

The diffusion of an integrated Activity-Based Costing (ABC) with the Economic Value Added (EVA) next to Tunisian enterprises

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Abstract: *This article is interested in the success rate of the ABC diffusion method also called the strategic accounting of costs or the activity-based costing when linked with the performance indicator of the economic value added creation (EVA). Its objective consists in showing the extent to which the diffusion of the latter next to Tunisian companies could succeed or fail in the presence of the following contingencies variables: the size of the company, the applied technology, the state of the competitive environment, the culture of these companies as well as the full cost and capital costs distortion. A survey was carried out next to a sample of 60 Tunisian private (small and medium) companies located in different areas and in different economic sectors in Tunisia. It revealed that the main factors affecting the success of the ABC method diffusion linked with the EVA next to these companies are the type of the applied technology, the problem of costs of the products, activities and of the capital distortion and their affectation. Similarly the financial and innovation culture as well as the intensive competition affect the diffusion success of the ABC method linked with the EVA.*

Key words: *ABC, EVA, Diffusion, Cost distortion, Contingency variables.*

JEL Classification: *C1, C23, D4*

Introduction:

Among the present innovations we can observe with much interest the predominance of debates related to the management activity-based costing (ABC) with a parallel interest in the improvement of the economic value added in the industrial and scientific fields. In the frame of this method, we have chosen to study and analyze its diffusion in connection with the economic value added (EVA) which is an excellent financial reporting tool. It seems for us that this choice is justified by the fact that this method could be considered as a managerial innovation in the way that most of the consultants, the software editors and the scientific researchers have presented the ABC method under the same title as the EVA since they are two managerial innovations capable of helping managers and stakeholders to acquire the added value. Gosselin and Ouellet (1999) confirm that the activity-based costing is one of the most important innovations of the 20th century in the research field of management accounting. We shouldn't also neglect that we are dealing with a new organizational innovation method capable of being associated with the EVA. According to this fact, the managers must be interested in both the development of the creative activities capable of creating the added value in the operational process of the value (Porter 1986) and the ability to cover the capital costs necessary for each activity with the required financial revenue of assets portfolio (Hubbell, 1996a, Hubbell, 1996b, Roztocky & Needy; 1998, Roztocky & Needy, 1999c, Cooper & Slagmulder, 1999).

The legitimacy of the value creation by the integration of the two last methods is backed up by the ABC, which often forces itself to emphasize in a direct way the role sought by the EVA activities. The fact that the last ones are granted with specific tangible and intangible assets represents at his level a major obstacle to overcome on the way to improve the value added (Cooper and Sllagmulder. 1999). Actually the ABC, which requires a strategic activity management within the business process, consists in developing strategies being able to create the added value in the eyes of the stakeholders (Roztock & Needy 1999). The non- creative activities of the value will be either underestimated or integrated within the rest of the activities of the value process or simply turned down. In Tunisia, It seems that a study of the factors that affect the diffusion of the ABC linked with the EVA next to companies would be of a great importance.

In our current work we are going to raise the problematic success rate of the spreading of the ABC method linked with the EVA as being a managerial novelty working for the creation of the added value in a general way as well as the space of its diffusion mainly next to the industrial companies. Our aim will consist in showing the extent to which the diffusion of the ABC method linked with the EVA next to Tunisian companies could succeed or fail in the presence of the following contingent factors: the size of the company, the applied technology, the state of the competitive environment, the culture of the value and wealth creation as well as the full cost structure and the capital cost resulting from financing the specific assets of the various activities.

The hypothetical-deductive methodology used to achieve this survey about the attitude of the Tunisian companies towards the diffusion of the ABC method while taking care of the EVA is backed up by the use of various collection methods and by the data analysis. The quantitative data about the diffusion of the ABC linked with the EVA next to Tunisian companies are obtained by means of a questionnaire handed over to a sample of 60 companies ISO 9001certified in different areas of Tunisia (mainly the north and the center), in the period between 21/03/2013 and 24/04/2014.

The use of the questionnaire also allowed us to determine the data and the analysis of variables to make them flexible to the binary logistic regression. This method of data analysis, especially by means of SPSS 17 software, was developed to enable the checking of the well-based hypotheses. We will draw them after a theoretical sweeping of the literature about the ABC diffusion linked or not with the EVA and that we allow ourselves to concisely elicit a priori as follows:

- H1:** Companies having a value creation culture in the eyes of the stakeholders are open to the ABC method diffusion.
- H2:** Companies having distortions in the calculation of their indirect costs while simultaneously seeking the control of their capital costs assimilate the ABC method better.
- H3:** Companies located in an environment of a high competition are sensible to the diffusion of the ABC method.
- H4:** Large companies offer an idealistic diffusion place in the choice of the ABC method.
- H5:** Companies applying an industrial leading technology are open to the diffusion of the ABC method linked with the EV A.

1- The theory of the diffusion of the management innovations:

According to Alcouffe and Al (2003), " a management innovation is a program, a product or a technique which is seen as a novelty by the individual or the group of individuals who believe in its adoption, and which, within the organisation where it is placed, affects the nature, the location, the quality and / or the size of the available information for the decision-making". The literature of the innovation diffusion in its broad meaning has so far been concentrating on the three following questions: the process of the innovation diffusion on the societal level, the crucial factors to make an organisation ready to accept innovation, and the processes of carrying out an innovation within an organisation (Wolfe, 1994; ITTNER, 2002).

1.1- The diffusion for Rogers (1995):

For Rogers (1995) the diffusion of an innovation is the process by which this innovation is spread through some communication channels in time and among the members of a given social system. The expected advantages from the diffusion of the management techniques will be, according to this author, the relative advantage, accounting, complexity, the trial possibility and the observable character. In fact Rogers (1995) does not stop neglecting the fact that all the receivers and users can be interested in the question of diffusion, but not in the same way. However, this model is suffering from some deficiencies whose most important one is that which considers that the receivers of the innovation have the same social, cultural and intellectual maturity. The diffusion literature has also focused on the mechanisms and the bases that motivate the adoption of an accounting or management practice as well as the factors of the diffusion efficiency.

1.2- The diffusion bases of the management innovations:

The review of literature about the diffusion of innovations enables us to point out five basic elements that can favour the adoption and diffusion of a new practice either in management or in financial accounting. These elements are respectively as follows:

1.2.1- The focusing centers of attention:

The models similar to the concept of "mimetic isomorphism" (Di Maggio and Powell 1983) have been in the heart of the researches about diffusion. For Banergie (1992) when an actor adopts and applies a certain practice it will be recognised by the other actors who themselves will be motivated to adopt this method or practice. On his side, Rogers (1995) asserts that the "core" of the diffusion process is the modeling and the imitation by the potential users of their neighbours who adopted the new practice. The model often spreads through the established channels between the central organisation and the original one.

1.2.2- The cultural acceptance (cultural integration):

The organisation's neo-institutional theories are very much lingering to show the distinction between the normative and the cognitive elements. They link the first concept with the old institutional theories (Parsons 1951) and the second concept with the recent ones (Di Maggio and Powell 1991). For Weick (1995), the norms, the beliefs and the values represent a crucial part in the attitude and in the choice of the managerial practices by individuals

1.2.3 – The educational system.

As far as the cultural acceptance is concerned, the educational system also favours the diffusion and adoption of the new practice in a direct or an indirect way (Zeitz, Mittal Mc Auty, 1999).

1.2.4 – The regulation:

The organisational regulation and power can also favour the adoption and the spreading of the new practice in management accounting more than others (Di Maggio and Powell, 1983; Jepperson and Meyer, 1991). The State employs its incentive and legislative authority as a catalyzer to oblige the companies to adopt a practice or a method of accounting or of financial management. Besides, some authority agents, such as large companies, can drive companies belonging to their network to apply a well-specified practice (Scott, 1995).

1.2.5- The technical rationality:

According to Zeitz and Al, (1995), the efficiency of a technique and its contribution to the performance is naturally the possible increase of its adoption and its being deeply rooted in the companies. The innovations often propagate when they help to lessen the non-performance crises caused by the environmental change. We first show the method so that later we can deal with the adequate frame of the appropriation of the ABC method linked with the EVA. The ABC method was developed during the 1980's by a research and development group in the United States called the "Computer Aided Manufacturing International (CAMI). It became known throughout the world thanks to the writings of Berliner and Brimson (1998), Brimson (1991) and Ittner (2002). The aim of the researches, which led to the ABC, was to remedy the insufficiencies and the limitations of the traditional methods of cost calculation following an economic contextual evolution and the appearance of new company managerial needs. The logic system of the activity-based costing can be summarized as follows: "The activities use up the resources, and the products (cost objects) use up the activities. In this new cross vision imposed by the coming up of the ABC, the company becomes a place of a value creation for all its partners (LEBAS, 1994). In fact, this value creation is about not only the satisfaction of the customers but also the rest of the partners including the shareholders whose satisfaction depends on the respect of the management rules of the share value after taking off capital costs from the discounted financial earnings. The EVA comes to strengthen these orientations by covering the capital costs with equilibrated financial revenue.

1.3- The adoption, the appropriation, the diffusion and the assimilation dynamism of the ABC:

Literature suggests two ways of explaining the assimilation dynamism of a management accounting tool. The first one is known as the linear mode, which considers innovation as being well established to be able to spread thanks to its intrinsic qualities. The second, known as the model of interest, has the principle that perfection has never been original. Innovation builds itself up progressively in accordance with the network development. Schumpeter (1974) admits that the economic development can be achieved only by applying several azimuth innovation processes.

We jointly agree that the innovation of the managerial methods coincides with the technological one (Drucker 1986). The success of their spreading is based on the deep study of the way we are going to be appropriated with.

1.3.1- The appropriation of the ABC:

Diffusing meticulously, cautiously and in a well-studied way, the ABC linked with the EVA could be relevant due to its organisational, financial, informational and strategic advantages. At this level, we can ask the following question: how can we properly appropriate ourselves with the ABC technology linked with the EVA and to what extent can it be the most appropriate to achieve its diffusion success?

For Zghal (2000) the excess appropriation in technology needs some preliminary conditions. It lies in the way of using intellectual and creative, individual and collective capacities in order to control the available technological novelty.

1.3.2- The management By ABC linked with the EVA is a tremendous technological novelty:

The ABC linked with the EVA, being a tremendous technological novelty, in management fields, that can be appropriated, attempts to gather the company's activities not according to their hierarchical belonging but to their contribution to the value creation in processes improvements. We can set up the following hypothesis:

H1: Companies having a culture of value creation in the eyes of the stakeholders are open to the diffusion of the ABC method.

1.4 - Factors that can affect the success of the ABC method diffusion:

Before talking about the factors that can affect the success of the ABC method linked with the EVA, it is suitable to show here that the success of the diffusion of the activity-based costing (ABC) assumes the following: the acceptance, the assimilation, the accessibility, the adaptability, the adoption and the use of this method.

The adoption of the ABC method depends on the existence of some characteristics. Cooper (1988) asserts that the cost structure (indirect charge rate), the cost calculation system, the variety of the products and the competition intensity are factors that affect the choice of the ABC method. These variables were used by Bojermaneck (1997) in his survey about the diffusion of the ABC method in Norway. His aim was to see if the adoption of the ABC method coincides with the variables suggested by Cooper (1988). On the other hand, according to the research carried out by the "Management

Group of the Institute of Management Accountant”, the factors that divide the American companies over what guarantees the success or failure of the ABC method diffusion are:

- the continuous existence of a cost distortion potential;
- the importance accorded to the information about the costs;
- the size of the company.

The surveys carried out by Kennedy and Bull (2000) and Ines and al (2000) underline many factors concerning the adoption of the ABC method, namely the size of the company, the variety of presentations proposed to the customers, the complexity of the range of the offered products, the amount of the indirect charges, the implementation of an integrated management software ‘ like (SAP) and the belonging of the company to an American society applying this method.

1.4.1- The continuous existence of a cost distortion potential:

According to Boivert (1991), there are two major causes for the distortions in the full cost calculation:

- First, the elevated rate of the indirect costs in the full costs;
- then, the existence of a cost imputation base to products, which is correlated with the size or the amount of the finished products.

The cost distortions can also be caused by the diversity and the number of products (Cooper 1998).The existence of a cost distortion potential in a company can lead it to choose the ABC method linked with the EVA. All the more the latter generates an implacable reflection about the destiny of the capital cost calculation and its combination with an activity-based costing calculation. In literature the variable (cost distortion existence) was measured either by means of the indirect charge rate in the cost structure or by the diversity and the variability of the products (Bojernaek 97). All this leads us to set up the second hypothesis:

H2: Companies that have distortion in their indirect cost calculation while seeking the control of their capital costs assimilates the ABC method better.

1.4.2- The competition intensity:

The most distinctive element of the environment development is the increase of the competitive pressure. If we consult the research of (Innes and Mitchell, 2000), carried out in the particular frame of the Scottish companies in the computer sector, we can claim that, in a highly competitive market where the new products are abundant, the tariff policy is essential and so is the product differentiation.

The intensity of the competition is then a factor that would affect the accessibility to the ABC method. In other words, the more intense the competition in an activity sector is (the case of the computer industry (Bescos and Mendoza, 1996)) the more important to acquire more accurate information about the costs and the ways of reducing them is. The error in the cost calculation can destabilize a company in relation to its rivals.

In literature the competition intensity variable has often been measured according to the turnover rate in exports as well as the number of rivals in the sector (Bojernaek, 97). At this stage it is necessary to mention a third hypothesis:

Hypothesis: 3: Companies located in an environment of a fierce competition are sensitive to the diffusion of the ABC

method.

1.4.3- The company size:

The company size can affect the choice of the cost calculation method. The possible reasons for the size variation lie mainly in the availability of the human, material and financial resources. Actually, the larger the company is, the more important the number of its activities is and the more difficult the tracking of the behaviour of its costs will be.

Krumwiede (1998) showed that companies that were open to the introduction of the ABC method are on the average larger than those that did not accept it. On his side Mevelec (1994) mentioned that the method of the total cost or the ABC method becomes necessary as soon as the organization complexity and size require management decentralization.

It seems that the large size of companies favours the success of the ABC method. In the carried out studies, the size variable has been measured according to the number of employees and the capitalistic intensity in the company. Based on this, we suggest testing the following hypothesis:

Hypothesis 4: Large companies present an idealistic place of diffusion in the choice of the ABC method.

The relationship between the type of technology applied by the company and the adoption of the ABC method linked with the EVA can be a subject of another questionnaire of a great importance (HUBBEL, 1996). Technology may be defined as “the whole processes accomplished by the company including, at the same time, the basic flow of the internal operations, everything that it purchases for supply and what finally delivers to the external environment” (Strategor 1998). The benefit of such a definition lies in the fact that it stresses two essential points: the production process and the product itself. This approach is strengthened by (Desreumaux 1996) who defines technology as “The use of the scientific and technical knowledge in the conception and the manufacture of products”. The development of technology can also be considered as the source of the structure change of the whole costs. This will drive us to test a fifth hypothesis:

Hypothesis 5: Companies applying up-to-date industrial technologies are accessible for the diffusion of the ABC method linked with the EVA.

2 – Empirical survey and validation:

After presenting the diffusion theory of the management innovations, the theoretical foundations of the ABC method linked with the EVA and the factors affecting its diffusion success, we will tackle the empirical part of this survey about the response of the Tunisian companies to the diffusion of the ABC method linked or not with the EVA. We will present first of all the methodology and the sample so that we can later show the results of this survey.

2.1 - Methodology and sampling:

The methodology applied to carry out this survey about the attitude of the Tunisian companies towards the diffusion of the ABC method linked with the EVA was endorsed by the use of various methods of data gathering and analysis. The quantitative data about the diffusion of the ABC next to Tunisian companies have been gathered through a questionnaire sent directly, in the period between 21/03/2012 and 25/04/2013, to a sample of 60 industrial companies ISO 9001 certified located in different Tunisian areas.

All the companies of this sample belong to the industrial sector but they have different activities: petroleum, mechanical and electrical, pharmaceuticals, phosphate and its derivatives, chemical, nutritional as well as other activities such as textiles and packaging. They are of different size and they can be interested in the production of one or many products.

Table 1: A detailed description of the sample:

Activity sector	Number of companies
- agro-nutritional	18
- mechanical and metallurgic industry	15
- wood and furniture	3
- chemicals	9
- textiles	5
- packaging	2
- various	8

The questionnaire consists, in its greatest part, in multiple choice questions as well as in semi-guided ones so that the information can be transmitted easily. The questionnaire consists of two parts depending on whether the company concerned has acquired the method or not. It mainly describes:

1. The general characteristics of the company, its nature, its characteristics, its organisational structure, the number of its products, the technology applied, the size of its general charges as well as whether it is certified ISO or not.
2. The reasons of determining the cost calculation.
3. The reputation of the ABC method linked with the EVA and what people think about it.
4. The contribution of this method in the value creation in the eyes of the stakeholders and the changes brought by its adoption.
5. The hindlers for the application of the ABC method in companies that have not applied it yet.

The questionnaire was tested before being communicated to the concerned companies. In order to test it, we have led a preliminary enquiry next to some companies belonging to our sample. The test in question consisted in a guided interview of four open questions. The data obtained through this preliminary investigation has allowed us to evaluate the relevancy of the problematic, the adaptation to the different measures of the Tunisian context and to elaborate a final questionnaire.

In addition, the questionnaire enabled us to show some descriptive results about the ABC linked with the EVA and its diffusion in Tunisia. It also enables us to set up the data and the analysis variables for the method of logistic and binary regression. This method of data analysis was developed in order to check the well-based hypotheses we came up with after a theoretical sweeping of the ABC diffusion literature.

2.2- The measurement of the variables:

Here, we are going to define the variables that apprehend the hypotheses dealing with the factors that affect the success of the ABC method diffusion linked with the EAV of cost calculation next to the 60 investigated companies. The variables of our research are divided two ways:

2.2.1- The measurement of the dependent variable:

The dependent variable coincides with the choice of the cost calculation method. This choice can be split up according to whether the retained technique is that of the ABC linked with the EVA or not. The dependent variable takes the value 1 in the case of the ABC method and the value 0 if it is about another method of cost calculation. Therefore, the variable to be explained is written as the following:

$$Y = \begin{cases} 1 & \text{if the accepted method is the ABC linked with the EVA} \\ 0 & \text{if the method is other than ABC linked with the EVA} \end{cases}$$

2.2.2- The measurement of the dependent variables:

In our current study we are going to limit ourselves to five variables that can either assist or hinder the proliferation of the ABC linked with the EAV method next to the Tunisian companies. These variables are: the culture of the value creation for the company, the intensity of the competition, the size of the company, the type of the applied technology of (production or information) and finally the existence of a potential of cost control.

a: The culture of the value creation in the eyes of the stakeholders:

The existence of a value creation culture oriented towards the satisfaction of different partners of the company (customers, suppliers, employees, and shareholders...) represents a favorable element for the success of the ABC method linked with the EAV. For this reason, it is probable that the shareholders and the managers, by accepting to study this method, can acquire non-negligible advantages and minimize the transaction costs linked with the agency conflicts as well as the capital cost.

In our current survey, we can say that the existence of a value creation in the eyes of the stakeholders is a dichotomous variable that takes the value 1 if the company is certified ISO 9001 and the value 0 in the default case. However in order

to understand the share value, the culture variable was measured by the certificate as well as the ability to control the capital cost (profitability) and the exploitation.

The variable is presented as follows:

$$Cult = \begin{cases} 1 & \text{if the company is certified ISO 9001} \\ 0 & \text{if not} \end{cases}$$

b: The intensity of the competition:

The intensity of the competition will be apprehended according to the turnover rate concerning the exports (this method is used in this way in the work of (Bjornaek 1997)). Therefore companies that face this situation would be compelled to continuously review their systems of cost management. It would be probable then that the ABC diffusion in these companies is fruitful.

In our current research we will consider the competition intensity as being a dichotomous variable. In this way, companies whose export turnover exceeds 50% would be qualified as companies that are exposed to a high competitive intensity and then take the value 1. However, companies whose export turnover is below 50% would be qualified as companies that are exposed to a low competitive intensity and then take the value 0.

The competition intensity variable is then according to the export turnover.

c- The company size:

Starting from the principle that the greater the company size is the more important the number of its activities will be, it would be more difficult for a company to track its cost behaviour using traditional methods in its cost calculation. We can say that it is probable that the acceptance of the ABC method by these companies will bring them non-negligible advantages. In our research the company size is measured by the natural logarithm of the whole number of assets.

This variable is explained as follows:

$$T A = n \text{ Log (total asset)}$$

d- The type of technology:

The production and information technologies have developed to become those of a digital control making then indirect costs far superior to the direct ones. Companies that face this situation would be compelled to continuously review their systems of cost calculation. It would be probable then that the diffusion of the ABC method linked with the EVA in these companies would have positive effects both on the organisation and on the control of capital cost.

In our survey, the nature variable of technology is a dichotomous variable that takes the value 1 if the equipment of the

company is automated (companies with high technology), and the value 0 in the default case, that is when the equipment of the company is both automated and manual.

This variable will be explained as follows:

$$Tech = \begin{cases} 1 & \text{if the company equipment is automated} \\ 0 & \text{if not} \end{cases}$$

e- The continuation of the distortion potential in the capital indirect costs:

According to the researches carried out in the Anglo-Saxon context, it was revealed that companies having a cost distortion potential are compelled to continuously review their cost management systems. It would be probable that the diffusion of the ABC linked with the EVA in these companies will be fruitful. The hypothesis concerning the existence of a cost distortion potential is going to be indirectly checked through the cost structure. Thus, it is going to be measured according to the important rate of the direct charges in the structure of the full cost. Actually, allocating the indirect charges on the base of direct labour hours for a product that requires a little direct labour cost leads to an over-evaluation of the product.

Companies whose indirect charge rate is beyond 50% in their overall cost are said to be companies having a cost distortion potential and so they take the value 1. While companies whose indirect charge rate is below 50% are said to be companies having a weak potential of cost distortion and so they take the value 0. Hence this explanatory variable is presented in the following way.

$$Costst = \begin{cases} 1 & \text{if the rate of the indirect charges in the overall costs is superior or equal to 50\%} \\ 0 & \text{if not} \end{cases}$$

2.3- Presentation of the model and the expected theoretical relations:

We have retained five variables in this survey and most of them represent nominal variables. They are: the continuous existence of the cost distortion, the competitive intensity, the type of technology and the company culture, and another metric variable (the company size).

2.3.1- Presentation of the model to be tested:

The model of the cross logistic regression is used to test the formulated hypotheses related to the factors that affect the adoption of the ABC method linked with the EAV.

$$Y = B_0 + B_1(Cost.st) + B_2(Inc) + B_3(Ta) + B_4 + B_5(Tech) + B_6(Cult)$$

while:

- **Y:** the dichotomous dependent variable that takes the value 1 if the company chooses to adopt the ABC method of the calculation linked with the EVA, and the value 0 if the company chooses to apply a method other than the ABC or EAV.
- **Cost.st:** a dichotomous variable that takes the value 1 if the rate of the indirect charges in the cost structure is superior or equal to 50% and the value 0 in the default case.
- **Inc:** a dichotomous variable that takes the value 1 if the exports turnover rate is superior or equal to 50% and the value 0 in the default case.
- **Ta:** a metrical variable that is measured by the natural logarithm of the total assets.
- **Tech:** a dichotomous variable that takes the value 1 if the equipment of the company is automated and the value 0 if it is both automated and manual.
- **Cult:** a dichotomous variable that takes the value 1 if the company is certified and the value 0 in the opposite case.

Table 2: A synthetic picture of the model and the expected theoretical relations (table of the expected relations).

Hypothesis	Measurement variable	Expected sign
Distortion cost	Cost.st	+
Competition intensity	Inc	+
Company size	Ta	+
Type of technology	Tech	+
Culture of the value creation in the eyes of the stakeholders	Cult	+

3. The empirical results:

The current survey does not aim at generating the results, nevertheless it helps to clear some descriptive statistics about the ABC linked with the EVA and its diffusion next to the Tunisian companies and to check the hypotheses of this attitude.

3.1- Descriptive results about the ABA method linked with the EAV criteria and its diffusion next to the investigated companies:

In this paragraph we are going to study in a descriptive way the diffusion of the ABC method linked with the EVA in the investigated Tunisian companies, the diffusion factors and the hinders and obstacles to its diffusion according to the investigation we carried out.

3.1.1- The diffusion of the ABC method in the Tunisian companies:

In what follows we try to make some suppositions about the topic already introduced by means of a descriptive analysis so that we can justify them later through a second step based upon the method of a binary logistic regression. According to the results of our investigation, 70% of those who were inquired and accepted to answer our questionnaire said that they know the ABC method linked with the EVA either through their university studies or it was introduced to them by consultants and 31.36% of them said that they are in favour of introducing this method. On the other hand, these results make us think that, in the theoretical controversies surrounding this method, the company managers think much more about the positive sides of the method than about its negative ones. They tend to think about the mitigated adaptability of the method. Only 28.33% of companies that answered the questionnaire carried out a study about the method feasibility or its use (17 companies out of 60 that is 28.33%). It is suitable to insist on the declarative character of the treated data. It is then difficult to evaluate the reliability of the answers concerning the application of the activity-based accounting linked or not with the EVA. The status of the ABC linked with the EAV in companies is not apprehended in the enquiry when raising only the criterion of its application or not. This seems obvious for us as it was stated by (Gosselin and Ouellet 1999, Krumwide1988). For these writers, the application of an ABC project as it is the case with any innovation goes through different stages. For this reason the elements of our enquiry predict several stages concerning the ABC method adaptability such as examining, examining the application possibility, partly applying the method in part or not.

The following table shows the different implantation cases of the ABC and the EVA in the companies of our sample.

Table3: The state of the implementation progress of the ABC project in the instigated Tunisian companies

Types of ABC linked with the EAV framework	Number	%
The ABC was applied or being implanted and so was the EVA	17	28.33
We think of applying the ABC method linked with the EVA	8	13.33
The ABC was considered but not retained after being examined	4	6.66
We intend to examine neither the eventuality of the ABC nor that of the EVA	31	51.66
Total responses	60	100

The study has revealed that 28.33% of the companies said they have tried the method. Others, that are 13.33%, said they are still considering the possibility of using it since they do not know the counter-indications yet. However, 51.66% said that they do not intend to examine the possibility of applying neither the ABC nor the EVA, while 6.66% are interested in the method but did not keep it after its examination.

3.1.2- The ABC linked with the EVA in practice: The benefits and the obstacles for its diffusion in the Tunisian context:

In practice, despite the favorable attitude vis-à-vis the ABC method linked with the EVA, its effective proliferation rate remains quite uncertain. Before explaining the reasons of this discrepancy, we would like to show the aims sought by the companies to put in place either the ABC or the ABC linked with the EAV and also the concrete benefits that it can bring them in Tunisia.

According to the enquiry carried out, 82.35% of the 17 companies, which are in favour of the ABC method linked with the EVA, believe that its essential aims are:

- The improvement of the relevance of the operational and financial information on the costs.
- The reduction of the costs and the encouragement of the shareholders.

This goes without saying, knowing that the activity-based costing takes into consideration, in the case of cost calculation, all the activities including those that do not have a direct link with production (financial activities, controlling activities). Thus, through a careful analysis of the activities and the change of the maximum indirect costs into direct ones, the ABC can reduce the arbitrary imputations of the indirect charges and to achieve a better relevance of the information about the costs.

In what is coming, we are going to see if the contributions of the ABC method linked with the EAV stated by the companies are in accordance with the objectives set at the start. According to the first impressions collected through the carried out enquiry, the major contributions of the ABC method linked with the EVA in practice, as they were noticed by the interviewees, are the help in planning, in budgeting, in externalising decisions (outsourcing) and essentially a more accurate establishment and evaluation and the return of the product and capital cost. Concretely, according to the enquiry we have carried out, the ABC linked with the EAV helped mainly improve the idea of controlling the indirect charges as well as the capital cost. For 15 among the 17 companies applying the ABC method, indirect charge control has become very significant after the adoption of the ABC method. The satisfaction vis-à-vis the system of cost calculation has improved in these companies. Actually, if beforehand, the satisfaction vis-à-vis the cost system before the adoption of the ABC were average, it has become elevated after the adoption of the method by these companies that have used it, (that is 12 among the 17 companies that could appropriate the ABC).

Certainly in practice, the adoption of the ABC linked with the EVA has several advantages concerning its reliability and accuracy in the full cost and capital calculation. However, we could notice a gap between the favorable opinions expressed vis-à-vis this method, that is (31.66%) and the weak success rate claimed to its diffusion in the Tunisian context. This can be explained either by the existence of obstacles; economic (45%), organisational culture (20%), managerial (25%) or of complex calculation techniques. Here, we are going to check, following the same descriptive procedure already mentioned, that these are the main hindrances and obstacles to the diffusion of the ABC linked with the EAV as being perceived by the business world in Tunisia, so that later we will be able to compare the results we will obtain to those that we can obtain through the use of the quantitative method named “binary logistical regression “. This will be achieved for precaution purposes against any subjective declaration.

The major difficulties faced by the diffusion of the ABC method linked or not with the EVA came out mainly from its assimilation, its conception, its feasibility and its application. What are then the main factors, which hinder its

diffusion and prevent it then from being efficient?

The first obstacle to overcome in the first place is the acceptance of the change project in the existing accounting method by the general management. The main reasons stated are; the high costs of its application and the considerable time devoted to the implementation of the method as well as the time accorded to it in order to achieve positive results.

Other company responsible agents do not intend to focus on the ABC and the EVA because the present system of the management analytic accounting in hand is satisfactory, besides, the least related problem to it would be rapidly resolved by the factor of experience.

For (Bescos and Cauvin 2001) “the advantages exceed the disadvantages providing there is a perseverance to go on up to the end of the application». This raises the degree of complexity in implementing the ABC method as well as the exact definition of the various company activities. The acquisition of such a detail cannot be achieved without the active and collective implication of the whole staff. It is the implicit human dimension of this approach which triumphs if we are looking for the success of the method (Guyon and Al 2000).

On the other hand, if some Tunisian companies did not even think of using the method, it is probably because their internal culture is not in favour to the change (these represent 20%).The hinders for the diffusion of the ABC method linked with the EVA can then emanate from the company’s cultural domain (see hypothesis 1).

For the companies that adopted the method (6.66%), the barriers for the reception of the method are related essentially to their informational system and organisational structure (20%).

The following table shows in percentages the causes of non-proliferation of the ABC method linked with the EVA in the Tunisian companies.

Table 4: The causes of non-proliferation of the ABC linked with the EVA.

The causes of non- proliferation	%
1)-The doubt concerning the efficiency of the ABC method linked with the EVA	5
2)- The ABC adoption costs are considered high (job loss...)	45
3)- The organisation considers that there is a problem of cost calculation with the ABC	5
4)- The agreement from the directors was not obtained for the use of the EVA while it was for the use of the return on investment	10
5)- The practice agents showed a little interest in both the ABC and the EVA	15
6)- Our organisation’s culture does not favour the change	20

The table below is an extension to the previous one since it is based on items already shown. It represents a summary of the constraints to the ABC diffusion.

Table 5: Hinders to the diffusion of the ABC

Hinders to the diffusion of the ABC linked with the EAV	%
Management hinders (items 4 and 5)	25
Economic hinders (items 8 and 2)	45
Technical hinders (items 1 and 3)	10
Organizational and psychological hinders (item 6)	20

According to this table we think that the main hinders to the ABC diffusion linked or not with the EVA are; firstly, economic and secondly, managerial. The organizational and technical hinders come in the third and fourth place. This can be explained by the disinterest and the inability of the directors to manage them.

After having presented the figures witnessing the ABC method diffusion in the Tunisian companies based on a descriptive analysis, we are going to empirically test the factors that can affect the success of the diffusion of the ABC linked with the EVA in the suitable context according to the quantitative attempt of the data analysis called "the simple logistical regression" in order to review the possibility of validating or invalidating the cited hypotheses

3.2- Presentation and interpretation of the results of the logistical regression:

The application of the «binary logistical regression» model allows us to check the significance of the impact of the explanatory variables about to choose either of the two modalities for instance, the adoption of the cost calculation ABC method linked with the EVA. The estimation of the parameters of the logistical regression is very sensitive to the existence of "extreme observations ». These observations coincide not only with codification errors but also with the exceptional conditions of observation. These can be detected by examining the distribution of the variable to be explained. It becomes important to examine its nature (error or exception). If it is a question of exception, we will try to identify its causes then we will conduct two regressions, with or without these observations, in order to examine their influence on the results. Finally we will keep as a model of regression the "neutralised » one, whose "extreme » observations have been eliminated.

In order to detect the existence or the absence of «extreme observations», we have used the technique of the "student residues". Going through the model three times, we could come up with two extreme observations.

The table below shows the results of the logistical regression. Khi Square test for the adjustment of the model at the value of 39.34 (5 free degrees) and it is significant at 0.000. It enables to reject the nil hypotheses stating that all the margins are equal to zero. This will lead us to keep the hypothesis according to which at least one of the variables is significant.

Table 6: The results of the logistical regression (Khi 2 test)

Variable	B	S.E	Wald	df	Sig	R	REXP(B)
TEC	3.6760	1.2909	8.1085	1	0.0044	0.2922	39.4869
TA	0.2072	1.1447	0.0328	1	0.8564	0.0000	1.2302
STC	1.9834	1.1055	3.2191	1	0.0728	0.1305	7.2674
CERT	0.5359	1.1096	0.2332	1	0.6291	0.0000	1.7089
ITC	0.1655	1.1009	0.226	1	0.8805	0.0000	1.1800
Constant	4.6367	7.6902	0.3635	1	0.5465		

According to this table we can come up with the following results:

The hypothesis stipulating that companies having a culture of value creation in the eyes of the stakeholders are accessible to the diffusion of the (ABC) method of cost calculation is in accordance with the expected results. In fact the coefficient associated with the variable (cult) has a positive sign (0.5359) but statistically it is not significant 62.91. This incites us to check the theoretical instructions already mentioned about the subject. Companies that have a culture of a value creation in the eyes of the stakeholders have the tendency, according to their culture, to choose and try to validate the positive aspects of the ABC cost calculation method linked or not with the EVA.

Hypothesis 2, according to which companies having a persistent cost distortion understand better the ABC, seems to reasonably verifiable. Actually the results showed that the variable associated with the variable (cost st) is positive (1.9834) and statistically significant to the brink of 10%. This result is in accordance with the work of (Rebai 1999) that could show that the type of technology affects the success of the ABC diffusion. Companies applying a well-advanced technology tend to accept the ABC cost calculation linked with the EVA.

3.3- Conclusion:

According to the survey carried out, we think that the main factors that affect the success of the diffusion of the ABC method linked with the EAV in the Tunisian context are the type of technology and the existence of a potential of a cost of a distortion (the results are in accordance with theory and appear to be significant). Companies that are accessible to the ABC method linked with the EVA are mainly capitalistic companies having a well-advanced technology, a high potential of cost distortion (that is companies that have a big part of indirect charges in their cost structure whose conversion into the full cost remains faulty to the arbitrary use of the working units) and employing a high qualified staff in financial management. In addition, we can single out the company size, the value creation culture and intensity affecting the success of the ABC method diffusion but their influence is not as significant as the previous ones.

There are hinders for the success of the ABC diffusion linked or not with the EVA in the Tunisian context. They concern the adoption costs, the technical difficulties related to the organisation, and the opposition to change of a managerial and organisational type.

According to our survey, we can assert that the ABC method seems to be known and recognised by the companies of our sample but remains really little spread. There would be a gap between the opinion favourable to the method and its diffusion in practice. We think that the context would be favourable to the introduction of the ABC method in the “market of ideas” but not as being a practice firmly fixed. Moreover, the new accounting system of the Tunisian companies appears to adopt the classical methods of cost management

The diffusion of the ABC linked with the EVA in the Tunisian industrial companies remains very limited and seems to concern only a few companies that have a company culture and believe in the well- to -do of the managerial and organisational innovations. It is only about 6.66% of companies use a well- advanced technology that has a significant indirect and capital cost. These companies accept the diffusion of the ABC method linked or not with the EVA in order to avoid the cost distortions caused by the size of the indirect charges in their cost structure much more than to control the capital cost Hence, despite the fact that the ABC method linked with the EVA permits to efficiently mobilize the activities and the capital with the minimum costs, a negligence in the matter was markedly noticed in most of the companies subject to our survey.

However, the famous performing large Tunisian companies that are certified ISO 9001 seem to adopt the ABC isolated from or linked with the EVA relatively as a matter of a trial or a fashion ant not as a rational and final adoption. It seems that this method does not meet their tax, economic and financial aspirations. In addition; it seems that the certified companies try to get the certificate just for administrative formalities rather than to create the value added or really enrich the shareholders. The interest given to the research about the profitability of the invested capital (ROI) has always overcome the EVA.

The relatively poor diffusion of the ABC linked with the EVA in the companies of our sample is explained by the high cost of applying it, its complexities; the resistance to change which it is subject to; the lack of the capital open up on the financial market, and then the absence of studies about its application beside the preconditions for its application (example: a lack of formation, absence of an efficient and reliable financial computer system...).

At this level we can consider that the appropriation of this method in the Tunisian companies requires a knowledge development of what to do about this new method especially when we try to link it with the EVA in the presence of a more flexible, open and learning organisational structure. On the other hand, popularising the ABC linked

with the EVA, in order to rationalise the financial reporting and create the value added, depends on the evaluating bases of its diffusion as a novelty in management and financial accounting as well as in management control. Hence a new research path is opened which consists in showing how the ABC linked with the EVA can play the role of a mechanism of a managerial and informational innovation simultaneously on both the operational and strategic level to play the role of the value creation lever.

References:

ARTICLES :

- ALCOUFFE, S., N. BERLAND, and Y. LEVANT, 2003, „Les facteurs de diffusion des innovations managériales en comptabilité et contrôle de gestion : Une étude comparative”, *Comptabilité – Contrôle – Audit*, Mai, 7 - 26.
- BANERJEE, A., 1992, “A simple model of herd behaviour”, *the quarterly Journal of Economics*, 3, 797-817.
- BESCOS, P., and E. CAUVIN, 2001 “La mise en œuvre de la méthode ABC/ABM au Canada, en France et au Japon. Etude comparative”, working paper in METZ congress of French association in accounting held in France on 17th Mai 2001.
- BJORNENAK ,T.,1997, “Diffusion and Accounting: The case of ABC in Norway” *Management Accounting Research*, March, 3-17.
- BRIMSON, J., 1998, “Feature costing: beyond ABC”, *Journal of cost management*, January-February, 6-12.
- COOPER, R., 1998, “The Rise of activity-Based costing- Part one: what is an activity – Based cost system?”, *Journal of cost management*, summer, 45-53.
- COOPER, R., 1989, “The rise of activity-Based costing – part three: How many cost drives do you need and how do you select them » *Journal of cost management*, Winter, 34-46.
- COOPER, R., and S. KAPLAN, 1998, “Measure cost right: Make the right decision”, *Harvard Business Review*, September – October, 96-103.
- COOPER, R., and R. SLAGMULDER, 1999, “Integrating activity – based costing and economic value added” *management Accounting*, January, 16-17.
- DIMAGGIO, P., and P. WALTER, 1983, “The iron cage revisited: institutional isomorphism and collective rationality in organizational fields”, *American Journal of sociology*, 48, 147 – 160.
- GOSSELIN, M., and G. OUELLET, 1999, “ Les enquêtes sur la mise en œuvre de la comptabilité par activités: qu’avons-nous vraiment appris?”, *Comptabilité- Contrôle – Audit*, tome 5, 1, 45-47.
- HUBBEL, W., 1996, “combining economic value added and activity-based management”, *Journal of cost management*, Spring, 18-29.
- HUBBEL, W., 1996, “A case study in economic value added and activity based management” *Journal of cost management*, Summer, 21-29.
- INNES, J., and F. MICHELL, 1995, “A survey of activity based costing in the UK’s largest companies”, *Management Accounting Research*, 6, 137-153.
- ITTNER, C., 2002, “The association between ABC and manufacturing performance”, *Journal of accounting Research*, 40, N° 3, 711-726.
- KENNEDY, T., and R. BULL, 2000, “The great debate”, *Financial Management rev*, Mai, 32-38.
- KRUMWIEDE, K.R., 1998, “ABC why it’s tried and how it succeeds”, *Management accounting*, April, 32-38.
- LEBAS, M., 1994, “Du coût de revient au management par les activités”, *Revue Française de comptabilité*, 285, 45-41.

- MALMI, T., 1996, "activity based costing diffusion across organisation: an exploratory empirical analysis of finish firm", *Accounting organisation and society*, 24,649-672.
- MALMI, T., 1996, "Towards Explaining Activity ABC Failure: Accounting and control in a decentralized organisation", *Management Accounting Research*, 8, 459-480.
- MEVELLEC, P., 1994, "Coûts à base d'activités un succès construit sur un mal entendu", *Revue Française de gestion*, Janvier Février, 20-29.
- ROZTOCKI, N., 2000, "The integrated activity –based costing and economic value added system as strategic management tool: A file Study", *Proceedings from the 2000 conference on manufacturing and management*, pag. 84-89.
- ROZTOCKI, N., and K. NEEDY, 1998, "The integrated activity –based costing and economic value added system as engineering management tool: A file Study" *Proceedings from the 1998 conference on manufacturing and management*, 77-84.
- ROZTOCKI, N., and K. NEEDY, 1999, "Economic value added for small manufacturing companies", *Proceedings from the 1999 conference on manufacturing and management*, 461-469.
- ROZTOCKI, N., and K. NEEDY, 1999, "How to Design and implement an integrated activity –based costing and economic value added system", *Proceedings from the industrial engineering research 1999 conference on manufacturing and management*, 438-450.
- ROZTOCKI, N., and K. NEEDY, 1999, "Integrated activity –based costing and economic value added in manufacturing": *engineering management journal*, June, 17-22.
- THIERRY, N., 1997, "Adaptabilité et utilité de la gestion stratégique des coûts dans la petite entreprise RFC", 291, 19-27
- WOLFE, R., 1994, "Organisational innovation: review critique and suggested research directions", *Journal of management studies*, xxxxi, 405-431.
- ZEITZ, G., V. MITAL and B. MCAULAY, 1999, "Distinguishing Adoption and Entrenchment of Management Practices", *Organization Studies*, 20/5, 741-776.
- ZGHAL, R., 1986, "Pour une stratégie de développement technologique dans les entreprises tunisiennes : l'action sur la structure organisationnelle et le développement du potentiel humain", *Revue travail et développement*, 7, septembre.
- ZGHAL, R., 1987, "Les conditions culturelles de la production technologique", *Revue travail et développement*, 9, Septembre.
- ZGHAL, R., 2000, " L'apparition de la technologie, le savoir et le développement", *Revue travail et développement*, Septembre.

Books:

- BESCOS, PL., and C. MONDOZA, 1996, *Le management de la performance*, édition comptable Maleshabes.
- BOUQUIN, H., 2000, *La comptabilité de gestion*, Economica.
- BOIVERT, H., 1991, *LE contrôle de gestion: vers une pratique renouvelée*, ERPI, Ottawa Canada.
- BRIMSON, J.A., 1991, *Activity accounting and activity based costing approach*, Jhon Wilery and sons; New York.
- COOPER, R., and S. KAPLAN, 1991, *The design of cost management systems*, Englewood cliffs Nj: Prentice Hall.
- DESREUMAUX, A., 1993, *Strategie*, Precis Dalloz.
- DRUKER, PE., 1957, *Les entrepreneurs*, Trade, Patrice Hoffmann. Paris, les éditions d'organisation.
- KAPLAN R, H JOHNSON 1987, *Relevance lost, the rise and fall of management accounting*, Boston, Harvard Business School Press.

- PARSONS, T., 1951, *The social system*, Glencoe, IL: Free press.
- PORTER, M., 1986, *L'avantage concurrentiel*, Inter éditions.
- ROGERS EVERETT, M., 1995, *Diffusion of innovation*, New York, Free Press.
- SCHUMPETER, R., 1974, *Capitalisme socialisme et démocratie*, Paris Payot (petite bibliothèque).
- SCOTT, W., 1986, *Institutions and organisations*, Thousand Oaks ,CA : stage ed.
- STRATEGOR, 1998, *Strategie, structure, decision, identité*, Inter Editions.
- STEWART, G., 1988, *The quest for value: a guide for senior managers*, New York Harper business Ed.
- WEICK, K., 1995, *Sensemaking in organisations*, Thousand Oaks, CA stage ed.