



## Factors Influencing Management accounting Change Case of Algerian Companies

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### **Abstract :**

This article aims to study the factors that influence management accounting change' by focusing on the contingency theory. This study contains a theoretical model that explains the relationships between the contingent variables and management accounting change. Using smartPLS3 software, the results obtained indicate that the differentiation strategy is the most important variable affecting changes in management accounting systems, and that the relationship between competition and changes in management accounting systems is mediated by a differentiation strategy and a decentralized organizational form.

**Key Words:** Management accounting change ; Factors ; Contingency theory ; PLS ; Algerian companies.

**JEL Classification:** M41, L25.

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### **Introduction:**

Since 1980s, the economic environment for companies has changed radically where a set of innovative management control tools has been developed to provide managers with relevant information in a timely manner. These are, for example, Activity-based costing / management (Cooper et Kaplan 1988; Mévellec 1993; Philippe Lorino 1991; P Lorino 1997), Target costing (P Lorino 1997; Meyssonier 2001) and Balanced Scorecard(Kaplan et Norton 1995). The adoption of these new techniques has been the subject of different researches, which highlight the practice's changes in several industries and in different countries with abundant new methodologies and literature on management accounting change.

Contingency theory is the most widely used to explain the problem of changes in management accounting systems (Haldma et Lääts 2002; Anderson et Lanen 1999; Waweru 2008; Hoque 2011). It is based on management accounting with the assumption that no one-size-fits-all management system that can be applied equally to all organizations under all circumstances (Emmanuel, Otley, et Merchant 1990). The major external factor that has been examined at the firm level in the area of management control is the external environment (Lawrence et Lorsch 1967; Khandwalla 1972; 1977; Otley 1978; Waterhouse et Tiessen 1978; Merchant 1990;



R. Chenhall 1999; Hartmann 2000). The most widely studied aspects are; the uncertainty and hostility of the environment; the factor of environmental hostility generated by increased competition; disrupts the importance of formal control systems and complicates accounting (Khandwalla 1972; Otley 1978). The most studied internal factors are company strategy (Miles et al. 1978; Simons 1987; ROBERT H Chenhall et Morris 1995) and structure (Bruns et Waterhouse 1975; Robert H Chenhall 2003; Waterhouse et Tiessen 1978; Child 1972).

The process of economic liberalisation in Algeria with its corollary of deeper insertion of the Algerian economy into the world economy, certainly affects the management rules of Algerian companies, including management accounting systems. However, the new management accounting methodology based on the multidimensionality of performance indicators has called into question the traditional approach based on the issue of resource allocation expressed in terms of effectiveness and financial efficiency verified posteriori.

As part of our study, we will try to provide some answers to the following main question:

- Which factors can explain the changes in management accounting systems of Algerian companies? And what relations exist between them?

This question can be divided into several inquiries:

- What is the number of changes in management accounting systems in Algeria?
- What is the frequency of management accounting systems in Algeria?
- What are the factors influencing changes in management accounting systems in Algeria?

Fortrying to provide an answer to all these questions, our approach consists of proposing a certain number of theoretical hypotheses, which will be subjected to statistical verification.

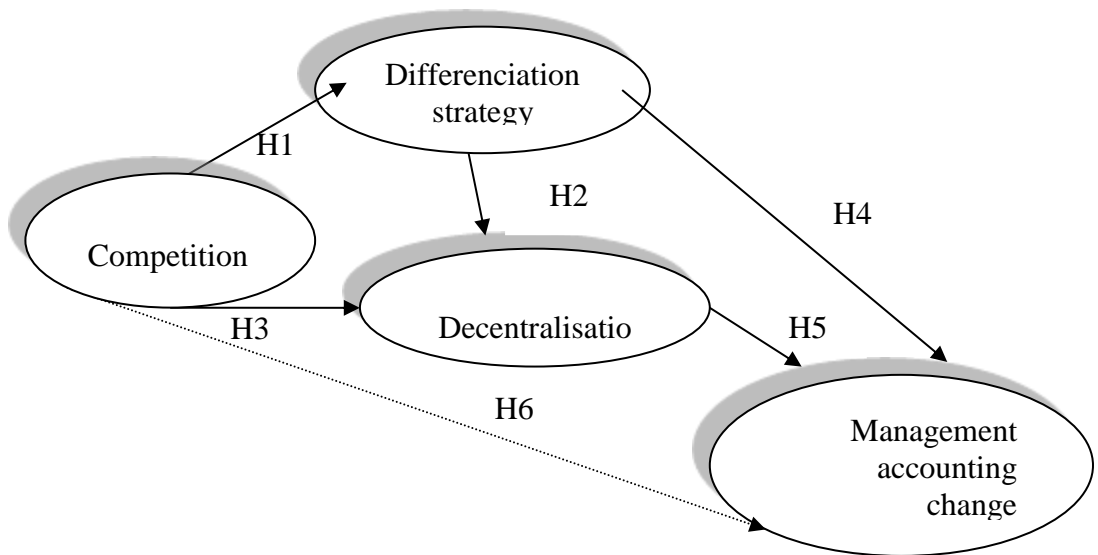
- H1: Competitive intensity is positively related to the differentiation strategy.
- H2: Companies that adopt a differentiation strategy, have decentralised structures.
- H3: The competitive intensity is positively related to the decentralised structure.
- H4: Changes in management accounting systems are positively associated with the differentiation strategy.
- H5: Decentralisation level is positively related to changes in management accounting systems.
- H6: The relationship between competition and changes in management accounting systems is through the differentiation strategy and the decentralised structure.

Finally, our study is based on contingencies' theory by using mediation to examine whether the two internal factors of the strategy and the organizational structure can intervene on the relation between the competition and the change of the



control systems management. Fig 1 presents the theoretical model of our study. According to our theoretical model, the differentiation strategy and the decentralised structure are mediating variables. Competition is the independent variable and management accounting change is the dependent variable.

**Fig 1:«Theoretical model »**



Source: prepared by the searcher

## I. Theoretical framework:

Contingency theory contributes to the understanding of control systems. It shows the importance of the organizational context, which cannot be ignored to explain corporate control practices. Thus, researches in this direction agree for the strong relationship between the characteristics of companies and the attributes of control systems. The relationships between the study variables are presented as follows:

### 1. Competition and differentiation strategy:

According to the structural contingency of Lawrence and Lorsch (1967), the uncertainty, instability, and the complexity of the environment influence the structure of the firm (differentiation and integration). The more the environment changes, the more the company breaks up into specialised units (differentiation). These two authors insist on the fact that the expansion of markets leads companies to implement a strategy of differentiation. For our research, we predict that competitive intensity may impact the differentiation strategy.

### 2. The strategy of differentiation and decentralization:

According to Chenhall, 2003, the structure is defined as "The formal specification of different members' roles of the organisation, or tasks for groups, to



ensure that organisational activities are carried out well. Structural arrangements influence work efficiency, individual motivation, information flows and control systems" The authors of this current believe that "strategy induces structure" (Robert H Chenhall 2003) and that strategy evolves to ensure consistency between the organisation and its environment (Donaldson 1987). This can therefore be considered as a contingency factor in control systems (Chapman 1997).

### **3. Competition and decentralization:**

The most widely emphasised aspects of the research are the uncertainty and hostility of the environment. A few predictable environmental elements have their own impact on organisational structure (Krishnan 2005; Krishnan, Luft, et Shields 2002; Libby et Waterhouse 1996; Mia et Chenhall 1994). Five sources of competition have been mentioned, according to Khandwalla (1972), namely: competition for raw materials, parts and equipment, competition for technical personnel such as engineers, accountants / programmers, competition in promotion, advertising, sales and distribution, competition in the quality and variety of products, price competition in their main line of business. These types of competition have an impact on the internal organisation of firms (Khandwalla 1977; 1972; Lawrence et Lorsch 1967). Chandler (1962) suggests that decentralisation is necessary to respond to an increasingly competitive environment. Our research predicts that competitive intensity is positively associated with the decentralised structure that leads to the top management of the company to delegate power to lower-level managers.

### **4. The differentiation strategy and management accounting change:**

According to Miles & Snow, 1978; Porter, 1980, firms that follow a defendant-type or cost-leadership strategy tends to favor cost control and use more centralised control systems than firms that follow a prospector or differentiation-type strategy and which are more oriented towards monitoring results and use more decentralised monitoring systems. Respondent-type firms also make more use of standard procedures and formalised job descriptions (Miles et al. 1978). These results were in part questioned by Simons (1987) who found that strict controls also existed in prospector-type firms, perhaps in an attempt to counteract an excessive spirit of innovation (R. Chenhall 1999).

Gosselin (2000) also showed that prospector-type companies are more likely to adopt activity-based accounting than respondent-type companies. He explains this phenomenon by the fact that these companies are developing a greater number of products and therefore seek to set up more refined cost systems such as activity-based accounting to achieve a better analysis of the profitability of the products. Gosselin clearly shows that strategy plays an important role in decisions to adopt activity-based accounting. These results allow us to suppose that prospector-type companies are more inclined to change their management accounting systems.



### **5. Decentralisation and management accounting change:**

According to the authors of the contingent-in-control current (Bruns et Waterhouse 1975; R. Chenhall 1999; Waterhouse et Tiessen 1978; Merchant 1984), organisation is one of the determinants of control systems (Bruns et Waterhouse 1975; Robert H Chenhall 2003; Waterhouse et Tiessen 1978). Child (1972), taking up Weber's thesis, shows empirically that the level of centralisation is negatively correlated and agrees with Weber's administrative control (bureaucratic control: specialisation, standardisation and formalisation). Bruns, Waterhouse and Merchant believe that; when decentralisation is accompanied by the structuring of activities, i.e. operational procedures are standardised and formalised and the number of specialists is greater, administrative control predominates with great support from complex budgets and sophisticated. For our research, we predict that the level of decentralisation may affect changes in management accounting systems (Bruns et Waterhouse 1975; Merchant 1984).

### **6. Competition, decentralisation, differentiation strategy and changes in management control systems:**

A question may be asked: what management accounting systems should be appropriate for organisations that arise under conditions of uncertainty, turbulence and hostility? The importance of uncertainty as a fundamental variable in the search for contingencies in management accounting systems has recently been emphasised by Chapman (1997) and Hartmann (2000). These two researchers examined the impact of environmental uncertainty on management accounting systems. In a study of four cases, Chapman (1998) proposed that management accounting has a planning role under conditions of environmental uncertainty.

However, there must be significant interactions between the management controller and other managers to deal with changing conditions as they unfold in unpredictable matters. The more the environment is perceived as uncertain, the more the control systems developed in the organisation will be organic (Waterhouse et Tiessen 1978; R. Chenhall 1999). Under conditions of high uncertainty, control systems rely on monitoring performance and socialising members of the organisation (Waterhouse et Tiessen 1978). Uncertainty is also associated with the usefulness of a more open, outward-looking and forward-looking information system (Gordon et Narayanan 1984; Robert H Chenhall et Morris 1986; Gul et Chia 1994; Chong et Chong 1997). Ezzamel (1990) indicated that high environmental uncertainty has been associated with heavy use of budgets for variance assessment; Merchant (1990) found a relationship between environmental uncertainty and pressure to meet financial goals. Uncertainty does not provide a complete description of the environment.

Therefore, Khandwalla (1977) provided a set of environmental variables. These include turbulence, hostility, diversity, and complexity. In an increasingly hostile and turbulent external environment, organisations resort to formal controls based on traditional budgets (Otley 1978). Several authors suggest that companies today need



a management accounting system that can provide relevant information on several variables (for example: cost of production, productivity, quality, customer service, customer satisfaction... etc) (Hemmer 1996; Hoque, Mia, et Alam 2001; Khandwalla 1972; Krishnan 2005; Krishnan, Luft, et Shields 2002; Libby et Waterhouse 1996; Merchant 1984). Kaplan (1995) states that: "The new demands of the competitive environment call for much more precise information about the performance of company activities, processes, products, services and customers".

He argues, further, that in competitive environments, managers also need to have more specific information to guide their learning and improvement activities: information that helps make processes more efficient and customer-focused. Traditional management accounting systems mainly provide financial, quantitative and historical information, which is often insufficient for performance assessment, planning and decision making in today's competitive global environment. As a result, management accounting systems have evolved to help companies adapt to the environment (Bromwich 1990; Bruggeman et Slagmulder 1995; Cavalluzzo, Ittner, et Larcker 1998; Hemmer 1996; Miller et O'Leary 1990; Young et Selto 1991).

Browich (1990) asserts that management accounting systems should be modified or developed to focus on the value-added activities of a firm relative to its competitors, and Hemmer (1996) asserts that the cause of changes in management accounting is the increase in foreign competition. Libby and Waterhouse (1996) reinforce the idea that growing market competition drives changes in management accounting systems. Krishnan (2005) found a positive association between price competition and the demand for accounting information.

Others have found a positive association between increased competition and the use of modern management accounting systems (Cavalluzzo, Ittner, et Larcker 1998; Hill 2000). It is therefore necessary to evolve management accounting systems for adapting to market conditions ((Robert H Chenhall 2003; Robert Hunter Chenhall et Chapman 2006; Hoque, Mia, et Alam 2001; Mia et Chenhall 1994). A positive relationship is therefore expected between management accounting change and competition.

## **II. Method and procedures:**

In order to collect the data for our study, we chose the data collection method by face-to-face questionnaire, which includes items that can be used by statistical methods: Likert-type interval scale y are employed. The questionnaire is subdivided into four areas, namely: management accounting change; competitive intensity; decentralisation; the differentiation strategy.

The study population is made up of industrial companies, more than 50 employees from the western region of Algeria, where the study sample includes the responses of 40 management controllers from different Algerian companies selected at random.



### III. Study results:

#### 1. Stability of the questionnaire:

The questionnaire stability achieved using the « Alpha Cronbach » coefficient method which is considered to be the most important coefficient for measuring the internal consistency of the questions asked. This coefficient can take several values, from 0 to 1, being considered "acceptable" from 0.7 (Nunnally 1978). We have calculated this coefficient for all the Items. We have obtained the value of "0.780". This means that the questionnaire is characterized by stability according to the Alpha Cronbach coefficient.

**Table 1: « Alpha Cronbach tests »**

reliability statistic		Observation processing summary		
Alpha cronbach	Number of elements		N	%
,780	36	Valid	40	100,0
		Observations Excluded <sup>a</sup>	0	,0
		Total	40	100,0

**Source:** : Prepared by the researcher based on the results of IBM SPSS Statistics21 software

#### 2. Company profile:

##### 2.1 By workforce:

According to table 2, we can say that the majority of companies have less than 250 employees with a rate of 82.5%, which means that the majority of participants are small and medium-sized enterprises.

**Table 2: «Company profile by workforce »**

Effective	Number of companies	Percentage
50 – 99	15	37.5 %
99 – 299	10	25 %
250 – 499	8	20 %
500 – 1000	6	15 %
> 1000	1	2.5 %
Total	40	100 %

**Source:** prepared by the searcher



## 2.2 By activity sectors:

Respondent companies from different activity sectors, our sample consists of 47% public companies, 45% private and 7.5% multinationals.

**Table 3: «Company profile by activity sector»**

	Number of companies	Percentage
Public sector	19	47,5
Private sector	18	45
Other (Multinational)	3	7,5
Total	40	100

Source: prepared by the searcher

## 3. Number of changes in management accounting systems in Algeria:

The table 4 indicates that the average number of changes in management control systems per company over a period of five years in Algeria is 5.15, the average number of changes per year per company is 1.03.

**Table 4: «Number of management accounting change in Algeria »**

Number of management accounting change	206
Number of companies	40
Number of average change percompany	<b>5,15</b>
Rang	23
Study period	5
Number of average change per year per company	<b>1.03</b>

Source: prepared by the searcher

## 4. Analysis of the research model and verification of the hypotheses:

In order to answer our research hypotheses, our choice was guided towards the PLS method. The use of this method turned out to be well suited to the problematic of this study: it enabled us to evaluate the quality of a confirmatory model, integrating formative constructs and mediating variables (the differentiation strategy and the level decentralisation).

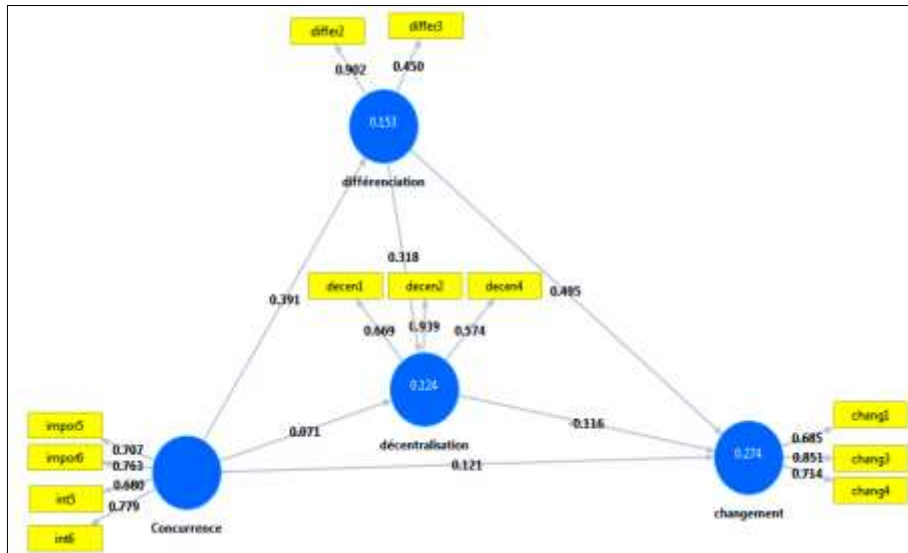
### 4.1 Analysis of the research model:

The model taking into account the hypothesis test results are as follows:





**Fig 2:«Ajusted research model »**



Source : Prepared by the researcher based on the results of SmartPLS 3

**4.2 Validation of the adjusted research model :**

The discriminate validity of the measures was achieved using the Average Variance Extracted (AVE) which is considered to be the most important test to measure the internal consistency of the structural model. The table 5 indicates that the AVE value of each latent variable is greater than 0.5 as recommended by Fornell and Larcker (1981). This confirms the discriminate validity of the measurements.

**Table 5: «Average Variance Extracted (AVE) »**

	AVE matix
Competition	0.538
Management accounting change	0.567
Differentiation strategy	0.508
Decentralisation	0.533

Source : Prepared by the researcher based on the results of SmartPLS 3

**IV. Discussion and verification of the hypotheses:**

The table 6 presents a summary of the results of our structural model using the method of structural equations (PLS regressions).

The result of our research model is summarised as follows:

**Table 6: «Résumé du modèle de la recherche »**

<b>Dependent variable</b>	<b>Independante variable</b>	<b>H</b>	<b>Direct effect</b>	<b>Indirect effect</b>
Differentiation strategy	Competition	H1	$P_{21} = 0.391$	
Decentralisation	Differentiation strategy	H2	$P_{31} = 0.318$	
Competition	Decentralisation	H3	$P_{32} = 0.071$	0.124
Management accounting change	differentiation	H4	$P_{42} = 0.495$	-0.037
Management accounting change	Decentralisation	H5	$P_{43} = -0.116$	
Management accounting change	Competition	H6	$P_{41} = 0.121$	0.171

Source: Prepared by the researcher based on the results of SmartPLS 3

### 1. Competitive intensity and the differentiation strategy:

H1 predicts a positive association between the intensity of competition and the differentiation strategy. Our path coefficient is positive ( $P_{21} = 0.391$ ). We can therefore conclude that competition positively influences the differentiation strategy, which confirms our first hypothesis.

### 2. The strategy of Differentiation and Decentralisation:

The results indicate the existence of a positive relationship between the differentiation strategy and decentralisation ( $P_{21} = 0.318$ ). We can therefore conclude that the differentiation strategy positively influences decentralisation. These results support the conclusions of previous studies by researchers in this school who believe that strategy induces structure (Donaldson 1987). We therefore confirm our second hypothesis providing that companies that adopt a differentiation strategy, have decentralised structures.

### 3. Competition and decentralisation:

There is a positive relationship between competition and decentralisation ( $P_{31} = 0.071$ ). We can therefore conclude that competition positively influences decentralisation. This relationship is consistent with the results of researchers in this current who believe that competition has a direct impact on the internal organisation of companies (Khandwalla 1977; 1972; Lawrence et Lorsch 1967) and that decentralisation is necessary to respond to an environment increasingly competitive (Chandler 1962). Indeed, our coefficient of the indirect effect between competition and decentralisation, by introducing the strategy of differentiation as a mediating variable is also positive (0.124). We can therefore confirm our third hypothesis.



#### **4. The differentiation strategy and the management accounting change:**

The results of our study indicate that our path coefficient is positive ( $p43 = 0.495$ ), which confirms the existence of a direct positive relationship between the differentiation strategy and changes in management accounting systems. We can, therefore, conclude that the differentiation strategy positively and directly influences the change of management accounting systems. These results are consistent with the theory that states that prospecting-type companies adopt new management accounting tools (for example, activity-based accounting) than defendant-type companies (Gosselin et others 2000). This confirms the fourth hypothesis which provides that prospecting type companies, following a differentiation strategy, are more inclined to change their management accounting. On the other hand, our results show a negative indirect effect by considering decentralisation as a mediating variable ( $- 0.037$ ). We therefore find that the differentiation strategy indirectly negatively influences changes in management accounting systems.

#### **5. Decentralisation and Changes in Management accounting Systems:**

Our fifth hypothesis predicts that the level of decentralisation is positively linked to the change in management accounting systems. Indeed, our path coefficient is negative ( $p42 = - 0.116$ ). This is explained by the existence of a negative relationship between decentralisation and the change in management accounting systems. We can therefore conclude that decentralisation has a negative influence on the change in management accounting systems. These results do not confirm the results of Child (1972) who empirically showed that the level of decentralisation is positively correlated with Weber's administrative control. Our fifth hypothesis is not confirmed. The results of the study therefore show that companies that have changed their management accounting systems have centralised structures.

#### **6. Competition and change in management accounting systems:**

First, our model shows a positive association between competition and changes in management accounting systems ( $p41 = 0.121$ ). Then, It confirms an indirect relationship through the differentiation strategy and the structure (indirect effect =  $0.171$ ). We can therefore conclude that competition positively influences directly and indirectly the change of management accounting systems. These results show that an Algerian company facing intense competition is likely to respond to such an environment by attempting a greater number of changes in management accounting systems, these results are therefore consistent with the theory which states that uncertainty the external environment requires more developed control systems (Waterhouse et Tiessen 1978; R. Chenhall 1999); these results therefore confirm our last hypothesis.

**Conclusion:**

The objective of this article was to deal with the problem of changes in management accounting systems in Algeria, our field survey allowed us initially to study the changes in management accounting systems in Algeria, our results show that the average number of changes in management accounting systems in Algeria for the five-year period is 5.15, the average number of changes per year per company is 1.03. By comparing the results of previous studies on the number of average annual changes per country, Algerian companies have a lower number (1.03) than that of French (1.4), Singaporean (1.23), Canadian (1.48) and Malaysian (1.90). This low annual rate of change in Algeria is explained by insufficient knowledge and professional experience of executives in the field (BENNIA née MESBAH, s. d.; MESBAH 2018)..

The theory of contingency is a line of research which has produced a large body of work on the relationships between the environment and the structure of organisations and their performance. On our part, we simply posed hypotheses to test the influence of three factors in changes in management accounting systems: the differentiation strategy, decentralisation and competitive intensity by developing a study model that explains causal relationships between variables.

Our choice of the PLS approach was made by default, given the impossibility of using the covariance-based method (LISREL). This method can be used to confirm the theory, as it can be used to identify the existence or not of relationships and therefore to suggest proposals for future tests.

The results of this study conducted among 40 Algerian industrial companies with more than 50 employees, also show that the indirect effect of the two mediating variables (differentiation strategy and the degree of decentralisation) increasingly strengthens the relationship between competitive intensity and changes in management accounting systems.

There are certain theoretical and methodological limits of our study, the first refers, first of all, to the limitations inherent in the PLS method itself, the fact that this approach does not take into account measurement errors makes it difficult to judge the quality adjustment of a model to empirical data and to the comparison between models. It is relatively difficult to compare the quality of several competing models, due to the lack of fit indices, the impossibility of using the usually mentioned fit indices (Chi-square, GFI, RMSEA...) does not mean that the models estimated by the PLS method cannot be evaluated.

To conclude, we wish to evoke a final limit of our research. Indeed, the sample of 40 companies may not seem significant enough to generalise about the country. Also, the companies studied are located in the west of the country. For this reason, it seems interesting to us to broaden our research on the greatest number of companies located in different regions. However, our thesis constitutes one of the first steps in the research on the changes of management accounting systems in Algeria. Being an ongoing process, the subject of changes in management accounting systems will remain, in the years to come, a living and topical subject.



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