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THE ROLE OF ORGANIZATIONAL AND CULTURAL FACTORS IN THE ADOPTION OF ACTIVITY-BASED COSTING: THE CASE OF MOROCCAN FIRMS

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ABSTRACT

The purpose of this study has been to measure the adoption of Activity-Based Costing (ABC) by Moroccan companies, and to identify the characteristics and causes of its implementation.
Employing a survey methodology, a questionnaire was used to collect data on the organizational and cultural factors meant supposed to facilitate the adoption of ABC by companies. To obtain rich data, three semi-structured interviews were carried out. The results indicate that the emphasis on the cost information and cultural factors explain the adoption. A comparison is possible with other international studies and can show the contributions and limitations of our results.

Activity-Based Costing, ABC, Adoption, Culture, Morocco

INTRODUCTION

Morocco remains the top destination for foreign direct investment (FDI) in North Africa, draining, between 2001 and 2007, flows of over $13.6 billion, which allowed him to significantly outperform other countries in the region (La vie économique, 2008).

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But the Moroccan companies must adapt to a competitive environment more and more acute, both to survive and benefit from the opportunities presented to them. Of course, the economic environment is an important consideration in any research in management but especially the case for Morocco is an emerging economy, evolving in an international context which is increasingly changing, hostile, complex and diverse. Thus, the forms taken by the competition can take different angles of attack, such as the price, but also the quality of services rendered or any other value attributed to the services offered to clients, both in industry and in services. This recent diversity of forms of competition made it increasingly necessary to adopt tools to improve performance as in European countries, including the use of Activity-Based Costing (ABC).

More and more Moroccan companies are turning to ABC to meet their information needs, because their cost structure was reversed in this new environment increasingly international: Indirect costs saw their proportion greatly increased compared to that of direct costs, because of the increasing role played by support functions (Bescos & Charaf, 2013). But so far, is the evolution of management tools following this modernization often considered essential for these companies? Should we not then wonder about the specifics in the implementation of these new approaches in Morocco, even if they only to contribute to their better adaptation to the context of this country?

Through the study of the causes of the adoption of ABC in Morocco, our goal is to measure the adoption of ABC by Moroccan companies and to determine the characteristics of its implementation. A comparison with other similar research from other countries should help to better identify the specific implementation of ABC in Morocco.

Starting from a case study that has already been undertaken has allowed us to identify the critical factors of adoption of ABC in this country. The results of this case study indicate that the relevance of data from the ABC implementation and the perceived usefulness of this data in making decisions, are considered as criteria for its adoption and success (Bescos & Charaf, 2013). Accordingly, we wanted to validate the initial findings on a larger sample, using a survey questionnaire whose results would be delivered in this paper.

The purpose of this research has been an attempt to measure the adoption of ABC by Moroccan companies, and to determine the characteristics and causes of its implementation.

Till now, there have been very few empirical research studies on the relationship between corporate culture and adoption of ABC. That is why we have included

these cultural factors in this study. Thus, we propose four key factors explaining ABC adoption:

1. Importance of costs for decision-making,
2. Complexity/diversity of business unit,
3. Proportion of indirect costs,
4. Culture.

To our knowledge, this is the first survey conducted on Moroccan companies on the subject. Our contribution to this field of research is broader and it would help facilitate the implementation of appropriate management tools in the Moroccan companies. This research could also provide some business leads for the adoption and the implementation of ABC.

This article is organized as follows. In Section 1, the literature review on the variables that influence the adoption of ABC is presented. This review will lead us to formulate several hypotheses about the influence of the four explanatory variables mentioned above. The methodology used to validate these hypotheses is described in Section 2. In Section 3, the results and the discussions are presented. Finally, the conclusion is presented in the last section.

1. LITERATURE REVIEW

ABC is often assimilated as an approach facilitating to have a more cross-organization vision, for the highlight of processes in which several managers and services can act jointly (Bescos *et al*., 2002). ABC is also seen as a solution to the problem of lack of relevance of costing systems inherited from a context of continued growth following the Second World War (Johnson & Kaplan, 1987).

In relation to the work on the subject, our research question assumes that there are organizational and cultural factors facilitating the adoption of ABC by companies. However, there is limited study on the relationship between corporate culture and adoption of ABC in the existing empirical research we have identified[1]. Organizational factors such as importance of costs for decision-making, complexity/diversity of business unit and the proportion of indirect costs are often identified as having a positive impact on the adoption of ABC (Krumwiede, 1998; Cagwin & Bouwman, 2002, Brown *et al.*, 2004). In this work, we will consider the following factors:

> **Organizational factors:** Importance of costs for decision-making, complexity/diversity of business unit, and proportion of indirect costs.
>
> **Cultural factors:** Outcome orientation, Innovation, Team orientation, and attention to detail.

1.1. Organizational factors and the adoption of ABC

As mentioned above, ABC is not appropriate for all companies, and only some conditions are favorable to its adoption and success. Organizational factors identified in previous research are mainly related to:

- Importance of costs for decision-making,
- Complexity/diversity of business unit,
- Proportion of indirect costs.

1.1.1. The importance of costs for decision-making

Previous research indicates that the relevance of the required data from the management accounting for decision making encourages organizations to implement ABC (Cagwin & Bouwman, 2002). Some factors which affect the decision of the usefulness of cost information include the company's use of cost data in pricing decisions, customer profitability analysis, allocation of overhead, cost reduction efforts, performance measurement etc. As a result, we believe that companies that give much importance to cost information tend to adopt a sophisticated management accounting system as ABC, particularly to help them to achieve goals of reducing costs and improving the process of decision making. This leads us to hypothesize that there is a positive relationship between the emphasis on costs for decision making and the adoption of ABC. Thus, we formulate our hypothesis as follows:

Hypothesis 1: The importance of costs for decision-making is positively associated with ABC adoption

1.1.2. The complexity/diversity of business unit

Studies dealing with the diffusion of ABC believe that the complexity and diversity of products/services are associated with its adoption and success (Krumwiede, 1998, Dearman & Shields, 2001; Ittner *et al.*, 2002; Cagwin & Bouwman, 2002). Also, companies that manufacture products with a low complexity of their products would not need advanced cost allocation, such as ABC (Gupta & Galloway, 2003). A company's complexity increases as the extent of its product line expands and as each product uses multiple components to manufacture the product (Swenson, 1995). Because the complexity/diversity of business unit may affect the adoption of ABC, the following research hypothesis will be tested:

Hypothesis 2: The complexity/diversity of business unit is positively associated with ABC adoption

1.1.3. The proportion of indirect costs

At the beginning of their work on ABC, Cooper and Kaplan (1988) based their observation on the proportion of indirect costs in the total cost of business that has become more important than before, thus justifying the implementation of a sophisticated costing system (such as ABC). Indeed, when the overheads have a significant weight, the adoption of global bases apportions implicates a less reliability in costs information. It also introduces the "cross-subsidization". Indeed, items which are produced in high volumes, are low in complexity, or require little technology investment are overcosted by traditional methods. Items which are produced in lower volume, highly complex, or require a large technology investment are undercosted by the traditional methods.

These distortions are also important in companies with multiple activities. As a result, companies that have a high proportion of indirect costs are interested to have a sophisticated costing system to allocate these costs to cost objects in a relevant way (Bjørnenak, 1997). We suggest that there is a positive relationship between the proportion of indirect costs and the adoption of ABC. We are led to formulate the third hypothesis as follows:

Hypothesis 3: The proportion of indirect costs is positively associated with ABC adoption

1.2. Cultural factors and adoption of ABC

Culture is defined as a "pattern of shared beliefs and values that give members of an institution meaning, and provide them with the rules for behavior in their organization" (Davis, 1984). Gosselin (2007) indicates that organizations that adopt and implement ABC are bureaucratic. In the same vein, Baird *et al.* (2004) suggest that organizations that are outcome-oriented and innovative are attracted to new management practices, such as ABC, to improve processes and enhance performance and competitiveness.

We were inspired by the criteria of O'Reilly *et al.* (1991) to study the relationship between culture and the adoption of ABC. The reason is that these authors have identified the categories of corporate cultures that are often included in studies of the ABC, allowing us to make comparisons between Morocco and elsewhere. These factors are: Outcome orientation, innovation, team orientation, attention to detail.

- **Outcome orientation:** Outcome-oriented companies emphasize accomplishment, results, and action as important values.
- **Innovation:** Organizations that have innovative cultures are adaptable, flexible, and experiment with new tools and ideas.
- **Team orientation:** Firms with a team-oriented culture emphasize cooperation and collaboration among employees.

- **Attention to detail:** Companies with a detail-oriented culture pay attention to details and emphasize precision.

The following research hypothesis will be tested:

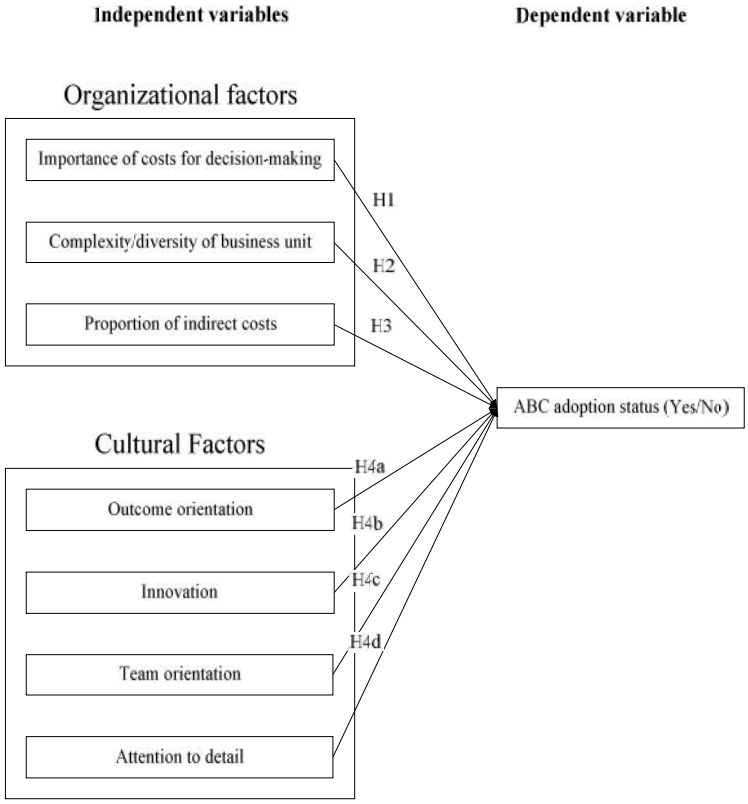
Hypothesis 4: Corporate culture influences ABC adoption

Hypotheses 1 to 3 are related to the influence of organizational factors, which are; the importance of costs for decision-making, the complexity/diversity of business unit and the proportion of indirect costs. Hypothesis 4 is designed to test the impact of cultural factors on the adoption of ABC. The variable "Corporate culture" includes four factors:

- Outcome orientation,
- Innovation,
- Team orientation,
- Attention to detail.

Our research model is presented in Figure 1

Figure 1. **Research model**



2. RESEARCH METHOD

In this section, we will present the research methodology used to study the topic.

Data was gathered from a survey using questionnaires. To determine the reference population of our questionnaire survey, we selected the 350 largest companies ranked by the Moroccan Kompass 2007. From the sample of 350 companies, 49 companies were eliminated. 9 companies for which complete address was unavailable and 40 companies that were not appropriate for our analysis, being consulting companies.

The questionnaire took into account the contributions of the literature and pre-tested by 5 academics in management accounting and 38 cost controllers who have had experience with costing systems, before being sent to different companies.

The pre-test allowed us to examine the appropriateness of language level, usefulness of instructions, and word usage in the survey instrument. Additionally, the pre-test enabled us to identify the existence of unclear portions and to confirm the estimates of interview length.

We sent a fax to potential respondents in order to present the objectives of the study and announce the mailing of the questionnaire in the following days. The questionnaire and cover letter were developed in French. To obtain rich data, three semi-structured interviews were carried out with Moroccan cost controllers from different organizations. The interviews were taped and notes were taken. The average duration of these interviews was 25 minutes.

The survey was administered using *Dillman's method* (2000), which has been shown to improve response rates to mail survey questionnaires.

After the initial mailings[2], three follow-ups were made by e-mail, phone and fax. There were 62 answers received in total (out of 301 sent[3]) for a response rate of 20.60%. We can consider that the percentage of response as satisfactory, given the fact that this is a mailing and is comparable to other surveys conducted on ABC in other countries. A non-response test was performed[4].

In total, 62 questionnaires were completed by the CFOs (43%), management controllers (55%), and other types of managers (2%). The organizations which responded were mostly companies belonging to various sectors of activity that can be grouped into two categories: Industry (37%) and services (63%), as shown in the graph below.

Table 1. **Demographics of Survey Respondents: By business sector**

Business sector		N	%	%
Manufacturing		23	37,1	*37,1*
Service	*Services to businesses and particulars*	22	35,5	*62,9*
	Banking and insurance industry	8	12,9	
	Retail	9	14,5	
	Total	62	100	*100*

2.1. The dependent variable

To measure the dependent variable on the status of ABC, previous research led us to consider only two situations only, namely the adoption or non-adoption of ABC. So we come to a dichotomous variable. This is justified also by the fact that this type of variable is easily treatable in the bivariate statistical analysis and may allow us to do international comparisons.

In addition, among the 62 questionnaires returned, only 21% of the companies in the sample had already implemented ABC, and 1.6% of firms indicated that ABC is under implementation. Thus, we estimated that 22.6% of the respondents have adopted ABC in Morocco.

Furthermore, 9.7% of the sample firms were considering the possibility of adopting ABC and 67.7% stated that they were not considering adopting ABC. By summing the latter two percentages, we can estimate that 77.4% of the Moroccan companies have not adopted ABC.

Table 2. **ABC adoption status in Morocco**

ABC adoption status		N	%
Yes	Currently using ABC or under implementation	14	22,6
No	Currently considering ABC adoption	6	9,7
	No consideration of ABC to date	42	67,7
	Total	62,0	100,0

The rate of adoption of the ABC in Morocco (22.6% of the respondents) is lower than the rate of 33.3% found by Rahmouni (2008) in France, and is almost the same as that found by Moalla (2007) in Tunisia (23.75%).

Table 3 below provides a summary of the comparison of our results with these previous studies in both countries.

Table 3. **ABC adoption status in Morocco, France and Tunisia**

ABC adoption status		This study (Morocco)	Rahmouni (2008) (France)	Moalla (2007) (Tunisia)
Yes	Currently using ABC or under implementation	22,6%	33,3%	23,7%
No	Currently considering ABC adoption	9,7%	18,2%	11,3%
	No consideration of ABC to date	67,7%	48,5%	65%
	Total	100,0% (N = 62)	100% (N = 66)	100% (N = 80)

2.1.1. The adoption of ABC by Industry

The first experiences of adoption of ABC were carried out in industrial companies. The service sector attracted the attention of some researchers who have extended their investigation to examine the three key sectors such as industry, services and trade (see in particular the study of Bescos & Rahmouni, 2007).

Table 4 shows that ABC was adopted in Morocco: 17.4% of industrial companies, 28.6% of services to businesses, 25% of banking and insurance industry, and finally 22.2% of the retail sector.

Table 4. **Demographics of Survey Respondents: By business sector/ ABC Adoption status**

ABC adoption status / Business sector	Using ABC or under implementation		Considering ABC adoption		No consideration of ABC to date		Σ
	N	%	N	%	N	%	
Manufacturing	4	17.4%	3	13.0%	16	69.6%	23
Service	10	25.6%	3	7.7%	26	66.7%	39
Retail	2	22.2%	0	0.0%	7	77.8%	9
Services to businesses and particulars	6	28.6%	2	9.5%	13	61.9%	21
Banking and insurance industry	2	25.0%	1	12.5%	5	62.5%	8
Other	0	0.0%	0	0.0%	1	100.0%	1
Total	**14**	22.6%	**6**	9.7%	**42**	67.7%	**62**

2.1.2. Information system used for the ABC

As shown in Table 5, the implementation of ABC can rely on a specific internal software development (11.8%), a spreadsheet (17.6%), a specific ABC software system sold on the market (23.5%), or an existing ERP (47.1%). The information systems that support the ABC model vary significantly across the organizations, as in Europe.

Table 5. **Information system used for the ABC**

	Adopter		Non-Adopter	
Information system	**N**	**%**	**N**	**%**
ABC software system sold on the market	4	23.5	4	6.3
Specific internal software development	2	11.8	2	3.1
Existing ERP	8	47.1	16	25.0
Spreadsheet	3	17.6	42	65.6
Total	-	100	-	100

2.2. The independent variables

The independent variables are taken from the previous research dealing with the adoption of ABC and related to the importance of costs information for decision making, complexity/diversity of business unit, proportion of indirect costs, and corporate culture. We considered these variables as factors influencing the adoption of ABC.

Our scales and different items retained in this study were inspired by the previous research (see table 6). Then they were adapted to Moroccan context, taking into account the comments collected during testing of the questionnaire. In our study, we used Cronbach's Alpha after factor analysis of items. It allowed us to check the internal consistency of all items. We got a high Alpha (between 0.627 and 0.875), which is acceptable to the reliability of measurement scales (Alpha greater than 0.5).

Table 6. **Independent variables (N = 62 surveys)**

Variables	Number of items	References	Hypothesis	Cronbach alpha (α)
Importance of costs for decision-making	3	Cagwin & Bouwman (2002) ; Krumwiede (1998).	1	0,7934
Complexity/ diversity of business unit	4	Brown *et al*. (2004); Cagwin & Bouwman (2002); Krumwiede (1998).	2	0,875

Variables	Number of items	References	Hypothesis	Cronbach alpha (α)
Proportion of indirect costs	1	Brown *et al.* (2004); Cagwin & Bouwman (2002); Krumwiede (1998).	3	-
Culture	16	Baird *et al*. (2007); O'Reilly *et al*. (1991).	4	0,627

3. RESULTS AND DISCUSSION

The aim of this section is to present the results of the empirical study discussed above and to confirm or reject our hypotheses. According to our research model, there is a relationship between the organizational and cultural factors, and the fact that companies adopt or not ABC.

In order to statistically test these hypotheses, we used logistic regression[5]. Table 7 below summarizes the results of logistic regression obtained with the seven selected factors and the constant of the equation. Only variables in bold labeled: "importance of costs for decision-making", "innovative culture" and "Outcome-oriented culture" are significant at the 0.05 error level[6].

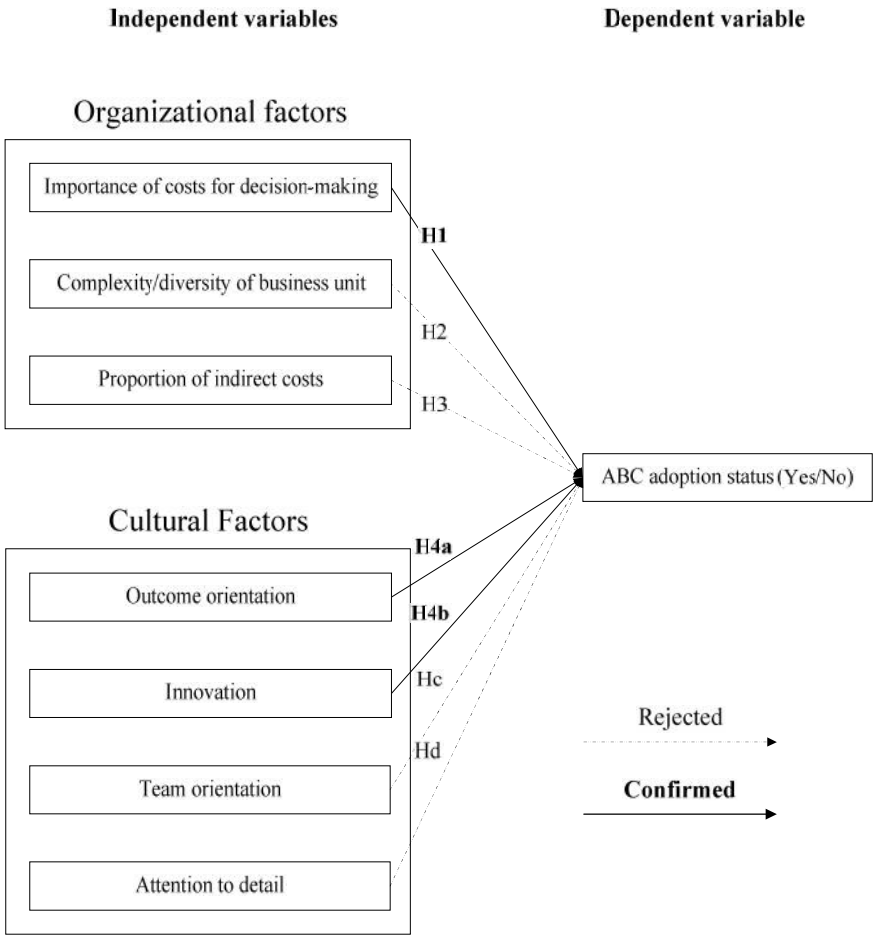
Table 7. **Logistic Regression model**

	Regression coefficients	E.S.	Wald	Signif.	Exp(B)
Importance of costs for decision-making	**1.434**	**0.672**	**4.559**	**0.033***	**4.196**
Complexity/diversity of business unit	0.845	0.576	2.153	0.142	2.328
Proportion of indirect costs	-0.27	0.436	0.384	0.536	0.763
Culture: Outcome orientation	**2.468**	**0.865**	**8.149**	**0.004****	**11.798**
Culture: Innovation	**2.048**	**0.812**	**6.358**	**0.012***	**7.755**
Culture: Team orientation	-0.669	0.666	1.012	0.314	0.512
Culture: Attention to detail	-0.315	0.682	0.214	0.644	0.73
Constant	-9.375	4.158	5.085	0.024	0
* significant at the 0,01 level **significant at the 0.05 level Nagelkerke R Square = 0,439 (the proportion of variance explained by the predictors = = 43.9%)					

According to our results and the correlation coefficient R Square calculated, 43.9% of the adoption of ABC could be explained by three factors related to the importance of cost information for decision making, "innovative culture" and "Outcome-oriented culture". Our tests therefore suggest that there is a significant relationship between on the one hand some organizational and cultural factors, and the adoption of ABC, on the other hand.

The research model is partially validated for hypotheses 1; 4a and 4b (see Table 8 below). Moreover, the variables related to complexity/diversity of business unit (hypothesis 2), proportion of indirect costs (hypothesis 3), "culture: team orientation" (hypothesis 4c) and "culture: attention to detail" (hypothesis 4d) are not validated in the model.

Figure 2. **Results of the research model**



First, our results are consistent with previous work with regard to the relationship between the importance of costs for decision-making and the adoption of ABC (hypothesis 1): Some companies need to have reliable information on costs for decision-making and this naturally leads to the implementation of ABC (Bescos & Rahmouni, 2007).

As stated by a cost controller in a Moroccan company:

> *"We adopted ABC systems because we need detailed and reliable information on costs* […]. *Our Costing system provides a great level of decision support* […]. *Our departments widely use information from ABC in order to make decisions related to product costing, customer profitability analysis, budgeting and so on."*

In contrast, according to the results of our logistic regression complexity/diversity of business unit and the proportion of indirect costs have no impact on the adoption of ABC for Moroccan companies in our sample (hypotheses 2 and3). This result seems surprising since it is likely that these two variables are positively associated with the adoption of ABC, as shown in the previous research on the subject (Krumwiede, 1998; Groot, 1999; Dearman & Shields, 2001; Cagwin & Bouwman, 2002; Ittner *et al.*, 2002; Gupta & Galloway, 2003; Bescos & Rahmouni, 2007). However, the result we obtained is consistent with Al-Omir and Drury (2007) and Abernethy *et al.* (2001). We can nevertheless explain this difference by the fact that our sample is relatively homogeneous in size of the companies surveyed: It is large Moroccan companies as we noted above. Thus, specific factors such as complexity and diversity of business unit, or the proportion of indirect costs, are substantially identical for all firms in our sample because these characteristics are often attached to any company of significant size.

ABC is not appropriate for all companies, and only some conditions are favorable to its adoption (Rahmouni, 2008) and its successful implementation (Baird *et al.*, 2004, Baird, 2007; Kallunki & Silvola, 2008). These specific factors, including corporate culture, play a major role in the adoption of ABC. The validation of our hypotheses 4a and 4b suggests that companies with a culture that is strongly *outcome-oriented* and companies that have innovative cultures tend to adopt ABC, which is consistent with the literature review. As mentioned above, this type of organization is naturally attracted by the new management practices (such as ABC), that these approaches improve their processes, their performance and competitiveness (Baird *et al.*, 2004; Baird, 2007).

In this regard, a cost controller in Moroccan company said:

> "*Our Company tries to implement the latest management tools because we believe that the lessons to be drawn from foreign countries could help us to*

be the best in our sector in order to improve our financial and non-financial performance. The implementation of ABC illustrates our vision of excellence."

Or,

"In our company rewards are tied to performance indicators and not to seniority. Employees are accountable for success. […]They are trained to sell company products effectively, and they calculate costs weekly by department.. […]We are led to implement the most innovative managerial tools in order to improve our revenues and reduce expenditures", says another cost controller.

As such, our sample does not indicate Moroccan specificities about the relationship between corporate culture and the adoption of ABC, since probably the same competitive constraints are ubiquitous for all countries that are open to international competition. In this respect, Morocco is not an exception and businesses are struggling with the same tools as the European firms, and ABC is one of them. These remarks illustrate this point:

"We carry 50% of our turnover on the export market. […] The European market is increasingly competitive, putting downward pressure on prices. [...] So, we have to offer to our customers, high-quality products at lower cost. [...] ABC allows us to determine and remove non-value adding activities", says a Chief Financial Officer of a Moroccan company.

Or,

"The Chinese products have flooded the Moroccan market in last few years. The most effort is concentrated in the field of production costs. […] Our costing system [ABC] helps us to identify the full costs and the origin of the expenditures of each activity, which is essential for reducing costs", says another manager.

Still, other research has (or would) probably identify more fully the work of adapting Moroccan companies to international constraints. But the ambition of our research did not fall within this framework. It reveals, however, that Moroccan firms adopt the ABC at a rate comparable to other countries for similar reasons.

Our research model is partially validated; ultimately, we will retain only the importance of cost information for decision making and corporate culture (innovative and outcome-oriented) as factors facilitating the adoption of ABC in Morocco.

CONCLUSIONS

Our study provides some answers to the paradox of Gosselin (1997) which states "If ABC has demonstrated benefits, why are more firms not actually employing it?" According to our results, we find that organizational and cultural factors may help or hinder the adoption of ABC. This means that the supposed qualities of this tool are not the only factors that could influence its implementation. Contingency factors, such as those selected here, and more involved in deciding organizations to choose whether or not to implement ABC.

As noted previously, ABC would not be appropriate for all companies, and only under some conditions would be favorable to its adoption, without any consideration related to the potential benefits that could derive from this method. These specific factors, including corporate culture, play an essential role in the adoption of ABC and the success of its implementation.

Till now, there have been very few empirical studies on the relationship between corporate culture and adoption of ABC. That is why we have integrated these cultural factors to measure their potential influence on the adoption of ABC. We concluded that innovative and outcome-oriented companies are predisposed to adopt ABC. The complexity/diversity of business and the proportion of indirect costs are also specific factors that we included in our analysis. But it was found that they have no significant impact on the adoption of ABC by Moroccan companies in our sample. These results are consistent with those of Al-Omir and Drury (2007), but contradict much of the previous management literature (Krumwiede, 1998; Groot, 1999; Dearman & Shields, 2001; Cagwin & Bouwman, 2002; Ittner *et al.*, 2002; Gupta & Galloway, 2003; Bescos & Rahmouni, 2007).

We can explain this difference by the nature of our sample. Indeed, our sample is relatively homogeneous with respect to the size of the responding companies (large companies in most cases). Thus, specific factors such as complexity/diversity of business unit or the proportion of indirect costs are substantially identical for all firms in our sample and do not differentiate the responses here on the adoption of ABC. However, our work confirms for Morocco that companies that adopt the ABC also give importance to cost information for decision-making.

Our methodological contributions mainly used in the Moroccan context, reliable and validated variables from the literature, such as those relating to culture, the complexity and diversity of business, status of ABC, and so on. Our desire to make a comparison between Morocco and other countries require this approach.

The anchor of our research in the Moroccan context is also a managerial contribution, since this is probably one of the first research on ABC in this country.

However, the operationalization of some variables used in our research is subject to limitations. This is the case for measuring the rate of adoption of ABC and the inclusion of the corporate culture. Other factors could probably have been used to explain more fully the adoption of ABC in Morocco.

The generalization of our results must also be considered with caution. Indeed, the number of responses received is low (62 companies), although our response rate is not very different from other research on the subject. The number of returned questionnaires did not allow us to use more advanced statistical tools than those used here. Possible validation of our results on a larger sample would be necessary.

Finally, future research could explore the relationship between culture and adoption of ABC or study the impact of ABC on the performance of companies in order to explain more fully, perhaps the low adoption rate in Morocco and elsewhere.

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[1] See Baird *et al*., (2004), Baird (2007).

[2] The questionnaires were sent out in February 2008.

[3] The companies selected in the population have a number greater than or equal to 100 employees and a turnover of more than or equal to 130 million dirhams (about13 million euros).

[4] Non-response bias was undertaken by comparing values of dependent and independent variables between early and late responders. No significant differences were found, indicating the absence of non-response bias.

[5] Logistic regression (sometimes called the logistic model or logit model) is a method for determining whether each of a set of independent variables has a unique predictive relationship to a binary dependent variable.

[6] Variables not selected do not meet the significance level of 0.05.