

Adoption and Implementation of Activity-Based Costing: A Web-Based Survey

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Abstract

This paper presents the results of a Web-based survey that gathered evidence about the current status of activity-based costing adoption and implementation. Activity-based costing was introduced about 15 years ago and implemented initially by large manufacturing companies. Our results indicate that the rates of adopting activity-based costing are now similar for service firms and manufacturing firms. Larger firms are more likely to have adopted activity-based costing than smaller firms, possibly because activity-based costing is more beneficial in larger firms that have a diverse mix of products or services. Larger firms are also more likely to have specialized staff familiar with this method.

Keywords

Activity-Based Costing, Costing System, Traditional Cost Accounting

1. Introduction

In the late 1980's, activity-based costing (ABC) gained the attention of academic researchers, consultants, and managers as a means of overcoming the disadvantages of traditional cost allocation methods. Cost accounting had traditionally allocated overhead to products or services using only one volume-sensitive driver, typically direct labor. For organizations with high overhead and a mix of products or services, using a single cost driver may distort cost estimates [5]. Traditional methods of allocating overhead were therefore believed to be deficient in terms of improving global competitiveness [8].

ABC improves upon the traditional approach by using a two-stage allocation procedure and multiple cost drivers [2,3,4]. In the first stage, significant activities are identified and overhead costs are assigned to each activity in proportion to the resources used. Cost drivers are then identified for each of these cost pools. In stage two, the overhead is allocated from the cost pool to the final outputs, or cost objects, in proportion to the amount of the cost driver consumed.

During the late 1980's and early 1990's, the ABC approach was implemented in a number of large manufacturing companies. Managers armed with the ABC system were able to reduce costs, identify opportunities for improvement, and determine a more profitable product mix [6]. Because of its perceived superiority, ABC was expected to gradually replace traditional methods. The results of earlier studies suggest, however, that the rate of diffusion of ABC has been slower than expected [1,7].

To gather evidence about the current status of ABC adoption and implementation, a Web-based survey was used to collect data from respondents who represented a broad range of firms, in term of size, geographical location, and industry sector. The results reported in this paper help identify the company characteristics that appear to support or impede successful ABC implementation. Consistent with the exploratory nature of the study, the data analysis is descriptive in nature.

2. Methodology

A survey instrument was developed to collect data to provide evidence about the current status of activity-based costing adoption and implementation. It included demographic questions about the respondent's position in the organization and about the size of the company and the economic sector in which it operated. Respondents were also asked about their familiarity with ABC and about the cost systems presently in use in their companies. The Web address of the survey instrument was submitted to five major search engines. Potential respondents would find the survey using keyword searches for terms such as activity-based costing, economic value added, performance measures, and web-based survey.

Web-based surveys have both advantages and disadvantages in comparison to the traditional "paper-and-pencil" format. Advantages include a lower cost of collecting data, elimination of the need for manual data entry, and access to a large population of respondents in different geographic areas [10]. A potential limitation of this methodology is the possibility that the resulting sample is not representative of the underlying population. Often, no systematic sampling methodology is applied, so the resulting sample may suffer from self-selection bias. This type of survey does not lend itself to the obvious determination of a response rate. Another limitation is the possibility that respondents may not be competent to provide thoughtful responses to the survey questions.

We addressed the limitations of the Web-based survey to the extent possible. Respondents who found the survey were assumed to be individuals with some interest in ABC who would be able to provide valid information. Responses that contained too many blank variables were excluded from the analysis. Further, we analyzed the data for only those respondents who identified themselves as being managers, owner-managers, or accountants as well as for the full sample, which also included respondents that identified themselves as holding some other position in the firm. The results from the smaller group were consistent with those found for the larger sample, and the latter results are reported in this paper. The results reported in this study should be interpreted giving consideration to the limitations imposed by the Web-based survey methodology.

3. Results

The respondents were broadly representative of a variety of firm sizes, economic sectors, and countries, and represented different job functions within the organization. Of the two-thirds of the respondents who identified the country in which they were domiciled, 35% were from the U.S. and Canada, 22% were from Latin America, and the remaining 43% were primarily from the Europe and Asia. Overall, 42% of the respondents worked for firms with 100 or fewer employees and 58% for firms with more than 100 employees. This proportion was fairly stable across the country groupings, except that 80% of the respondents in the European group were from larger firms. The manufacturing and service sectors were approximately equally represented and there were no significant differences in the economic sectors reported by respondents across the different country groupings. Although the respondents seem broadly representative of different countries and economic sectors, we cannot definitely conclude that the sample results are indicative of population differences.

3.1 Familiarity with ABC

The relationship between the respondents' familiarity with ABC and various demographic variables is examined in this section. Figure 1 summarizes respondents' familiarity with ABC in relation to industry sector. Overall, slightly less than one-third of the respondents said that they were familiar with ABC and a comparable number said they were unfamiliar with ABC; the remaining 37% indicated some degree of familiarity. Familiarity with ABC was not significantly related to economic sector. This suggests that ABC has made significant headway into the service sector since the time of its initial implementation in large manufacturing firms. In part, this may reflect the application of ABC in the health care industry, where its use can be advantageous when various services place differing demands on overhead. It is also worthy of note that a surprisingly large portion of the manufacturing respondents indicated that they were unfamiliar with ABC.

Figure 2 investigates the relationship between firm size, measured by number of employees, and familiarity with ABC. The overall relationship is not statistically significant at .05 level based upon a Chi-square test. Nevertheless, a clear progression in the percentage of respondents indicating familiarity with ABC as firm size increases can be seen.

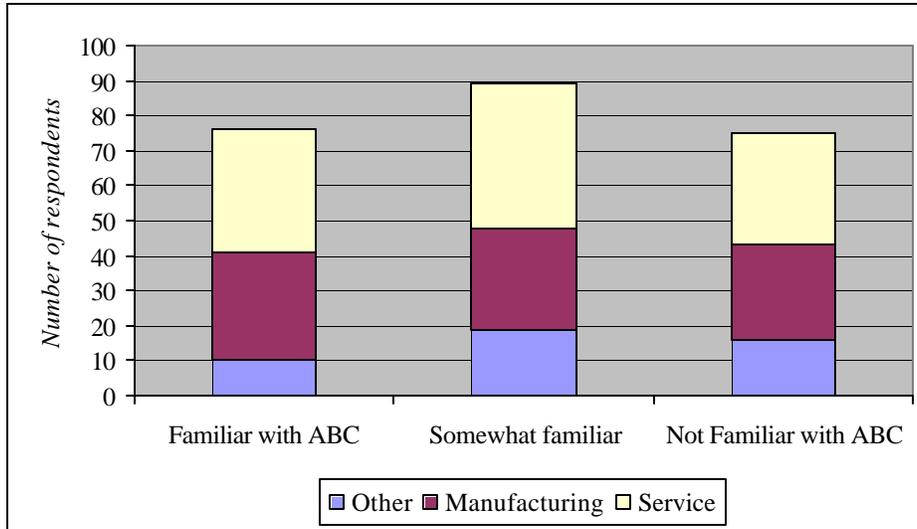


Figure 1. Familiarity with ABC and industry sector

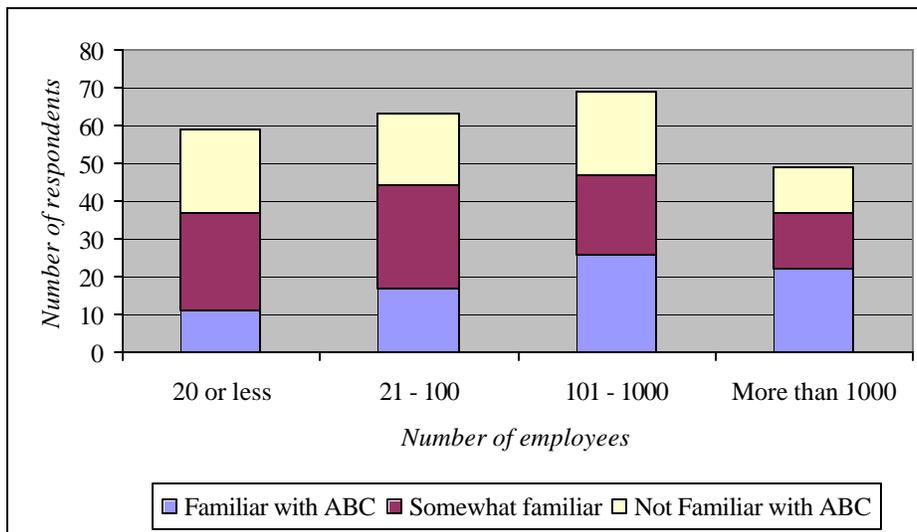


Figure 2. Familiarity with ABC and firm size

Figure 3 depicts the relationship between the respondent's job function and familiarity with ABC, which is significant at .05 level based upon the Pearson Chi-square statistic. As would be expected, the rate of familiarity with ABC is highest among the accountants. Since the late 1980s, ABC has been covered extensively in publications aimed at practicing accountants and has been rapidly integrated into managerial and cost accounting textbooks. Among our respondents, the owner-managers group was the one least familiar with ABC. Most of these owner-managers were running smaller businesses. To the extent that the owner-managed businesses are less likely to have a diverse mix of products or services, we would expect to see less of a benefit from the use of ABC and thus less need to develop familiarity with it. Also, the owner-manager is apt to be more of a generalist than a specialist, and may run a small company based more upon experience and intuition than upon the use of sophisticated managerial tools.

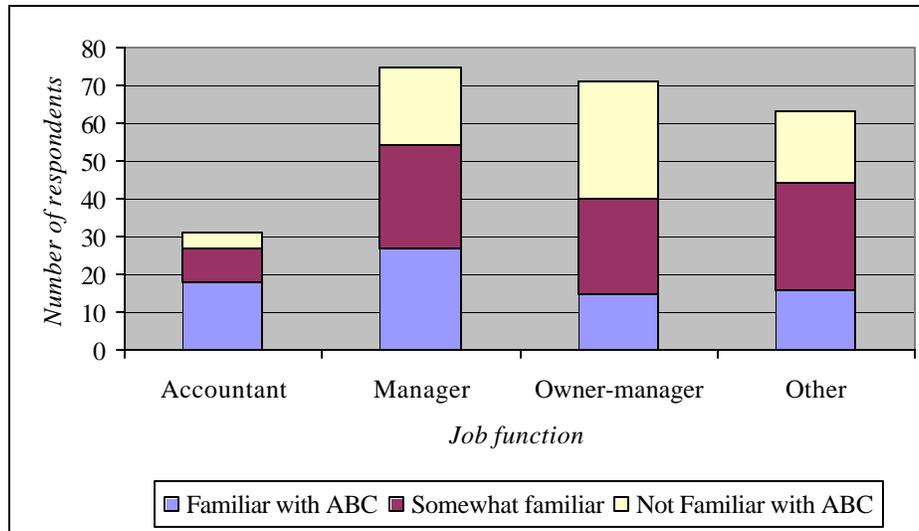


Figure 3. Familiarity with ABC and job function

Table 1 extends this analysis by separately examining the relationship between familiarity with ABC and job functions for different sized firms. We find a significant relationship (at the .05 level) between job function and familiarity with ABC for those working for firms with more than 100 employees, but no significant relationship for those working for firms with 100 or fewer employees. Notably, we find that 70% of the accountants and 45% of the managers working for the larger firms were familiar with ABC, while only 36% of the accountants and 19% of the managers working for smaller firms indicated familiarity with ABC. The small firm-large firm distinction was not as pronounced in the case of the owner-managers, but only 10 of the 71 owner-managers in the sample who answered this question worked for larger firms.

Table 1. Familiarity with ABC by job function and firm size

Number of Employees	Job Function	Familiar with ABC	Somewhat Familiar	Not Familiar with ABC	Total
More than 100	Accountant	14	5	1	20
	Manager	22	13	14	49
	Owner-manager	1	4	5	10
	Other	11	14	14	39
	Subtotal	48 <i>41%</i>	36 <i>31%</i>	34 <i>29%</i>	118 <i>100%</i>
100 or less	Accountant	4	4	3	11
	Manager	5	14	7	26
	Owner-manager	14	21	26	61
	Other	5	14	5	24
	Subtotal	28 <i>23%</i>	53 <i>43%</i>	41 <i>34%</i>	122 <i>100%</i>

3. 2 Implementation of ABC

Comparing the firms that have already implemented ABC with those still using traditional cost accounting, we find results comparable to those based upon the questions related to familiarity with ABC. Only the 215 respondents who provided information on the implementation of ABC in their companies are included in this analysis. Overall, nearly 22% of the respondents indicated that their firm had already implemented ABC. Figure 4 examines ABC implementation by economic sector and shows that implementation rates are quite similar across both the

manufacturing and service sectors. There is no statistically significant relationship between ABC implementation rates and economic sector for firms in this sample.

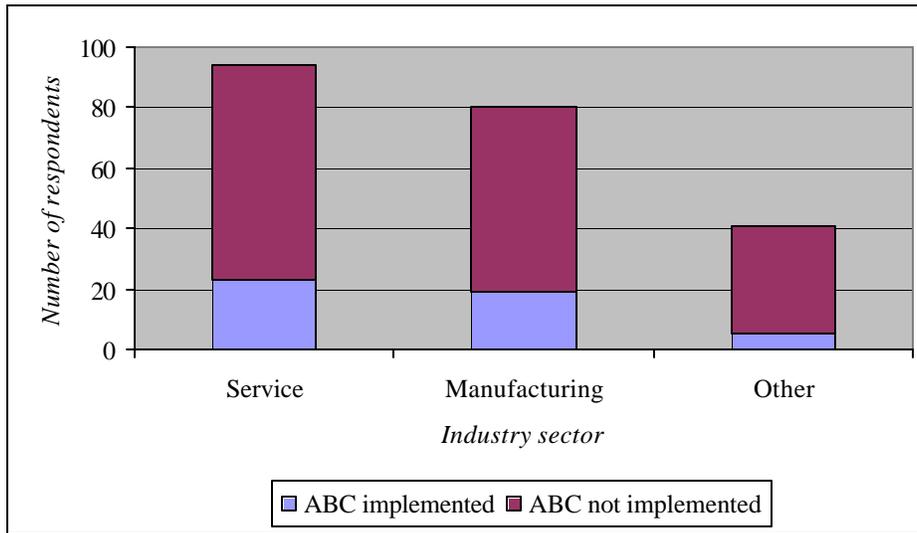


Figure 4. ABC implementation and industry sector

The relationship between company size and implementation of ABC is examined in Figure 5. The Pearson Chi-square statistic indicates that the relationship between these variables is significant at the .05 level. As expected, the largest firms were the most likely to have already implemented ABC while the smallest companies were the most likely to still be using traditional cost systems. This is consistent with the finding of earlier studies suggesting that not many small companies apply modern managerial tools such as ABC [9]. Smaller firms may not have the diverse mix of products or services that would make the use of ABC beneficial. Also, small firms often operate in a business environment characterized by lack of resources [12]. Without a large staff of specialists, small companies would tend to use a simple costing system [9].

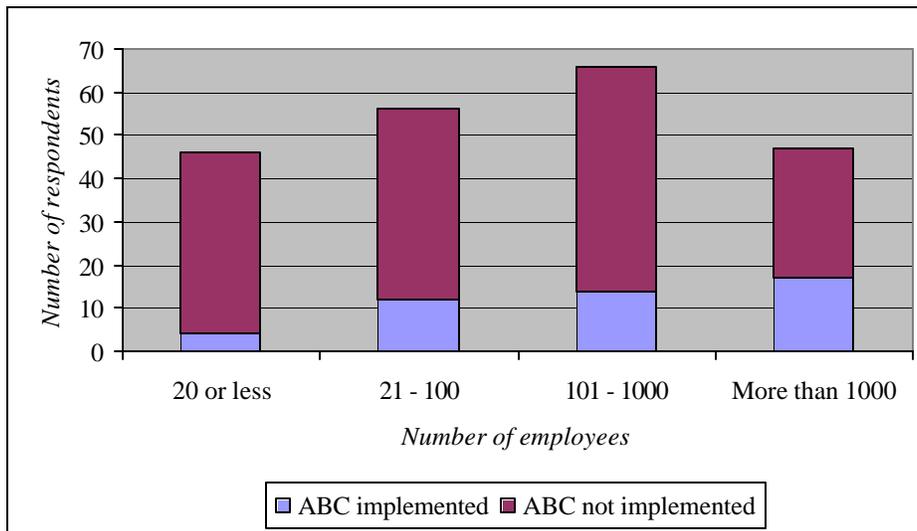


Figure 5. Implementation of ABC and firm size

4. Conclusions

Our results confirm the finding reported in earlier studies that the rate of diffusion of ABC has been relatively slow [1,7]. Familiarity with and adoption of ABC was found to be comparable across both the manufacturing and

service sectors. Service firms that provide multiple services that use overhead at differing rates can benefit from the use of ABC, as can manufacturing firms with multiple products that place different demands on overhead. In this study, adoption of ABC was found to be significantly related to firm size, with larger firms being more likely to adopt this method than smaller firms. These results may reflect the fact that larger firms are more likely to have the diverse mix of products or services that makes the use of ABC advantageous. Also, smaller firms may be less likely to have specialized staff that are familiar with this method. Accountants and managers working for larger firms were more likely to be familiar with ABC than those working for smaller firms. As small firms develop greater familiarity with ABC, increased implementation would be expected. In addition, adoption of ABC by smaller companies might be supported by implementation procedures customized to their particular needs [11].

One limitation of the current study is that no data were gathered concerning the number of different product or service lines the companies offered. Accordingly, it is difficult to conclusively determine whether the lower ABC adoption rates in the smaller firms reflect the lack of expected benefit from the use of ABC or the lack of knowledge about this method. An extension of the current study would incorporate an attempt to identify the number of product or service lines offered by the sample firms.

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Bibliographical Sketches

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