

Perceived benefits of ABC implementation in Moroccan enterprises: Results of an empirical study

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Abstract

During the last decades, the Activity Based Costing (ABC) represents a new model in the management accounting. It has been the subject of several research papers in developed countries (USA, UK, Australia, etc.). However, this type of works is still absent in developing countries like the Arab area for example. In this context, this article highlights the results of an empirical study on the relationship between ABC method and organizational performance in Moroccan enterprises. The results based on a sample of 62 firms showed that 12.9% of the responding companies reported using the ABC method. The results by using the Student's t-test for a difference in means indicate that the management accounting system based on ABC method results in a better performance for enterprises that have adopted it.

Keywords

Activity Based Costing (ABC), Performance, Competitiveness, Profitability, Productivity

1. Introduction

According to Johnson (1990, p.15), "...ABC certainly ranks as one of the two or three most important management accounting innovations of the twentieth century". Activity-Based Costing (ABC) was introduced by Cooper and Kaplan (1988) to overcome the weaknesses of the traditional volume-based costing system. Compare to traditional costing system, ABC system employed multiple cost drivers and allocation basis to allocate overhead cost to final products and services (Cooper and Kaplan, 1988, 1992).

This method is now one of the most-researched management accounting areas, especially in developed countries: the United States of America (Krumwiede, 1998; Kiani and Sangeladji, 2003; etc.), France (De La Villarmois and Tondeur, 1996; Gueye, 1997; Bescos and Cauvin, 2000; Alcouffe, 2002; etc.), the United Kingdom (Innes et al., 2000; Tayles and Drury, 2001; etc.), Sweden (Dahlgren et al. 2001; etc.), Norway (Bjornenak, 1997; etc.), Ireland (Pierce and Brown, 2004; etc.), Australia (Chenhall and Langfield-Smith, 1998 ; etc.), etc. The most of these research works have been conducted by using the contingency theory. They focused on

the relationship between the ABC adoption and several contingency factors like strategy (Gosselin, 1997, 2000; Elhamma, 2013; Elhamma and Yi Fei, 2013; etc.), firm size (Bjornenak, 1997; Elhamma, 2013; etc.), organizational structure (Gosselin, 1997; Elhamma, 2013; etc.), structure of charges (Malmi, 1999; etc.), etc. However, the studies on its performance are still insufficient.

In this context, this article aims to present the results of an empirical study done in Morocco and attempts to answer the following questions:

- What is the adoption rate of ABC method in Morocco?
- What is the impact of ABC method on global performance?

A literature review and a formulation of the research hypothesis (§ 2) and a presentation of our choices of research methodology (§ 3) are necessary to conduct the statistical analysis and to present the main results (§ 4).

2. Literature Review

In this section, we highlight, firstly, the ABC method and its adoption in some developed and developing countries, and secondly, we present the ABC performance.

2.1. ABC: A New Method of the Management Accounting

The activity-based costing technique has been substantially developed in the last decade of the twentieth century (Cooper, 1990). It is claimed to avoid the deficiencies of the traditional absorption costing methods, which commonly use direct labour to assign indirect costs (Dugdale, 1990). ABC is a management accounting process that allocates resource costs to products based on activities, which are the factors causing work and incurring cost, used by products or services (Krumwiede and Roth, 1997). According to this method, it is essential to organize the firm by activities and not by functions or products. The heart of ABC is the activity concept (Turney, 1991). According to Bescos et al. (2002, p.238), "activities are a group of actions or tasks that add value to a product or a service and that generate costs and resource consumption". Three main stages of implementation of the ABC model can be highlighted. The first stage is "the mapping of activities and processes" (identification of activities). The second stage is "the allocation of resources to activities" (the resources consumed by a product or a service are allocated to the various activities used by this product or service). The third stage is "the consumption of activities by objects of cost (product, service, process..." (allocation of activity costs to objects of cost through the cost driver).

Over the last decade, several surveys show that the trend in developed countries has been an increase in the adoption and implementation of the ABC method (Baird et al. 2004). In table 1, we present the evolution of the adoption rate of ABC in some developed countries.

Table 1. The extent of ABC implementation in some developed countries

| Countries | Year | Study | Adoption rate |
|-----------|------|------------------------------|---------------|
| USA | 1993 | Armitage and Nicholson | 11% |
| | 1995 | Shim and Sudit | 25% |
| | 2003 | Kiani and Sangeladji | 52% |
| | 1991 | Innes and Mitchell | 6% |
| UK | 1994 | Drury and Tayles | 13% |
| | 2000 | Innes, Mitchell and Sinclair | 17.5% |
| | 2001 | Tayles and Drury | 23% |
| | 2001 | Bescos et al. | 23% |
| France | 2002 | Alcouffe | 15.9% |
| | 2007 | Cauvin and Neumann | 23% |
| | 2008 | Rahmouni | 33.3% |
| Australia | 1998 | Chenhall and Langfield-Smith | 56% |
| Ireland | 2004 | Pierce and Brown | 27.9% |

In the USA, UK and France, surveys between the early 1990s and 2008 have indicated an increasing extent of ABC adoption in each of these countries. In the USA, the adoption rate of the ABC method has increased from 11% (1993) to 52% (2003) and that of UK companies has increased from 6% (1991) to 23% (2001). Also, the firms in France increased their ABC adoption from 15.9% (2002) to 33.3% (2008). In Australia, the ABC adoption rate is very high in 1998 (56%) and it is 27.9% in Ireland (2004). In recent years, some studies have been conducted on the adoption and implementation of the ABC method in developing countries (table 2).

Table 2. The extent of ABC implementation in some Asian and African countries

| Countries | Study | Adoption rate |
|--------------|-------------------------------------|---------------|
| Cameroon | Ngongang (2010) | 9.3% |
| Tunisia | Moalla (2007) | 23.75% |
| South Africa | Sartorius, Eitzen and Kamala (2007) | 12% |
| Thailand | Chongruksut and Brooks (2005) | 35% |
| Malaysia | Ruhanita and Daing (2007) | 36% |

The adoption rate of the ABC method is higher in Asian than in African countries. It is 36% in Malaysia (2007) and 35% in Thailand (2005). This rate is only 24% in Tunisia (2007) and 12% in South Africa (2007). Also, 9.3% of the Cameroonian companies adopt this method of the management accounting (2010). Unfortunately, we could not find statistics for Moroccan firms.

2.2. Performance of ABC

The impact of ABC on organizational performance has been studied by several authors, especially in the Anglo-Saxon countries like the U.S. and the UK for example. According to its partisans, the ABC method can reduce the inexactitude about the allocating costs and improve the performance (Ittner et al., 2002). Shields (1995), from an empirical study conducted in the United States, showed that 75% of respondents said that the use of ABC resulted in improving in financial performance, and only 25% who said the opposite. This result was confirmed later by McGowan and Klammer (1997) and Foster and Swenson (1997).

According to an empirical study comparing the performance of traditional methods and that of the ABC method, Mc Gowan (1998) demonstrated that the relevance, the causality, the availability and the meaning of information are improved by using the ABC system. In the same sense of ideas, Krumwiede (1998) obtained that 42% of enterprises using ABC method consider that their system of the management accounting is "good" or "excellent", while the percentage is only 28% for all enterprises.

During the XXI century, Ittner et al. (2002) have shown that the use of ABC is associated positively and significantly with reducing of the costs in the U.S. manufacturers. According to Pizzini (2006), the use of the ABC approach usually results in an increase in profitability, competitiveness and shareholder value.

Recently, Banker et al. (2008), from an empirical study of 1250 U.S. companies, have shown that ABC method has an indirect positive impact on the industrial performance. More recently, Zaman (2009) confirmed that the use of the ABC method results in a better overall performance for enterprises that have adopted it in Australia, we can formulate this hypothesis:

Research hypothesis: There is a significant positive effect of ABC adoption on organizational performance.

3. Methodology

It is important to present the methodology for any study

conducted. The following sub-sections describe study design and the methods for data collections.

3.1. Sample

The study was based on data collected using questionnaires sent to enterprises based in Morocco. Morocco that has chosen liberalization and the opening on the international market became pushed to use international accounting (IFRS) and management accounting innovations like the activity based costing (ABC) (Elhamma, 2012, 2013).

The questionnaires were completed by 18 CFOs (29%), 23 management controllers (37%), 17 accountants (27%) and 4 other managers (6%). The sample consists of 48 industrial enterprises (77%), 6 firms of building and public works (10%), 6 enterprises of services (10%) and 2 commercial enterprises (3%). Regarding the firms size, 48% of this sample consists of SMEs and 52% of large firms.

3.2. Variables Measurement

In this research, two variables will be used: the use of the ABC and the organizational performance.

For have information about the use of the ABC method, we have formulated the following question: what is the method that you use to calculate the costs of your products? Five answers were offered:

- “the full cost method (homogeneous sections)”;
- “the method of partial costs (direct / variable)”;
- “the activity based costing (ABC)”;
- “informal methods”;
- “other methods”.

In front of the impossibility to isolate the performance generated by the management accounting methods, we had chosen a perceptual approach. This approach involves an assessment of the respondent on a five-point scale (ranging from “very low” to “very high”), the average contribution of the management accounting method adopted in the improvement of three dimensions of performance: “profitability”, “competitiveness” and “productivity”¹. The Cronbach’s alpha for global performance is 0.848, indicating a good level of reliability. A high score means a high performance and vice versa.

4. Results and Discussion

According to the survey, 12.9% of companies had declared using the ABC approach. In this section, we present firstly the main results of the survey, and secondly we test the research hypothesis.

4.1. Main Results

The main results of the survey are shown in table 3, 4 and 5. 87.5% of the ABC adopters have considered that the use of

the ABC method results in a “very high” or “high” improving in competitiveness and in profitability. Concerning the classical methods, this percentage is only 42.6% for the competitiveness and 44.4% for the profitability. Also, the use of this new method of the management accounting results in a better productivity for enterprises that have adopted it. Generally, these results support the validation of the research hypothesis.

Table 3. Contribution degree of ABC and classical methods in the competitiveness improvement

| | ABC | Classical methods |
|------------------------|--------|-------------------|
| Very high contribution | 75.00% | 1.9% |
| High contribution | 12.50% | 40.7% |
| Moderate contribution | 12.50% | 55.6% |
| Low contribution | 00% | 1.9% |
| Very low contribution | 00% | 00% |
| Total | 100% | 100% |

Table 4. Contribution degree of ABC and classical methods in the profitability improvement

| | ABC | Classical methods |
|------------------------|--------|-------------------|
| Very high contribution | 37.5% | 11.1% |
| High contribution | 50.00% | 33.3% |
| Moderate contribution | 12.5% | 55.6% |
| Low contribution | 00% | 00% |
| Very low contribution | 00% | 00% |
| Total | 100% | 100% |

Table 5. Contribution degree of ABC and classical methods in the productivity improvement

| | ABC | Classical methods |
|------------------------|-------|-------------------|
| Very high contribution | 12.5% | 11.1% |
| High contribution | 62.5% | 29.6% |
| Moderate contribution | 25.0% | 50.0% |
| Low contribution | 00% | 9.3% |
| Very low contribution | 00% | 00% |
| Total | 100% | 100% |

4.2. Testing of the Research Hypothesis

To test statically the research hypothesis, we will code the responses (5: very high contribution; 4: high contribution; 3: moderate contribution; 2: low contribution and 1: very low contribution) and we will compare the means between ABC adopters and ABC non adopters. To do it, we will use the Student's t-test for a difference in means. The main results of this test are shown in table 6.

According to our data, the use of ABC results in an increase in competitiveness (t-value=5.340; $p < 1\%$), profitability (t-value=2.644; $p < 10\%$) and in general in performance (t-value=3.399; $p < 1\%$). Therefore, the surveyed firms have an interest to use the ABC approach. The research hypothesis, which predicts a significant positive relationship between organizational performance and the use of ABC, is accepted by our statistical analysis.

¹ Using these three dimensions of performance is recommended by several authors in management control (Naro, 2003).

Table 6. Performance average compared between the ABC and the classical methods

| Performance dimensions | ABC adopters mean value | ABC non adopters mean value | Difference | t-value | Sig. |
|------------------------|-------------------------|-----------------------------|------------|---------|----------|
| Competitiveness | 4.6250 | 3.4259 | 1.1991 | 5.340 | 0.000* |
| Profitability | 4.2500 | 3.5556 | 0.6944 | 2.644 | 0.010*** |
| Productivity | 3.8750 | 3.4259 | 0.4491 | 1.488 | 0.142ns |
| Performance | 12.7500 | 10.4047 | 2.3426 | 3.399 | 0.001* |

* Significant at the 1%, *** Significant at the 10%, ns Not Significant

5. Conclusion

According to Bescos et al. (2002, p. 243), “there is still a lot of work to do to fully understand the diffusion process for management accounting innovations in various contexts”. In this context, this article evaluated the relationship between ABC adoption, firm size and performance. Despite its popularity, only 12.9% of the responding companies had declared implementing the ABC method. The results of the study show that the management accounting system based on ABC method results in a better performance for enterprises that have adopted it.

Two major methodological limits should be highlighted in this research: the modest size of the sample and the use of a perceptual approach to collect data. The results obtained in this research must be used with great caution.

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