales personnel and accounting/production personnel but the question is raised whether this is due to function, participation in the implementation process or access to cost driver and activity cost data.

All relevant findings in the identified related studies are consistent with the results of this study and there is also confirmation of some other published statements.

RESEARCH METHOD

Since the call for more field and case studies in the early 1980's (eg Hopwood 1983 and Kaplan 1983 and 1986b) a number of researchers have taken up the challenge. It is becoming more recognised that reporting for internal decision-making and control requires an understanding of the environment in which the decisions are being made and control is being exercised, an understanding that comes from "visiting firms and actually learning something about contemporary manufacturing operations and practices." [Kaplan 1983:702]. The results of survey studies of accounting practice have lead Scapens [1988:9] to conclude that "it was soon realised that they can give only a very superficial view of management accounting practice and that more intensive fieldwork and/or case studies are required."

For the question being explored in this work the case study approach was considered the appropriate research method and the methodology was to collect the primary data in face-to-face interviews. Personal interview technique using open-ended semi-structured questions was used to obtain data. The advantage of this approach is that, while time-consuming, it enables probing on specific responses [Emory 1985: 160]. A framework of questions was designed for use in the interviews as openers to further enquiry depending on the response obtained. The questions were structured around the factors (above) that were expected to affect user support for ABC.

FACTORS LIKELY TO AFFECT SUPPORT FOR ABC

The author initially identified qualities that would be sought in the output of an ideal costing system for the purpose of constructing a framework for assessing a particular ABC system. Ideal in this sense is taken to be a firm specific notion. It is believed that these criteria by which a system may be judged in academic research are also criteria that would affect user perceptions of the information the system produces:
1 **Elimination of perceived problems with existing system.**

For a firm to consider undertaking an ABC exercise or implementing an ABC system it is inferred that ABC information will overcome at least some of the limitations, or fill a void, of the existing system. The perceived success or otherwise of ABC will be influenced by the degree to which it meets these expectations. The official rationale for resorting to ABC may not correspond with the deficiencies identified by the individuals whose perceptions are being studied and it is observed improvement with regard to individually identified inadequacies that will affect the perceptions of that individual.

2 **Extent of new problems with application of ABC.**

Problems accompanying the introduction of ABC information will affect the acceptability of the new information to the individuals as well as influencing the firm’s continuing commitment to a full ABC system. As in aspect 1, above, the perception of the individual must be distinguished from the view of the firm.

3 **Extent to which ABC meets its claimed objectives.**

Support for ABC may be conditional on such systems meeting the claimed advantages of ABC for two reasons. Firstly, for each advantage claimed there is a characteristic that has been identified as necessarily present in an ideal costing approach. Whether consciously or not the absence of the characteristic may influence the user’s perception of the approach and the information it produces. Secondly, if the claim of the advantage is known to the user an expectation has been created and the absence of the characteristic will influence perceptions of the application.

Berliner and Brimson [1988] identify the following eight advantages of ABC:

- **ABC:** adequately traces costs;
- isolates the costs of unnecessary activities;
- adequately quantifies the importance of: quality, throughput, flexibility;
- provides adequate cost/benefit data with respect to new investments/divestments;
- monitors the outcome of such decisions;
- encourages continual improvement in eliminating non-value adding costs;
- facilitates the use of externally driven targets (e.g. target costs);
- improves traceability of costs to management reporting objectives.

In addition to the qualities that Berliner and Brimson imply should be possessed by good management accounting information the author added one regarding the improvement of efficiency with respect to value adding activities. This aspect appears to be overlooked in much work on ABC which focus almost entirely on elimination or minimization of non-value adding activities, but ABC needs to make its contribution to total efficiency not partial efficiency. A justification for this lack of attention to the efficiency of value adding activities has been the argument that when they are not efficient they become non-value adding activities, or, that that inefficient part of it is non-value adding! However, attention is drawn to the cost of certain activities by **classifying** them as non-value adding. The classification of an activity as value adding is not made conditional on the level of performance and cannot be adjusted for inefficiencies to which attention is not drawn.

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1 Argument related by, but not supported by, Robin Cooper, in conversation.
4 Absence of commonly identified deficiencies of traditional methods.

"Unless the bean-counters join the manufacturing revolution, traditional cost accounting will have little place in the factory of the future." [Business Editorial, The Economist, 1990:67].

For some uses the information generated by traditional costing methods has been found to be irrelevant, for others it has been identified as unreliable and for some purposes it has been criticised as having both of these deficiencies. Whether or not these criticisms are universally valid, and whether or not the firm has been using traditional costing methods, they do provide guidance in identifying the qualities sought in an ideal costing system. It is suggested that the five most common criticisms of traditional methods are deficiencies with respect to quality management, inventory management, manufacturing management, appropriate cost allocations and timeliness (eg see Johnson and Kaplan 1987; Hendricks 1988; Green, Amenkhienan and Johnson 1991; Kaplan 1983; Schwarzbach 1985; and Steedle 1988).

5 The relationship of the management accounting information with other management tools.

For premier efficacy the information produced by management accounting methods must complement the various approaches used to devise and implement management strategy. Acceptance of new management accounting methods is likely to be affected by the timing of their introduction relative to other innovations and the relationship between this 'new accounting technology' and any other techniques in use.

One such technique is the just-in-time technique which is widely used by large US companies [Green et al 1991] but "cost accounting systems that made sense years ago when they were established are now counterproductive in a just-in-time environment in today's automated factories" [p50].

The other two dominant techniques identified by Schonberger [1986] as necessary for world class manufacturing are Total Quality Control and Total Preventive Maintenance. TQC requires feedback on items such as the cost of non-conformance, reliability and durability [p126]. Similarly TPM requires information appropriate for cost-benefit analyses. Schonberger argues that in the past improvements involved trade-off decisions, the view being that not all aspects requiring continuous improvement could be improved in unison:

"A few years ago we didn't even know the factors of manufacturing that ought to improve. There was little agreement on what excellence in manufacturing is, because we thought in terms of trade-offs. ... There is now good reason to believe that those goals may be pursued in concert, that they are not in opposition." [p2].

Management accounting information should be able to clarify this belief and assist in the pursuit. As Chenhall claims [1991], in the 1990's the "development of manufacturing strategies ... will be a major determinant of success" and "an important part of developing competitive manufacturing strategies is management accounting systems that assist managers in planning by providing information on the costs of alternative strategies. In addition, systems should generate control information to evaluate the effectiveness and efficiency of action plans to achieve strategies." He concludes that "as firms develop competitive manufacturing strategies it will be critical that the costing procedures and the process of performance evaluation become supportive of the manufacturing objectives."
"Accounting systems must serve the objectives of the firm. We do not have a universal accounting model that works well in all circumstances. While the choice of appropriate measures, aggregations, and cost allocations is an art, it is an art that must be practiced in conjunction with the strategic goals of the firm and in close communication with the rapid changes occurring in the firm's manufacturing processes." [Kaplan 1986:198].

With the introduction of new management techniques it is imperative for the standing of the management accountant that management accounting information complement these techniques. The alternative is that these new methods will fail, not necessarily due to an error in the intrinsic philosophy of the approach, or that the required information will be obtained from sources other than the management accountant. The usefulness of the management accounting information in this context is therefore likely to be influential in the users perceptions of the management accounting technique used.

6 Decision makers confidence in the outcome of using ABC data.

The overriding evidence of a user's acceptance of management accounting information produced, and support for the method used to generate the information, will be the user's confidence that it provides a reliable indication of the alternative outcomes when making decisions. Using the information with confidence will be dependent on the user's experience and judgement of the quality of past decisions as shown by the outcomes of those decisions. As well as being a measure of acceptance of and support for the information, investigation of this aspect also serves to ascertain whether observation of the outcomes of past decisions that were based on information from this source may have influenced the users perceptions of the information and the method used in its derivation.

USE OF THE INTERVIEW FRAMEWORK

A framework for the interviews was constructed around the factors detailed above. Evidence was collected about these factors by using predetermined 'opening' questions that allowed further probing when the response suggested a 'promising' line of enquiry. It is stressed that these points were incorporated into the questionnaire that was used as a guide in the interviews. Unfortunately a time constraint of two hours was imposed on the interviews and some interesting conversations were curtailed in favour of obtaining a balanced interview that touched on all factors to be covered.

Scaling was used for some questions and illustrative examples were often requested. The style of the questions may be ascertained from the following examples:

3a. Why was there a need for the new information?

c. Does the information being produced now eliminate these problems?

no totally
1 2 3 4 5 6 7

4a. Have you encountered any new problems?

c. Is there any way the new information could be improved?

5a. When making decisions how confident are you that the new information provides a reliable indication of the alternative outcomes?

not at all very
1 2 3 4 5 6 7

7c. Has there been an impact on inventory control?
Towards the end of the interview the respondent was invited to add anything about what had happened and their feelings during the carrying out of the exercises.

**SELECTION OF RESEARCH SITE**

It is claimed that some firms are more likely to benefit from the use of ABC methods than others (Cooper 1988b; Cummings 1991b). While future studies may confirm these claims the present study focused on a firm that would be expected to benefit most from ABC methods in order to control for negative results due to conducting the study at a site inappropriate for ABC applications.

Ideally traditional costing methods are used in an environment of stable markets and standard products that are made in bulk over lengthy periods. A requirement of flexibility in any form diminishes the relevance and reliability of information produced by traditional costing techniques. However, in the absence of any need for flexibility, their simplicity and the inexpensive collection of data make traditional costing methods preferable as minimal benefits from sophisticated costing methods would not match the higher cost.

Activity-Based Costing provides the sophistication required to accurately cost different products made by dissimilar processes, supply useful information for operating in highly competitive markets and reliably cope with change. Referring to a series of articles by Cooper (1988a, 1988b, 1989a, 1989b) Spicer (1991:22) summarises some of Cooper's findings as follows:

"...Cooper [explores] the conditions under which the benefits of an activity-based costing system can be expected to exceed the costs of implementation and operation. Firms manufacturing a diverse mix of products, operating under conditions of intense competitive pressure, with low measurement costs are expected to have a positive benefit-cost ratio."

Consultants at Arthur Andersen and Co. consider the following factors to be indicative of ABC being appropriate for a particular firm:

- relatively low direct cost to total cost ratio;
- relatively high (fixed cost + information cost) to total cost ratio;
- diverse batch sizes, physical sizes, complexity and material content.

Further relevant characteristics can be found in Appendix 1. The presence of any one of them may indicate suitability, the final assessment incorporating consideration of the trends of the items and being influenced by other, as yet, undocumented indicators.

Recognising the need to select a site with the above characteristics, this case study is of a division in a large diversified company, the division is in two distinct manufacturing businesses, supplies 14 markets, only manufactures customised products, produces by use of dissimilar processing and must cope with competitive market-driven pricing. "A perfect candidate for ABC" (Gus Cummings, Arthur Andersen consultant). This view is also held by the consultants to the research site, Price Waterhouse Urwick, who provided the following statement:

"[This] business is an ideal candidate for an Activity Based Costing (ABC) project. Generally the more complex an organisation the greater the benefits obtained from ABC."

[The research site] is characterised by a large product range, a number of different processes and act as suppliers to a broad range of industry groups.
The ABC project was therefore able to provide the organisation with sufficient information to address their product and customer profitability needs. It also provided a clear focus for the activities thereby complementing their TQM programme. The project may be considered to be more of an Activity Based Management (ABM) project than just an ABC project.

THE RESEARCH SITE

A company with appropriate characteristics was identified and approached to secure co-operation on the proposed research. Due to a commitment to confidentiality it is not possible to provide information, such as products or markets, that could be used to identify this firm2. Given the focus of the research, such specifics are not essential. However, certain environmental and historical detail is necessary to provide a context for the responses presented with the results.

Background information about the company, its operations and history was obtained during briefings with the originators of the notion to utilise activity-based costing methods in the division and during plant tours before the interviews were conducted.

The division studied is within a large diversified multi-national corporation. The division is in three businesses, two of them manufacturing businesses. There were four manufacturing plants being run on three sites in three different states of Australia. Another division in the company supplies the raw material input for certain plants in this division. The plants which receive the basic raw material from the other division sell their output to other firms and also provide the raw material input for the other plants in this division, which then sell outside the firm. These latter plants had not really made a profit since 1956 but were able to report a profit internally by manipulating the reported transfer price.

The whole division improved on its budgeted profit in 1987/88 by a multiple of 10 due to a world shortage of their product. The following year the division's major overseas customer, which had consumed 25% of the world trade in these markets, stopped buying. At the same time costs went up significantly, due to a rise in the price of natural resources, and the Australian dollar strengthened. There was an oversupply of the products all over the world and domestic customers who had previously been on allocation from the division were committed on contract orders with overseas suppliers. These contracted orders prevented domestic suppliers from expanding their domestic market and in the space of two or three years foreign supply in the market went from 20% to 60%.

Since early 1990 the selling price of products has been predominantly market determined. All plants work well below capacity and orders may be run off the production line well in advance of delivery. Delivery schedules seem to be dictated by the customer's convenience and may be by progressive partial delivery. It is clearly a buyer's market. Previously the selling price was largely influenced by a cost plus margin approach and performance appraisal based on the margin with a benchmark set at 30%. The 30% margin could thus be assured and the 'assessment' of performance was a misnomer and a pointless exercise. Pressure on performance and appreciation of the lack of relevant data came from the downturn in the market.

A variable costing approach was in use and an ad hoc "system" was said to be used for budgeting. A problem that was experienced and said to have led to recourse to an ABC exercise was in the calculation and use of a sales margin. Referred to as the

2 Industry classification codes are SIC 30 and ASIC 27.
gross margin the figure is the contribution margin obtained from net sales less variable (marginal) costs, these costs being; raw material, freight out, power, and process labour.

A costing system did not really exist. The accounting system was designed specifically and exclusively for financial reporting purposes - as simple as would be acceptable under accounting standard AAS2, although totally useless for management control purposes due to extensive aggregations and meaningless allocations. At three of the four plants products were grouped according to the type of raw material input. All costs classified as variable that were incurred in processing each input (two types were used throughout) at each of these plants were aggregated and allocated according to saleable tonnes produced - no distinction was made between different product lines.

Management anticipation that the sales margin approach would give the same result as the financial accounting figures led to disappointment. The management accounting calculation of profit used standards and a marginal approach, the published income statement used actual costs and a gross profit approach. The profit figures bore no resemblance to one another and the calculation of variances did not fully satisfy the need for analysis. Reconciliation was hampered by lack of information. Plant-wide fixed costs were collected on a monthly basis and allocated to product lines on the basis of saleable tonnes produced. The denominator used was total saleable production, distinction was not even made for different types of input at this level - hence the appraisal of performance based on contribution. Identification of profitable and unprofitable lines was impossible.

It was observed that a proportion of a certain product was sold off at a particular cost and the proportion that passed through a further process incurring high maintenance costs was costed at the same amount. There was a recognised need "to disaggregate products, divide the plants into areas and reassess the classification of variable and non-variable costs".

The response to these conditions was a decision to trial ABC on one plant. A 'one-off' ABC exercise was conducted on one plant in August/September 1990. In one short meeting in October the benefits of the exercise were demonstrated to the divisional general manager whose immediate response was to authorise the repeat of the exercise for the other plants during November 1990 - January 1991. For the purpose of the exercises direct labour was redefined as a fixed or semi-variable cost rather than variable; costs were identified as direct material, direct labour, variable overhead, fixed overhead, and semi-variable overhead; activities were identified as value adding and non-value adding activities; and cost drivers recognised input and throughput - eg raw material input, direct labour hours worked on a particular machine, set up time for indirect labour - rather than allocating on the basis of output. 100 product groups were costed individually through the system.

There was identification of excess costs, such as overmanning in some areas, duplicated facilities and material brought from stores to intermediate stores. It is claimed that most such problems had already been identified and that the figures from the ABC exercise merely confirmed the previously held belief that certain action should be taken whilst also putting a dollar amount to these extravagances. The degree to which the ABC information had any influence over major decisions made after the ABC exercise is unclear.

Some products were known to have "large quality problems". The ABC exercise revealed the cost of the problem, costs such as those incurred following up complaints, dealing with returns, giving credits, generating refund cheques. Consequently, on the factory floor there was technical effort directed at addressing the quality problem - it was described as "almost a time-and-motion study". Previously the cost of poor quality had not been a product cost, now it became part of the product cost and also
facilitated a cost-benefit exercise with regard to the quality control activities undertaken. Instead of looking at new products or new lines time was spent on correcting or improving existing ones. In some cases the decision was made to get out of that particular product line altogether. Given this information the responses on the matter of impact on quality were surprising and somewhat confusing.

The ABC exercise produced information that was used in the restructure of the division - staff cuts, amalgamations etc. The restructure meant that the ABC model used had to be recast due to changed circumstances. Originally the plan was to implement an ABC system to run in parallel with the existing system but instead the existing system is being slowly modified to incorporate ABC principles. A complete exercise for the whole restructured division (now three plants) was conducted in May 1991. Another 'snapshot' exercise was carried out in July/August 1991 to be used in setting the 1992 budget. The interviews were conducted during December 1991 and January 1992. Consequently, the responses obtained are based on the limited experience of ABC that comes from one, two or three exercises carried out for budget purposes and the modifications they have experienced to the existing system.

The most dramatic changes seen after the initial ABC exercises were:
- the reduction of product groups from 100 to 70;
- the reduction of people from 350 to 250; and,
- the reduction of plants from 4 to 3.

THE RESPONDENTS

The division now operates in 3 businesses and 14 markets. Teams have recently been formed for each market with five people on each team, one each representing marketing, sales, accounting, production and technical aspects. (This structure still stands despite the even more recent amalgamation of the marketing and sales functional groups).

In the selection of people to interview it was requested that the sample include: at least two from each of these functions (above); preparers of information (processors of the data) as well as end users of the information; and people who were aware of the initial ABC exercise at the time, and hence have greater experience with ABC, as well as those introduced to it after that exercise had been completed (very few knew about the exercise at the time). Due to time constraints on the personnel interviewed the selection of 17 people that met these criteria was reduced to 9; a combination of sales/marketing, accounting, production, higher executive, preparers, end-users, early users and later introduced was achieved.

TABLE 1

Characteristics of Respondents

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>RESPONDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divisional General Manager</td>
<td>X</td>
</tr>
<tr>
<td>Accountant</td>
<td>X</td>
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<tr>
<td>Marketing</td>
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<td>Sales</td>
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<td>User</td>
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<td>Introduced early</td>
<td>X</td>
</tr>
<tr>
<td>Introduced later</td>
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* Some early involvement.
RESULTS

Conclusions to be drawn from the results and their analysis fall into five categories; the level of acceptance of and support for the ABC application, the influence of predetermined factors on user perceptions of ABC, other possible influences on those perceptions as revealed in the interviews, the degree to which the results obtained support those from other relevant research, and the appropriateness of the interview framework used. These categories will therefore be used in the presentation of the results and discussion of the researchers observations.

Presentation of the responses regarding the factors expected to affect support for ABC requires some prior explanation. Some respondents found it necessary to give more than one response to a few lines of questioning. For example, because of perceptions of "teething troubles" some respondents chose to give one response with regard to their experience of this application of ABC and another with regard to their expectations of future applications. In the presentation of the scaled responses in Table 2 these are classified as based on experience (exp) and based on theory (theory) respectively. Scaled responses were sought on a few other questions and they are presented in Appendix 2.

The interviews of two respondents at a particular plant also required a dual approach because they had devised their own means of obtaining relevant information for plant related decisions. Unknowingly they were applying activity accounting principles. Their comparison with existing available information is therefore not consistent with that of the other respondents and two comparisons were requested, incorporating the information generated by the divisional system.

Other reasons for multiple answers include different attitudes according to plant and/or raw material input (and hence processing).

Information about specific responses is indented and referenced with the respondent number from the respondent profile, Table 1. Related responses may therefore be associated both, with each other, and with the relevant profile.

SUPPORT FOR THE ABC APPLICATION

All of the respondents were supportive of the introduction and future development of ABC related information. The anticipated resistance to change was overestimated. Two respondents have not accepted the accuracy of the figures being produced but even they support the performance of the exercises. From some comments it appeared that the lack of resistance was partly due to the information sessions the Manager Accounting and Information Systems conducted. He became an accomplished presenter of seminars on ABC due to the rounds of instruction sessions undertaken and directed at the level of knowledge of small groups, from receptionists to management accountants. Apart from such care with the implementation process other reasons for lack of resistance include relief that something was being done to provide potentially useful information and, for some respondents, respect for the expertise of the implementers.

As may be seen from the table in Appendix 3, based on their experience, all of the accountants and the production manager had a strong preference for ABC information over other available information. Of the three sales/marketing personnel interviewed, one could not express a preference, one was currently indifferent but with a strong preference for the potential of ABC, and the other had a strong preference for ABC for the snapshot/budgetary use but, until ABC is on-line, prefers standard costing for day-to-day decision making. The other respondent, the divisional general manager, does not have a preference between different sets of information but regards them as
necessary for different purposes. Overall, a strong preference for ABC, especially at its potential in the future, was witnessed, and there was universal support for its introduction and further development.

PREDETERMINED FACTORS FOR INVESTIGATION

Elimination of perceived problems with existing system.

It is argued that perceptions of ABC are likely to be influenced by the degree to which it overcomes the perceived limitations or fills a void of the existing system. The most common deficiencies of the existing system that were identified were the lack of detailed management accounting information and the generation of erroneous information with respect to product costs and allocations.

It was recognised by the respondents that the information generated by the existing system was intended for, and only suitable for, financial reporting purposes. It was variously described as being for inventory valuation; consolidating divisional results; and showing overall profitability or plant profitability without useful breakdowns to indicate exactly where the profits were and were not being made. There was general agreement that that information was not useful for management control purposes:

"... it didn't tell me anything about the detail ... it was mainly being used as a corporate requirement ... it was a historical measure of what had happened ... not used for management control purposes ... it didn't tell me, if we made money in the business, where we were making it; if we were losing money in the business, where we were losing it and therefore no idea of what we needed to tackle, what we needed to focus on, to improve the business." [R2]

"... the purpose of the system really was to value inventory ... on a total basis ... There was also a product costing system if you like to call it that [which] gave us a [standard] product cost at the product group level [90 groups for thousands of products] ... I wouldn't say that it was used for control at all ..." [R1]

Additional comments included that there was difficulty (sometimes an impossibility) explaining variances and that the profitability of individual products was unknown:

"... could not distinguish between profitable and non-profitable lines ... " [R1]

"... with how competitive things are ... we needed to know which product is actually making us money and which isn't and, with ABC costing, it actually gives us that - the profitability of products - it makes fewer assumptions." [R4]

"... it was impossible to get an accurate product cost ... product group cost, or market area costing ..." [R7]

"... they didn't have a clue how much it cost them to make a product." [R8]

The ABC information was seen as a great improvement over the "other" information. Seven of the nine respondents believe greatly improved information (from ABC) is already being used. However, it is regarded as only partly satisfying current needs.

"The first ABC study led to a massive restructuring, sale of a plant and a business ... [as a result of the ABC figures] ... 100 people less in the
business today - that's pretty powerful stuff - it moved it from gut feeling ... " This respondent stressed that these were very difficult decisions that needed substantial supporting evidence of the likely outcome of the recommendations made, and this was supplied by the ABC information. [R2]

"... why I say it doesn't eliminate all of it is that still, the framework that they are using is the old one ... gearing itself to inventory evaluation ... The other problem ... whereas the ABC system that we have adopted takes a snapshot of the business at a particular point in time, it does not tell you how things are moving or how the whole analysis would apply under a particular situation ... . [R1]

The lack of information is not as great now but some respondents believe that they have a need for information that is produced for others but not widely available. Everyone also commented on the limitations of the application due to the utilization of intermittent ABC exercises for budgetary use when there is a persistent need for current information from a full on-line system:

"... ABC ... has been very helpful in the business management area ... its good to take a snapshot in time, using the budget, typically, and saying 'right, we're bleeding badly in that area, let's take corrective action - we're winning in that area, let's put more resources into it'. However ... if I could get an ABC system that was capable of being flexed such that I could do what-if analysis on a particular product, that would answer a large percentage of my reservations .... " [R5]

Two marketing/sales personnel are unsure about the information they receive now but one of them believes it will eventually give very good information and the other thinks it should be developed further because it may in time be as good as it is claimed.

An interest in the cost drivers was common amongst the marketing/sales respondents. A reservation voiced was that costings that this ABC application produced are simply wrong:

That respondent [R6] supports the introduction of ABC because he believes it should eventually give the necessary information. The perception of error in the output of the ABC application is an intuitive one. The respondent feels that he should be supplied with all cost driver and activity costing information to convince him of their accuracy. However, if they are proved to be appropriate and yet still produce costings he finds 'unacceptable', it seems likely that he will then doubt the accuracy of the model:

"To get the initial confidence with the system you need to know how the figures were generated ... I believe that activity-based costing is the right way to go and I can understand that I would make decisions and I would use it if I could believe the information ... I have no idea what they are using as cost drivers, I don't have confidence at all ..."

It was recognised that attempts at product costing and cost allocations in the past produced misleading figures. Whilst seven of the respondents perceive a greater accuracy in the figures generated by the ABC application there were recurring observations that some of the original cost drivers, and perhaps also a few current ones, were wrong, and that some of the original projections in the input data were also wrong. It is interesting that some of the cost drivers that were thought to be more appropriate now did not actually change. The quality of the projections is thought to have improved. Output information cannot be better than the input data and these
projections would affect any output, independent of the accounting model used. It is to the credit of the instructional sessions about ABC presented to the various personnel that these early teething troubles did not alienate the users. Eight of the respondents have absolute faith that the application can be greatly improved and that it will then provide what they are looking for. Reservations expressed with regard to whether past problems have been eliminated are therefore specifically about this application and not about ABC as a method.

**Extent of new problems with application of ABC.**

The intent of introducing ABC methods must be to eliminate experienced problems. However, the introduction of new problems with the ABC application may adversely affect user perceptions of ABC. As in Bailey's research [1991:32] (discussed further below) the lack of problems was surprising. The problems identified do not take issue with ABC itself. In fact, many of them stem from a perception of the benefits of ABC. These include the desire for more frequent feedback, requests to the accountants for more information than they can supply including more reports and more detailed reports, and some dissatisfaction with the comparative inaccuracy of a small amount of allocation:

"It's that more and more information is being sought after ... ABC analysis can only be undertaken to a certain level ... you cannot analyse everything to the nth degree ... how long is a piece of string? How long do you analyse and go on ... they appreciate that it is a much better system than we had before and they want more ... more than can be justified on a cost-benefit basis ... they realize the value of the system.” [R1]

All respondents expressed a desire to have a full, on-line, ABC system, which should eliminate the first two of these problems.

The issues with regard to cost drivers and the basic assumptions made in preparing the initial input projections were mentioned above. Both of these problems are perceived by most respondents to have improved. The initial projection problem is one that ABC could not eliminate, because it is not strictly an accounting problem, yet it is likely to influence user perceptions of the budgets prepared using the ABC approach. Hence, it may influence user perceptions of, and support for, ABC. This problem is particularly acute for a business supplying customised products:

"... the ABC analysis ... is based on a number of assumptions: the fact that you will be selling a certain product mix ... using certain equipment ... having certain manning levels, and so on and so forth. Given that our situation is such that ... what actually gets sold is very very different from what you have forecast or budgeted ... really there is a reallocation of it in that new mix which will make the original analysis somewhat approximate.” [R1]

Associated with the assumptions and cost driver reservations are the observations:

"... originally assumptions regarding the forecast of product on certain line was wrong - since then its been modified." [R8]

and:

"... the first year there were bigger gaps, the second year smaller gaps - the process is probably quite accurate ... not sure that the implementation is as accurate ... it has improved but still not quite right ..." [R5]
The question of timeliness, also raised in the previous section, was mentioned as a problem with this application:

"Things are changing so fast and you can't go back and change everything in the system very quickly." [R1]

The problem identified by the main decision maker in the division was confusion from two entirely different sets of figures that cannot be reconciled:

"... I have to ask 'now is that conventional profit and loss accounting numbers you're giving me or is that ABC costing information' and I get different answers so there's confusion ... [which do you go with?] ... I use both pieces of information to make a decision ... they are both right depending on what you want to use them for ... the conventional figures I can trace right back to an annual report ... " [R2]

Other responses with respect to how the ABC information or application can be improved include, again:

"Oh yes! Its got to be on-line!" [R2]

"The ABC costing we have is still at a macro level, more macro than we probably need." [R3]

and:

"The system needs to be more formalized ... it is not totally user friendly - not the sort of thing anyone can go in and use ... needs to be available for people to manipulate on small spreadsheets." [R1] [Some managers have taken the initial steps toward having spreadsheets prepared for their own sensitivity analyses but it appears that the input data required for these spreadsheet applications is not easily located by them.]

These and other responses may be summarised as follows:

- the cost drivers are questioned by some users;
- there is a strong desire for an on-line system for timely feedback and relevant input for sensitivity analyses;
- managers have become aware of the potential of the system and want more detail from it than can be justified on a cost/benefit basis;
- some confusion exists from ABC and the conventional system giving different "numbers" (from a strong supporter of ABC);
- there is an unwelcome awareness that full-costs cannot be recovered on the export market. Although not stated explicitly it appears that some marketing managers require more information on manufacturing costs to satisfy themselves "that what the market will bear will at least cover marginal costs";
- a preparer's reservations about assumptions made with regard to costs for which cost drivers cannot be identified (eg corporate and certain interest charges). She wants the accuracy of the other allocations to extend to these costs;
- some output errors arise from the inaccuracy of some input forecast data.

There are two other criticisms, one being the confusion experienced from having two irreconcilable sets of figures, and the other, from a preparer of the ABC information, that the software is not user friendly. This latter problem also agrees with the findings of Bailey [1991:31].
Extent to which ABC meets its claimed objectives.

The stated objectives of ABC are presented in the literature as desirable characteristics of management accounting systems. Their achievement should therefore favourably influence the user's perception of that application. Awareness of the claim being made for ABC may also create an expectation in the user that should not be disappointed if the ABC application is to be supported.

Discussion in the interviews with regard to the claimed objectives of ABC revealed a lack of interest in most of those stated objectives. Generally they were either not seen as relevant to the respondent or the achievement of the objective was not credited directly to ABC. The scaled responses are presented in Table 2.

Two aspects of these discussions are of particular interest, the use of ABC with regard to investment/divestment decisions and the views of the respondents concerning where costs should be traced to.

Although the ABC information had been used to confirm a divestment decision it was not used to follow up that decision so the appropriateness of the decision and the ABC information could not be assessed adequately. Conversely, a major investment in equipment was made without reference to ABC information but ABC was used to feedback information on the profitability of that equipment. In both cases direct comparison of feedforward and feedback was not possible and hence the reliability of the decision directed information could not be determined.

With regard to the tracing of costs, eight of the respondents believe costs should be traced to products. Three of these add other destinations such as activities, markets and managers whilst one clarifies the answer by stating that costs should be allocated to products "only to the level that is relevant so that you eliminate arbitrary allocations". The resultant statements would have the familiar stepped layout with classifications such that aggregate product contribution in a market (ie revenue less those costs that could be traced as far as the product) would then have costs traceable only as far as the market deducted from them to give market contribution, etc. This respondent (R1) believes that the application "goes a long way to being able to do that". Of the other seven respondents, four are unsure how adequately the costs are being traced (R6,7,8,9), two (R4,5) think it is adequate only for the periodic budgetary exercises and the other (R3) believes the tracing of costs is improving.

The ninth respondent, who made the decision to implement ABC, believes that costs should be traced to the people incurring them but that this application will not do that because it was implemented for another purpose. Despite the availability of data for responsibility reporting and the belief in its utility there has not been an attempt to use it in that way.

Frequently a respondent would not have the experience to form an opinion on particular stated objectives of ABC. The objectives about which an opinion could be formed were generally answered favourably. In the few cases where the response was toward the lower end of the scale, the response was based on experience to date and another response toward the upper end of the scale was offered for what was perceived as the potential of an ABC application.

The overwhelming impression obtained was that the subject of most of these claims for ABC were foreign to most respondents. Most responses given required some thought and did not appear to have been based on aspects that had been influential in forming any views previously.
**TABLE 2**

Some statements from which the objectives of activity-based costing may be deduced together with responses to them (on a scale 1 (do not agree at all) - 7 (very much agree))

<table>
<thead>
<tr>
<th>Statement</th>
<th>Respondent</th>
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<td>ABC: adequately traces costs;</td>
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<td>provides adequate cost/benefit data with respect to new: investments</td>
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<td>divestments</td>
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<td>monitors the outcome of such investments;</td>
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<td>encourages continual improvement in eliminating non-value adding costs;</td>
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</table>
Some respondents gave one response, shown on the middle line.

Some respondents gave a response with regard to their experience (exp.) and a second response with regard to what they see as the potential of their application of ABC (theory).

A zero denotes inability to comment.

6 denotes inability or unwillingness to be specific eg "about 6 or 7" or "somewhere around 6 to 7".

Y denotes "yes" but inability to scale response.

# "it gives the information but we're not very good at using it yet".

+ "not in production but pre and post production...so I would have to say about 4".

X scaled 6 for own model.

Absence of commonly identified deficiencies of traditional methods.

The identification of deficiencies in traditional management accounting methods is another indicator of desirable characteristics of a management accounting application. It is argued that the most commonly identified deficiencies are in the areas of inventory, manufacturing, and quality control, cost allocations and the timeliness of information. Any impact the ABC application had on any of these aspects, whether favourable or not, could be supposed to influence the perception of ABC held by the individual identifying that impact.

Any recent change in inventory management and quality control were not thought to have been due to ABC and the potential for this ABC application to have an impact on the timeliness of information was substantially reduced because of its periodic nature. However, improvements in timeliness - due to the reconstruction of the data reporting process, reorganisation of the ledger, improved willingness to provide data and the pressure for reports - are indirectly due to the ABC application and this was recognised by three respondents (R2, R3 and R4).

Seven of the respondents claim that cost allocations are more accurate although there are still some queries about the appropriateness of some cost drivers. The other two respondents do not state that the cost drivers are wrong but wish to have their appropriateness demonstrated before acceptance.

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<tr>
<th>TABLE 2 (contd)</th>
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<td>facilitates the use of externally driven targets eg target costs;</td>
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<td>improves traceability of costs to management reporting objectives;</td>
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<td>* encourages improved efficiency with respect to value-adding activities</td>
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Respondents identified many ways in which ABC had had an impact on production management. Most of these relate to the greater awareness of various costs and an increased respect for the accountants' contribution to management decision making. The awareness of where, how and why costs occur has impacted through the complete operational cycle, from raw materials utilised through set-up times and frequency to sales decisions. The sales decisions, based on market price and full cost, determine product mix manufactured affecting efficiency and, hence, costs.

The relationship of the management accounting information with other management tools.

The degree to which the ABC application complemented the other management techniques in use was expected to affect user perceptions of the information it produced and hence ABC itself. Although the ABC information helped in the process of organisational change this was not recognised by the seven respondents who were not involved in structural planning. Only the implementer credited ABC with producing information useful in TQM and the only other interaction ABC is seen to have with a formalized approach to management is its use on the MFT's. The accountants and the production manager are aware that they use the ABC information or other activity accounting information on the MFT's and they use it confidently. The sales/marketing personnel interviewed do not appear to be aware that it is used but anecdotal evidence was given that other sales/marketing people on the MFT's are aware that that is the source of some of the information used and are happy with it. The accountants and the divisional managing director accept that the presence of the accountants on MFT's, and improved respect for the accountants due to their valued contribution on the MFT's, are both directly due to the availability of the ABC information.

It should be noted that conflict between the ABC application and other management tools would have been commented upon so there is a positive aspect to the lack of comment on this issue.

Decision makers' confidence in the outcome of using ABC data.

A final matter that was expected to influence user perceptions of ABC was the confidence they had that the information gave a reliable indication of the outcomes of alternative decisions. Investigating decision makers' confidence in the outcome of using ABC data served two purposes. The degree of confidence expressed was an indication of the level of acceptance of the ABC information and the extent of support for the utilisation of ABC methods. This aspect also revealed a matter that would influence that acceptance and support since confidence in the use of the ABC information for decision making would not only be based on acceptance of its theoretical basis and the apparent accuracy of its output but also on the perceived outcomes of past decisions in which ABC information was applied. The level of confidence that the ABC information "provides a reliable indication of the alternative outcomes" was fairly high. The reasons given for it being high relate to the detail of the information obtained whereas the reasons for it not being very high include adversity to a small level of arbitrary allocations and the unreliability of estimates that are input. It was common for the respondent to indicate that confidence had increased, that there was a perception that "teething troubles" were being overcome.

Only one respondent scaled his level of confidence in the figures as low and the reason was lack of knowledge of the cost drivers. It appeared that this respondent felt intuitively that the product costings were wrong and required convincing that they were correct. It seemed possible that this marketing manager was resisting the knowledge that much of his past effort had gone into promoting less profitable (or
maybe loss producing) products. There was a strong feeling that if the cost drivers
could be proved correct then other aspects of the model would be doubted by the
respondent who simply had a problem accepting certain costings.

***

The degree of satisfaction with the use of ABC information in decisions made was very
high, both for their own decisions and for the decisions of others. The only reservation
was voiced by an accountant who believes that a divested plant left an unexpected level
of costs. Overall, confidence in the use of ABC information in decision making was
very high. The least confidence was expressed by sales/marketing managers, one of
whom does not have confidence yet and the other only has confidence in the budget
figures, not in its use for major acquisitions or day-to-day product cost based
decisions.

OTHER POSSIBLE INFLUENCES REVEALED

From comments made with regard to the desire to trace costs to the person incurring
them, and those made with regard to inappropriate performance measurement causing
dysfunctional behaviour, it seems likely that if this ABC application had incorporated
performance measures for responsibility reporting the advantages of the method would
have been even more appreciated.

It was a common perception that both vertical and horizontal communication had
improved. The improvement in vertical communication was due to the "flattening" of
the organization in the organizational restructuring. This restructuring was assisted by
the ABC information but was not caused by it and ABC was not credited with this
outcome of improved vertical communication. The improvement in horizontal
communication was partly due to the use of MFT's. The use of MFT's was not due to
ABC but the inclusion of the accountant on the MFT's and the new-found respect for
the accountant was due to ABC. Only the four accountants and the divisional
managing director identified this result of using ABC. The other reasons given for the
improvement in communication was the "common accounting language" and "common
understanding of costs" provided by ABC. Although this is a significant benefit from
using ABC it is not usually identified in the literature. It was, however, a finding of
Bhimani and Pigott [1992:27] and a benefit reported to Kaplan by the managers of two
companies amongst an unknown number that were asked to "quantify the hard,
tangible benefits" of adopting ABC [King 1991:23]. Perhaps it would have been a
more common observation if quantified benefits had not been requested.

The common accounting language and common understanding of costs encouraged the
greater awareness of costs that was mentioned by most of the respondents. There is an
obvious cost control benefit from this awareness of costs but in the context of this
research the awareness of costs by non-accountants was also found by the accountants
and the divisional general manager to have made their job easier. It therefore had a
favourable influence on the perception the accountants and the divisional general
manager had of ABC.

A negative influence on the perceptions of one accountant in his role as a preparer of
ABC information was the quality of the software used. This accountant had
experience with an activity accounting model on a Lotus 123 spreadsheet and thus he
was frustrated by the need to alter data in more than one place in the software. Other
users commented on the difficulty of locating desired information on the computer
model. As mentioned in the next subsection, this confirms Bailey's findings with
regard to software and system design causing problems [1991:31].

Bhimani and Pigott [1992], Haedike and Feil [1991], Cummings [1991b], Eiler and
Campi [1990], Dugdale [1990] and Jeans and Morrow [1989] stress the importance of
the management of the implementation process. Involvement in the implementation
stages affords the opportunity for input into the identification of cost drivers. The costings obtained are therefore more readily accepted by the users of the output. The findings of this research do not conflict with this view, but tend to confirm it. However, they also suggest that the acceptance of the costings is not necessarily a function of involvement in the implementation process. Since new staff would not have had this opportunity this is encouraging, otherwise a stage would be reached when none of the staff could have been there when ABC was implemented and no-one would accept the figures. It appears from this research that early involvement allows a greater understanding of the model used and more detailed knowledge of activities costed and cost drivers used, and that it is this knowledge that leads to acceptance of the output, not the early involvement and participation per se. If this is so, the detail conveyed to new users of ABC information needs to be reviewed and probably extended. One of the sales/marketing managers indicated that going to extremes may not always be necessary. He accepted the word of the accountants because he respected their expertise just as he hoped they would accept his projections in his area of expertise. The acceptance of output may therefore be a function either of respect for the implementers or of specific knowledge of the model used, rather than early participation. Early participation just satisfies one of these dependent conditions.

COMPARISONS WITH RELEVANT PRIOR RESEARCH

The three most closely related prior research projects identified are by Bailey [1991], Innes & Mitchell [1991] and Bhimani & Pigott [1992]. The focus and some limitations of these projects is detailed earlier in this paper.

It is believed that many of the limitations of those research projects have been avoided here. The restrictive nature of the structured interviews and questionnaire used by Bailey and Innes & Mitchell respectively was not an issue due to the use in this instance of semi-structured interviews. Being of about two hours duration these interviews were also more extensive than the 45 minute unstructured interviews undertaken by Bhimani. Bailey and Innes & Mitchell did multiple-firm studies (10 and 11 firms respectively) but did so by assuming that one respondent could represent the views of "the firm". A consequence of this is that within each study each respondent was commenting on a different ABC application. All of their respondents, with the possible exception of two of Bailey's respondents, were accountants. Bhimani studied one firm (seven non-accountants and two accountants, one of whom was Pigott) and hence all responses were about the same ABC application. The point has been made that it is dangerous to judge the success of any ABC application on the perceptions of one or two individuals. It is even more dangerous if those individuals have a vested interest in proving the appropriateness of the decision to implement ABC methods. This can occur if they were involved in the implementation decision or in the implementation itself, as is likely when the individual is in a senior accounting position.

Where the findings of these research projects and those of this work overlap the consistency in the results is notable. Bailey [p32] reports "an unexpected bonus" the companies found in much improved cost awareness and communication between departments. Other unexpected results include motivation from the feeling of ownership (whether of the exercise or of costs is not clarified), less emphasis on problems than benefits, "unhappiness" with "software availability or the system design" and pressure on managers time. All of these observations are consistent with the findings of this work.

Innes & Mitchell [p26] give two clear areas of perceived benefits, better product costs and the provision of information for cost control purposes. These were among the benefits identified by the respondents in this research. What is not clear is whether Innes & Mitchell made provision in their questionnaire for the respondents to identify any benefits that the authors had not anticipated.
Bhimani interviewed non-accounting personnel but, since they were "non-accounting staff at the manufacturing site", it is anticipated that they do not include sales and marketing personnel. The statements by Bhimani & Pigott, that the ABC figures confirmed factory managers' suspicions about the real product costs, that ABC provided "factory managers with a tool for justifying desired changes in terms that could be understood" by others and that ABC quantifies what people had already known were echoed in the interviews reported above. In this research the Divisional General Manager needed data to support his recommendations to superiors and this was supplied by the ABC figures. In the words of Bhimani & Pigott and the Divisional General Manager in this project, the figures lent credibility to the proposed actions. The claim that the ABC figures substantiated previously held beliefs was also consistent with the results of the interviews here, with the exception of the interviews with sales/marketing personnel.

As in this research project, Bhimani was informed of the "active use of the new accounting parlance in interpreting and articulating" concerns and issues and of the improvement in communication due to the introduction of this "common language". The similarity of expression between that article and the responses obtained here is noted. Bhimani & Pigott's statement that their accountant's felt that they were perceived by others to "be playing a more legitimate role within the firm" was also consistent with the findings here, although it was not a subject introduced by the interviewer.

In this research, answers with regard to the difficulty of obtaining the data for the ABC application revealed the lack of hindrance experienced, even in the initial stages of conducting the early exercises. As in Bailey's research [p32], obstacles to implementation would seem to be minimal. Care was taken to explain the new approach to people before they were involved in providing input or receiving output from the exercise. The process of implementation appeared to have an effect on users' attitudes to ABC. The respondents who do not get cost driver information are the ones who are not fully accepting of the ABC information. These are sales/marketing personnel, who could make the best use of product cost information as opposed to cost control information, and who were not included in any of these other studies. The importance of the implementation process was highlighted by Cummings [1991b], Eiler and Campi [1990], Haedike and Feil [1991], and Dugdale [1990] then reiterated by Bhimani and Pigott. While Bhimani concluded from his interviews that early involvement and participation affected a predisposition to ABC [p131] he does not appear to have evidence of lack of predisposition due to non-involvement and participation. This is provided here by statements such as the doubting of the authenticity of the cost drivers because the respondent did not have any input into their selection. This lack of participation caused non-acceptance of the information from this application of ABC but the instruction provided still created a predisposition to ABC itself! The omission of sales and marketing personnel from the implementation team, and hence their lack of involvement in identifying cost drivers, was a consistent factor in the ten firms studied by Bailey [p30]. Bailey quotes Jeans and Morrow [1989] to support his contention that they should be involved. Jeans and Morrow advocate the involvement of these functional managers "in the creation and implementation" stages so that the system "belongs" to all managers. This form of ownership should promote acceptance, support, use, etc. However, it is entirely possible that acceptance of the ABC information is not necessarily dependant on participation but on access to the cost driver and activity costing information that is provided to participators. Failing this, it could be sufficient for acceptance by marketing/sales personnel that they are aware that respected managers of their function were involved in the selection of cost drivers. The impossibility of all subsequent users of ABC information being involved in the implementation of the application suggests a need for an understanding of these influencing factors in the acceptance of that particular application.
The findings of Innes & Mitchell, that among the firms that have "implemented ABC the feedback is predominantly positive", confirmed Bailey's summary that "the findings of the investigation are positive and live up to the expectations created by ABC pundits ... benefits are both obtainable and substantial ... obstacles to implementation would seem to be minimal". This research supports those statements. However, Bailey's final comment, that this "should reassure those contemplating the use of activity-based costing" may be unwise. Innes & Mitchell sent questionnaires to 720 firms to get 187 responses that indicated almost half had seriously considered ABC, about 33% were still vetting it, 6% were implementing it and 9% had rejected it. Obviously careful thought had gone into the decision to implement or not implement and Bailey's firms went ahead because of a critical assessment of the suitability of the method for the particular firm, not because of its success in some other entirely different organization. The characteristics of firms most likely to get the results reported by Bailey are still to be identified by empirical research.

Bhimani & Pigott were able to conclude that "the array of changes caused by the altered accounting approach exceeded those which were presented as likely effects of adopting the ABC system and the configuration of those changes followed a pattern specific to the sequence adopted in installing ABC as well as the particular structural context of the organization" [p131]. Similarly, this work found that more benefits than expected were experienced by the firm studied, ABC had a broader impact than anticipated and the structural changes affected the impact ABC had due to the changed lines of communication. It appears that Bhimani & Pigott's second comment, that the pattern of changes was specific to the installation sequence, relates to the notion that people respond to what is being measured and reported and is not disputed.

In summary, all relevant findings in these related studies are consistent with the results of this research project. Moreover, there is also confirmation of some other published statements - eg with regard to the influence the implementation process has on acceptance and many of the promoted benefits of ABC. However, there are many aspects to the utilization of ABC that have not been considered in the literature before - eg enhanced communication; demands on the time of accountants due to requests for more information; an enthusiasm for their job by accountants who are more respected than before and who find ABC makes their job easier, and by others who are getting information that facilitates more confident decision-making. In particular the impact of the understandability of ABC is underestimated. By providing different managers with the means to articulate needs and the means to fulfill those needs there is created an understanding of not only ABC but of costs and of each others problems as well. Instead of fuzzy lines of communication the individuals are tuned in to the same waveband and there appears to be a broadening of the definition of "us" and a diminishing of the concept of "them" - a feeling of "pulling together". The added respect for each other and ability to either provide more useful information or more confidently make decisions (ie do a better job = enhanced self-respect) seems to add enthusiasm and revive motivation for doing a good job.

THE USEFULNESS OF THE INTERVIEW FRAMEWORK

The interview framework elicited opinions on the matters wished to be covered and allowed openings for other aspects not anticipated. The framework is more appropriate for a firm that has two systems running in parallel as comparisons were sought of a system and a partial implementation in the form of periodic exercises. These applications are not directly comparable but the required insights were obtained.

The question on timeliness of information was asked without an anticipation of it being relevant. The ABC application was not of a system, as anticipated when the framework was prepared, so improved timeliness was not expected to be an issue. Fortunately the topic was not discarded and useful feedback about improved timeliness of an unexpected nature was obtained (given above).
When there was lack of interest in a particular topic the matter was not pursued but the
time was reserved for aspects that proved of particular interest to that respondent.
The matter of complementarity of ABC with other management tools was not found to
be a fruitful topic of discussion but could be time-consuming. On the other hand,
future interviews could usefully investigate: how comfortable the respondent feels with
the use of ABC jargon as an opening to a discussion about a change in the ability to
articulate accounting needs and feedback; whether the status of the accountants has
changed; whether there has been an impact on cost awareness and what the
consequences of such a change have been (apart from a preoccupation with cost
control there can be an impact on industrial relations, on the demands made of the
accountants with regard to more detailed reports, pressure on other managers to use
ABC information more effectively, and a new motivation toward the job due to a
greater feeling of control, among others); how happy the respondents are with the
software and the format of reports; and whether there has been an impact on
responsibility reporting (this is not necessarily covered by the question on performance
measurement but some comments on this matter were offered in the course of other
discussion).

It was felt that the interview framework served its purpose well. It needed to be used
intelligently as earlier conversations often covered or touched on matters raised at a
later point. Instead of omitting the later question the opportunity was offered for the
respondent to add something to earlier comments. Frequently this was taken as an
opportunity to enlarge on or illustrate the other points made. Sometimes it led to
discussion of other aspects of the same matter. A danger in conducting interviews is
that, because they are one-sided, the respondent can lose interest. When a matter was
raised again care was taken to ask about it in a different way, to get confirmatory
responses, or, when appropriate, the earlier views expressed were mentioned to show
understanding and interest. An example could have been "you mentioned some
problems you had getting cost driver data at first, were there any other problems at
the implementation stage?". With this approach the respondents did not visibly lose
interest when covering ground again. Given the overlap of the various aspects to be
covered, such retouching of points already made is inevitable.

The one-sidedness of the interviews was reduced to some extent by contributing
information in the course of the interviews. When a subject raised had no meaning to
the respondent its significance was sometimes explained, especially if there seemed an
interest in it. Comments intended to be helpful were sometimes offered after
completing all related discussion. An example of this would be the incident when
discussion about performance evaluation measures in use explained the dysfunctional
behaviour of some managers mentioned earlier in the interview.

LIMITATIONS

One aspect of this research is that user perceptions will be influenced by the outcome
of past decisions made in which ABC information was utilized. There is a lengthy lead
time between implementation of ABC methods and this confirmation of the accuracy
of its output. For most of the respondents in this research project, therefore, the
outcome of major decisions had not been fully assessed, although they were able to
comment on either day-to-day decisions (for which the information was not always
appropriate due to its periodic nature) or on the major decisions others had made using
ABC information.

Bailey [1991:30] identified a problem in his research due to "the lack of availability of
current users" of ABC. This is an even greater problem in Australia than Britain but it
is believed that the most appropriate firm identifiable was studied. Other firms appear
to be at earlier stages of implementation and/or do not have many personnel (eg 2, 3 or
4) who knowingly make use of ABC information.
The limited number of respondents was a disappointment but was beyond the control of the researcher. A mix of 17 respondents was initially anticipated to be made available for interviews but other demands on the time of these personnel led the Divisional General Manager to reduce the number to 9, including himself, with an absolute time limit on the interviews of two hours. The good fortune to have the cooperation of the firm is appreciated but the limitations on the analysis and validity of conclusions drawn are recognised.

It is believed that some useful pointers can be drawn from the data obtained but the weight of these is reduced with the reduction in number of respondents. Furthermore, ideally, a number of people from different functional areas would have been interviewed so that results from, for example, sales/marketing, accounting, and production personnel could be compared. Unfortunately another consequence of the reduced number interviewed is that the comparisons possible are only between sales/marketing and accounting and these may not be entirely valid as there were too few interviewed from each function for an authoritative comparison to be made.

There may be a perceived limitation in restricting the study to respondents within one firm. It is recognised that findings may not necessarily carry over to other firms implementing ABC but the intent was to obtain views of the same ABC application, thus eliminating results that vary due to the nature of the ABC application. It is hoped that several future case studies of the same nature will allow interfirm comparisons to be made. This would provide a basis for conclusions that allows recognition of differences due to firm specific anomalies and give a significant data bank of responses. It should also be recognised at this time that the findings of this research project are consistent with the relevant findings of two multiple-firm studies (Bailey 1991 and Innes & Mitchell 1991) and another firm specific case study (Bhimani & Pigott 1992).

This study was of ABC applications that provide information not provided by the existing system. Most respondents received entirely new information, not information of the same type but from different techniques. It is entirely possible that significantly different results would be obtained at a research site that previously had a product cost system not based on ABC. This, of course, is one of the variables that affects multiple-firm studies. Unfortunately there is not any evidence in the papers of Bailey or Innes & Mitchell that their studies elicited this information.

The timing of the study may have had an influence on its findings. If the difficult economic environment in Australia before and during the conduct of the study drew attention to costs and, thus, to the need for a suitable costing method, it is not clear to what extent the costing method can be credited with the heightened cost awareness that was found. Similarly, "In periods of greater uncertainty, particularly when accompanied by significant reduction in resources, accounting terminology becomes an important medium of discourse" [Ezzamel and Bourn 1990:423].

A final recognised limitation in the conduct of this research is that follow-up questions after the interview were not possible. Such questions may arise due to issues raised at later interviews with other respondents. The conditions of conducting the interviews did not permit further demands on the time of the respondents but it was not thought judicious to seek later responses anyway because these views of the respondents were likely to be influenced by the content of the earlier interview. It is known that the interviews had an impact on some users use of the information and the later communications they had with the Manager Accounting and Information Systems.

CONCLUSIONS

In the introduction the purpose of this study was stated to be to examine the overall extent to which preparers and end-users of information from ABC are satisfied with this technique and the factors forming the basis of that belief. Certain factors
predetermined as likely to influence that belief were investigated in a way that allowed other factors to become apparent. It is now possible to draw some conclusions with regard to user perceptions of ABC and the likely influences on those perceptions.

Due to some of the limitations encountered in the carrying out of this research, in particular the restriction on the number of interviews undertaken, many of the results obtained do not lend themselves to a precise and succinct summary. However, the generality of observations drawn from the conduct of the research may be the subject of further research projects.

The introduction and future development of ABC related information was universally supported by the respondents, including two respondents who have not yet accepted the accuracy of the figures being produced. Confidence in the use of the information had grown as the respondents identified an improvement in the reliability of the output of this application.

In general, the responses regarding the factors predetermined as likely to affect support for ABC revealed the following:

- problems experienced before the availability of ABC information were, or are expected to be, eliminated;
- the few problems observed to have accompanied the introduction of ABC are related to this application and not to ABC principles. Many of the experienced problems arise due to the perceived benefits of ABC (eg heavy demands for more information) and all respondents desire a full, on-line, ABC system;
- most of the issues covered by the stated objectives of ABC do not appear to be of interest to the users who identify them as irrelevant to them or not related to ABC;
- the timeliness of information has not improved directly through provision of ABC related reports because these are produced periodically by exercises designed to meet budget needs. However, there were benefits in timeliness identified as being indirectly attributable to the introduction of ABC methods. Most respondents were not aware of the use, nor the potential, of ABC information for performance measurement, quality, inventory and production control, but cost allocations are seen as much more appropriate. The respondent who does not accept the cost allocations expects to after he has investigated the cost drivers and, if necessary (this was implied and not stated), had them changed;
- most of the respondents are not aware of any relationship between management accounting information and most management tools - to clarify this, the exceptions are that one identified a use for ABC in TQM and the accountants and Divisional General Manager were favourably disposed toward ABC for the contribution it made on the MFT's;
- confidence in the use of ABC information for decision making was very high with the exception of sales/marketing managers who have reservations about this particular application but hope to receive improved information in the future.

Hence, factors 1, the elimination of problems experienced before ABC information became available, 2, the lack of serious problems introduced with ABC, and 6, decision makers confidence in the outcome of using ABC data, and the issues of cost
allocations in factor 4 and utility on MFT's in factor 5, are possible influences on user perceptions due to their positive correlation with the users' supportive attitude toward ABC.

Other possible influences on user perceptions of ABC were revealed in the interviews. The most significant of these is the change in the working environment caused by the new "common accounting language", "common understanding of costs", "cost awareness" and "ownership of costs". The improvement in communication this affords has eased the transfer of knowledge as well as improving the relationship of managers from different functions. These unexpected benefits were also identified in the research of Bailey [1991:32] and Bhimani and Mitchell [1992:129].

A negative influence was identified by a preparer of the information who considers the software used to be "cumbersome". Others also found it difficult to use, so lack of use of ABC information in some instances could be related to a disinclination to use the computer model rather than the accounting model. Bailey [1991:31] reports similar findings.

The instructional sessions conducted by the Manager Accounting and Information Systems appears to have had a positive effect on the perceptions of ABC methods. Even personnel who find the information produced by this application unacceptable favour the continued use and development of ABC in the firm ("its the way to go"). There seem to be two stages to the acceptance and use of the ABC information, belief in the theory and acknowledgement of the reliability of the output of that particular application of the theory. Belief in the theory was universal among the respondents but some sales/marketing personnel were not convinced that the output received was reliable. The acceptance of the output does not appear to depend on the early involvement of the respondents (there was a mix among the accountants) but upon the receipt of data that allows an assessment of the suitability of cost aggregation and cost drivers. It may not be the function that the manager performs that determines ready acceptance of the output. Acceptance may be a function of the circumstance that these managers do not receive production related data. This hypothesis is consistent with the proposition that the conduct of the implementation of ABC will affect the success of the application (Cummings 1991b, Eiler and Campi 1990, Haedike and Feil 1991, Dugdale 1991). It is also consistent with the view that participation in implementation promotes acceptance (Bhimani and Pigott 1992, Je and Morrow 1989) since such participation provides the opportunity to assess these critical components of the model. Brausch [1992] describes a case that may demonstrate the point made here - a firm built a very good cost system "in a black box" [p45] and, because of lack of communication, there was distrust, ignorance and lack of use of the new information.

As in the research of Innes and Mitchell [1991] and Bailey [1991], the perceptions of ABC were found to be predominantly positive. Benefits exceeded expectations and obstacles were minimal and surmountable, confirming Bailey's conclusions.

The interview framework worked well although it would be modified in future applications to reduce enquiry about the factors not influential here (ie the stated objectives of ABC and most material about other management techniques). Whilst most of the items identified as common criticisms of traditional methods were not involved in user perceptions of ABC (ie quality, inventory and production control and performance measurement) they were not time consuming enquiries and sometimes prompted an interesting discussion about other factors.

It would be useful in future interviews to enquire about the influencing factors identified above that were not included in the interview framework used, ie were not identified as likely influencing factors when the framework was constructed.
"Accounting is not a static phenomenon. Over time, it repeatedly has changed. New techniques have been incorporated into the accounting craft. It has been called upon to serve an ever greater variety of different and changing purposes... Unfortunately, however, very little is known of the processes of accounting change. As of now we have only a limited understanding of the conditions which provide the possibility for particular conceptions of the accounting craft, the forces that put accounting into motion, the processes accompanying accounting elaboration and diffusion, and the varied human, organisational and social consequences that can stem from changing accounting regimes."

[Hopwood 1987:207]

This research has both, shed some light on these issues, and on a method of delving deeper into them.

INDICATIONS FOR FUTURE RESEARCH

As has been indicated above, there are many aspects about the use of ABC that have not been investigated. Among these would be the far reaching effects of the aid to communication that ABC affords. Other issues include the use of ABC for responsibility reporting and the characteristics of suitable computer software and system design.

A question raised above was whether involvement in the implementation of ABC is responsible for ready acceptance of its output or whether this acceptance comes from the consequent receipt of data that "proves" the accuracy of the model. The repercussions to be expected from this issue relate to the degree of acceptance of the output by new or relocated staff who have not had the opportunity to participate in the early stages of implementation. An associated issue that would be of interest to implementers of ABC applications would be covered by a study that examined the effect of, and ways of overcoming unfavourable reactions to, unpalatable information coming from ABC. For example, how does one handle a situation in which someone who had consistently been congratulated for his high level of sales now finds that his biggest seller was being sold at less than cost and his hard work had been reducing profits, not increasing them?

It is hoped that the future direction of the research started here will eventually cover several issues. To obtain empirical evidence of the characteristics of firms most likely to benefit from ABC techniques comparative studies of firms with and without ABC, satisfied and dissatisfied with their application, should be undertaken. Studies within these firms should include personnel from various functions to permit a comparison of attitude between functions (see Limitations above). Cross-case analyses, comparing results from different firms who had adopted ABC methods, would also reveal the effect of differences in the environment and application (e.g. whether a product cost system had been in use before or whether the inventory valuation system for financial reporting purposes had been used for this purpose).

Given these avenues for further study, it would be appropriate to reiterate the statement of Innes and Mitchell, that "a strong need is apparent for a continuing research effort and the dissemination of information, particularly about practical experiences with ABC" [1991:30].

CONCLUDING COMMENTS

The findings of this project may help future implementers of ABC applications since it does indicate matters that should be considered when implementation of ABC applications is contemplated. Beyond influences on the users' perceptions of ABC was the discovery that preconceptions about the benefits and problems of implementation
can be very wrong. Resistance from managers and their support staff should not be assumed, but rather pressure from them for more reports is a distinct possibility. There were far more benefits from the use of ABC at this site than anticipated - a seeming preoccupation with costs due to a greater awareness of them and an understanding of them; enhancement of the accountants position in the management team ("the accountants are now doing what engineers always thought they did!") leading to a preparedness to consult them for decision making assistance; the organisational restructures from streamlining and amalgamations together with the team approach has improved communication within the division, both vertically and horizontally. The implementation process would have had an influence on these observations. The Manager Accounting and Information Systems became an accomplished presenter of seminars on ABC due to the rounds of instruction sessions undertaken and directed at the level of knowledge of small groups, from receptionists to management accountants. However, some people need to be convinced of the model before receiving its output, perhaps by early involvement but perhaps by the initial provision of information normally considered outside their province.

It should be noted that most respondents expressed appreciation for having participated in the interview despite its length and the pressure they were under at that time. Follow up discussion sessions of a similar nature in some firms may be useful to force people to consider certain issues, building on their experience and stimulating awareness of benefits and limitations.

This research has provided some insight into the factors that influence users of ABC information in their perceptions of ABC and their receptivity to its output. It has also demonstrated our lack of knowledge of the use of ABC in practice.
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APPENDIX 1

THE 'MEANS TEST FOR ABC:

* Highly diversified product range;
* Assembly and non-process industry;
* Indirect costs and overheads are over 30% of total costs;
* Competitors can underprice and still make profits;
* Manufacturing department believe their overhead burden is too large;
* Divisions believe their overhead burden is too large;
* The company does not differentiate between prices of short and long term production run products.

(Used in presentations by consultants in the Melbourne office of Arthur Andersen & Co. and reproduced in Cummings 1991b:23).
### Scaled Responses to Questions Other Than Question 6

<table>
<thead>
<tr>
<th>Respondent</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1c</strong> How useful was the previous information?</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>no good (1) - very useful (7)</em></td>
<td>1</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>2a</strong> Do you use that information very much now?</td>
<td>5</td>
<td>d</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>r</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>not at all (1) - extensively (7)</em></td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>r</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2c</strong> How much did you use that information before?</td>
<td>6</td>
<td>2</td>
<td>d</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>not at all (1) - extensively (7)</em></td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td></td>
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</tr>
<tr>
<td><strong>3c</strong> Does the &quot;new&quot; information eliminate the problems?</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>no (1) - totally (7)</em></td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>5a</strong> How confident are you that the new information provides a reliable indication of the alternative outcomes?</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td><em>not at all (1) - very (7)</em></td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Appendix 2

- **0** Denotes unable or unwilling to give a scaled response.
- **4** Denotes "between", or "about", "four to five".
- **s** With the incorporation of some ABC based improvements it has improved.
- **b** "not absolutely confident all drivers are right".
- **c** "well, I need both".
- **d** Current usage is about 80% of previous usage.
- **e** Very but only up to plant gross profit, "before commercial charges."
- **f** 4 to 5 at present but it should be 7 in the future when ABC is used fully in the MFT.
- **g** 5 for standard costing but 1 for "true" (actual) costing.
- **h** "It's not in the same format".
- **i** 5 for budget/snapshot; 3 for product costing; 1 to 2 for major acquisitions
- **j** 2 for the snapshot; "for ongoing"; 2 if "ABC delivers at its potential" but standard variable costing is preferred at present ("so 6 to 7").
- **k** "snapshot basis".
- **l** Different for the 2 different raw material classifications (and hence different processing).
- **m** No change.
- **n** Unknown because the drivers are unknown
- **p** "do not believe it is being applied correctly".
- **q** Indifferent (4) at present but it has the potential to become 2.
- **r** Respondent used his own activity accounting information.
- **s** Scaled for his own activity accounting figures.
- **t** Has not based decisions on ABC information.
- **u** Before using own model (once a month).
- **v** For the ABC figures.
- **w** Preference over division system and own model (which "only goes part of the way").