Journal of Research in International Business and Management Vol. 1(4) pp. 096-106 June 2011
Available online @http://www.interesjournals.org/JRIBM

Full Length Research Paper

Indirect effect of leaders' incentive system type on financial performance through the level of innovation

Habib Affes

Professor of Management Accounting at the University of Sfax
E-mail: Habib.affes@yahoo.fr

Accepted 04 June, 2011

This article focuses on the relationship between the leaders' incentive system type and financial performance through the level of innovation in the Tunisian context from a cognitive perspective of corporate governance. The method used in this study is based on the regression analysis. We directly address the leaders' incentive system type and the firm level of innovation on financial performance. Our model includes some control variables such as the firm's size, the firm's sector of activity and even whether the firm is listed or not. We empirically demonstrate that the relationship between the leaders' incentive system type and financial performance is mediated by firm innovation level. In the same way, we demonstrate that the compensation system which is based on long-term objectives has an influence on the determination of the financial performance through the innovation policies in Tunisian firms.

Keywords: The leaders' incentive system type, innovation, financial performance, mediator.

INTRODUCTION

The theoretical framework of this research, rests on the contributions put advanced by the recent theories of corporate governance. The contribution of cognitive theories of corporate governance constitutes an appropriate analytical framework adequately fit to reconcile the three major concepts relevant to this field namely: executive compensation, innovation and financial performance.

Although the usual common approach of corporate governance has certain advantages to offer in terms of simplicity and its relative efficiency measure by enhancing value creation. It has shown some significant gaps (Charreaux and Desbrières, 1998). This contractual approach was initially a relatively limited normative explanatory power of the governance system (especially within those companies whose governance profile is not of an Anglo-Saxon nature). However, it assumes that, a passive leaders behaviour supposed to undergo disciplinary action mechanisms. In fact, this may lead to an overestimation of their effectiveness. Similarly, the current composition of the shareholding structure is far from being covered and targeted as early as Berle and Means (1932). In addition, judging by the meta-analysis studies on corporate governance, it has been discovered that the traditional model of corporate governance suffers from several noticeable shortcomings.

In light of these factors, our purpose is to develop and intermingle various research frameworks that have attempted to integrate the cognitive aspects into a single model of value creation. More explicitly, the cognitive aspect enriches the understanding of corporate governance in such a way that the concepts of learning and innovation become central subjects. Relying on the cognitive theory of corporate governance, we tend to justify the theoretical correlation existing between the leaders' reward system, innovation and financial performance. However, few are those studies that have tried to integrate the three dimensions within a single perspective. This leads us to justify the theoretical basis guiding these somewhat complex relationships. It seems more appropriate, therefore, to direct our analysis towards examining and studying of other research areas such as the revolution in financial theory in respect of knowledge that highlight the importance allocated to skills and knowledge in value creation (Charreaux, 2002).

Thus, with regards to accounting and financial literature, we shall have to justify some theoretical and empirical explanations on the relationship between the often contested system of corporate governance and the latter's performance thereof. Among the answers

provided by the literature in this area, it is worth mentioning the importance of identifying the mediating variables in the often considered direct relationship between the corporate governance system and its financial performance. Within the framework of this paper, the leaders reward system appears to be a governance mechanism intended to improve corporate financial performance.

Noteworthy, Miller et al., (2002) have recommended that companies operating in an uncertain environment should develop a system to reward executives based on achieved performance. Yet, empirical literature on the practices of corporate governance pertaining to business innovation through the executive compensation and incentive policy has shown certain discrepancies. In this regard, the alignment of interests is targeted to promote innovative investment projects. Holthausen et al., (1995) have discovered that the relationship between innovation and reward system for long-term leadership is managers significantly positive. In fact, a high ratio and noticeable link can be observed between firm performance and reward (Hall and Liebman, 1998.) Actually, this relationship appears to be insignificant judging the results achieved by Eng and Shackell (2001).

Similarly, Guay (1999) and Coles et al., (2004) suggest that a higher sensitivity of the manager's wealth necessitates and induces more investment on R and D. In addition, the use of shares buying options, or the non-restrained buying options on shares is positively associated with innovation (the number of patents) or the intensity of investment on R and D (Johnson et al 2009). In this respect, the results seem to be robust enough to sustain and highlight the leader's position. Guay (1999) has shown that spending on R and D may be related to the level of non-executive incentives on non-executive shares, while Pugh et al., (1999) have observe that adopting a stock buying option plan to purchase the shares offered incites an increase in R and D investment. However, the divergence of these findings could be explained by the scarcity studies dealing with the indirect relationship between the type of executive compensation system and financial performance through innovation.

Hence, the subject matter consists in examining the indirect effect of the executive incentive scheme on the company's financial performance in the presence of an innovation policy.

Thus, we reckon to treat this issue from the following cognitive perspective: to what extent can the managers' reward system help guide the company's financial performance through innovation? For this aim, we reckon to divide our work in the following way. After introducing the topic, we turn to identify the evident assumptions that might arise. The third section is devoted to outline the research methodology adopted. As for the presentation and result discussion, they will be dealt with in the fourth section. Finally, the fifth section will present the achieved findings, as well as the limitations of the research scope as suggestions for further researches and studies.

Theoretical framework and hypotheses development

As has already been stated, our problematic issue consists in highlighting the indirect effect of the type of executives' incentive scheme on the company's financial performance through the innovation level scale. The answer to this question requires, firstly, to depict the relationship between the type of incentive scheme for executives and innovation activities, secondly to explain the relationship existing between the type of incentives system for executives, business innovation and financial performance.

The leaders' incentive and reward system and the level of business innovation

Under the cognitive dimension, the role of the board of directors expands by means of constructing a strategic vision and implementing it. This board can help the manager detect or set up growth opportunities, enhance its strategic vision by matching its cognitive schema to the directors' (Charreaux, 2002). Furthermore, this role appears to be even more in appointing officers. The Board, thereby, actively participates in rewarding competent leaders by allotting them higher salaries. This allows the company to create additional rents generated by managerial skills (Castanias and Helfat, 1992). These rents generated by assets' management and not just by their detention (Allemand, 2005). As a matter of fact, an effective compensation system is that one which enhances a fair valuation of the skills brought by the leader in building opportunities for long-term growth for the firm's future benefit (Lin et al., 2009). Thus, the leader who is endowed most with the qualifications and experience required would be the most capable one of maintaining the company's growth and survival, thereby increasing its value. As indicated earlier, innovation is rarely a clear continuity with the past. Zahra (1996) states that short term based reward systems might discourage managers to pursue innovation strategies.

However, at this junction, one might well wonder: What are the reasons behind the proprietors' will to index executives' compensation on the basis of achieving the long-term goals?

The most appropriate and logical answer lies in the fact that leaders are seen as a source of value creation by virtue of their skills and knowledge to develop of specific projects. It would be advantageous for the company to preserve and maintain its human capital in the specific incentives based on the achievement of long-term targets. Actually, the corresponding remuneration is based on specific skills that the leader could bring or

provide to the company. This could have a positive impact on developing the innovation activities conducted by the company. In this sense, an appreciation of the managers' cognitive contribution is considered and evaluated according to the type of compensation recommended and ratified by the board of directors.

As a matter of fact, the executive compensation system, which is based on accounting results, induces opportunistic behaviour of the latter. In this respect, investments on R and D are subject to accounting manipulation by the leadership while respecting the current accounting standards. This behaviour, often regarded as opportunistic, becomes invalid in the cases where the company valorises leadership skills correctly by granting them remuneration according to adequate compensation plans. Thus, the problem of opportunism is counterbalanced by a higher and more efficient remuneration (Shleifer and Vishny, 1989). As a result, the concerned company recognizes the cognitive contribution a leader might provide to its overall benefit. In this way, compensation is based on the leaders' contributions to the success of innovative investment projects in such a way that the problems of opportunism and moral hazard are disposed of and become out of question. Similarly, in a study conducted on a sample consisting of some high-tech firms, Balkin et al (2000) have discovered the existence of a positive relationship between the long-term compensation plans and the development of innovative investment opportunities involving high risks and long term horizon prospect. On the ground of such developments, the following hypothesis is likely to emerge.

Hypothesis 1 (H1): The managers' incentive system, based on long-term plans, positively influences the business innovation level.

Type of managers' incentive system, innovation level and financial performance

This, the short-term compensation offered to the leader is likely to sensitize him to company interest and performance in the short term, while long-term items found in compensation contracts (stock ownership or stock options) should theoretically encourage the manager to maximize long-term financial performance (Murphy, 1993). This is confirmed by Stammer johan (2004), whose study results dealing with 137 executives in 56 companies suggest that a higher proportion of executive compensation in the form of annual bonuses increases the company's long term performance but with a negative short-term effect. Moreover, in the prevailing new economic environment, companies are more than ever aware that the process of value creation largely lies within the specificity of human capital. This could be explained by the indexation of executives' salaries in the respect to the achievement of long-term objectives. In such specific context, the leader is likely to play a more active role in the production of corporate pension thanks to his or her specific skills and competences (Allemand, 2005). Hence, a long term based compensation plan should encourage the leader to invent, identify and come up with new opportunities (Lazonick and Prahalad, 2000). In this respect, the firms' efficiency lies in its ability to create value by investing in innovative projects. This requires the presence of highly qualified leaders able to generate additional revenue turnovers. Similarly, Hayes and Schaefer (2000) along with Ang et al., (2003) validate, in their works, the relationship between the leadership high qualities, the high level of remuneration and the firm's increased performance.

Thus, a long-term compensation scheme would allow the leader to promote his /her cognitive capital along with his/her specific expertise to improve the business performance. Actually, investments in innovation projects represent the major vehicle of value creation. A system of incentive compensation positively influences the leader's behaviour as regards innovation and therefore, allows to maximize shareholder value creation. Thus innovative activities could play an intermediary role between the type of remuneration scheme and the company's financial performance. This fact is consistent with the recommendations of Hutchinson and Gul (2004) stipulating that the effect of corporate governance system on performance should be well studied with respect to firms' contextual variables. It therefore, appears that long term based compensation plans simultaneously have a direct, and above all, an indirect impact on business performance. The indirect effect is conditioned upon the setting up of innovative investment strategies, the essential components of sustainable value creation.

Hypothesis (H2): Long term incentive system plans for business management positively influence financial performance through the level of innovation criterion.

METHODOLOGY

Sample Description

It is worth noting that our sample consists of some 95 anonymous non-financial Tunisian companies among which 17 are listed on the Tunis securities stock exchange and 78 are not listed. As far as the present research is concerned, 200 companies have been called upon, yet a very strong dislike and unwillingness have been expressed by some of them to deliver special information. This lack of collaboration has affected the size of our sample which has been reduced to only 95 respondents, representing an effective response rate of 48%.

The concerned companies have been interviewed over a three-year period ranging from 2004 to 2006. This temporal choice stems from the recommendations of the OECD Oslo Manual (2005) while the relevant empirical studies lie in different contexts (Wu, 2008).

As for the current study data, they have been collected from different sources, Some information has been obtained through a questionnaire administered to the companies in question. A collection of additional information concerning financial statements has been gathered from the Securities Stock Exchange of Tunis. As for data on unlisted companies, and owing to a short age in concise database, we were obliged to collect essential data relevant to our empirical analysis by means of a survey conducted with the concerned companies and their chartered accountants.

Measurement of variables

In consistency with our hypothesis, measurements of endogenous as well as exogenous variables are defined below.

Measuring the level of business innovation

Research and Development (R and D) has often been considered by many specialist researchers and practitioners as synonymous with innovation. However, on reviewing the relevant literature, we are led to assert that innovation has a broader scope than the mere costs of R and D (Kirner et al., 2009). Thus, measuring the level of business innovation requires greater care.

Within the scope of this research, we intend by innovating the introduction of a novelty in the economic field (Klaus et al., 2006). Innovation activities includes, among others, the emergence of new products and processes, the adoption of new working or organization methods, the adoption of new management and administration techniques, the R and D budget, engineers training ratios, the techno structure framework, the member of R and D personnel, the degree of computerization etc. (Rogers, 1983; Dosi, 1988). Actually, these indicators are used to measure the extent level of business innovation. With the help of these indicators, we tend to construct a corresponding reliable index for companies, capable of reflecting the degree of business innovation.

In addition, recent literature dealing with innovation considers it necessary to go beyond both managerial and technical categories of innovation, privileging emphasizing a global holistic approach (Van and Poole, 1995).

In fact, the idea of constructing such an index stems from those research works focusing on voluntary disclosure of accounting information (Bertrand, 2000).

According to Bertrand (2000), the index construction rests on a well-defined methodology comprising four steps, namely: determining the variable to be measured, selecting the items, choosing the study period and finally calculating the score.

To note, it is worth recalling that the variable to be measured consists in the level of business innovation.

Items Selection

The main issue has been to define reliable measures of innovation. Theoretically, we maintain some aggregate measures of innovative activities according to their noticeable characteristics pertaining to this field, whether they are presented under the form of an innovative product or process. Actually, the introduction of new products / processes serves as an important measure of the firm's innovative activities as it indicates the potential commercial impact of its activities (Klaus et al., 2006). Innovation thus appears to be a means to achieve the firms' strategic objectives, improve its competitiveness, to distinguish itself from competitors and create value.

On the basis of what has been mentioned, it seems that various measures of innovation have been applied by different authors. These measures include R and D spending, the number of patents filed by the company or the number of new products or processes introduced on the market. Thus, in conformity with the Tunisian accounting disposition along with the international recommendations on the context of innovation surveys (OECD Manual, 2005) as well as other empirical studies (Loof and Heshmati, 2006), operationalization of innovation activities will be undertaken as follows; Its measuring criterion is going to be conceived of as being the sum of the different synthetic indicators spread over three years, as they appear in appendix (see Annex 1). Following this respective order of ideas respondents will have respond to the following request: during the last 3 years (2004-2006) and under the guiding directives of the company owners and the director's board, please indicate whether your company has adopted the innovation activities mentioned above. Noteworthy, we have included in the questionnaire the definition advocated by the OECD Manual (2005) of the mentioned innovation.

Choosing the study period

Owing to the fact that innovation, in its various stages of formulation, validation, dissemination and diffusion, is a complex process that involves a considerable time lapse, the OECD Manual (2005) has extended its implementation scope to a three year period from 2004 to 2006.

Qualification of items and score calculation

In this study, we assign value 1 to each item if the respondent checked "yes" and 0 inversely. It is also necessary to determine the method of calculating the score. In the studies pertaining to disclosure, two score calculating methods of disclosure have been applied. The first method is called "simple" and the second is called weighting method. The first consists in summing up for each company the obtained points after reading the information medium (questionnaire in our case). As for the second method, it consists in weighing the scores obtained by the highest score in the sample or the number of items forming the index. As part of this work, we use the weighing method. The Innovation score is calculated as follows:

With:
• INDINVTi: is the level of innovation calculated for firm i
• Ij: is a binary variable that takes the value 1 if the item is checked by the respondent and 0 in the opposite case.
• n: is the total number of items used to measure the level of business innovation

The type of incentive system for company directors

$$\mathbf{INDINVT_i} = \sum_{j=1}^{13} Ij / n$$

Managerial remuneration comprises three components: fixed remuneration, short term incentive compensation and long-term incentive compensation (Duhaime, 2007). According to Duhaime (2007), short-term items are based on performance calculated according to targets measured over a period of 12-18 months and usually consist of a base salary and cash money bonus. On the other hand, the long-term portion is calculated on the basis of objectives extended beyond 3 years and usually involves the granting of shares, options or deferred stock units. It follows that each program term are determined with regards to the objectives the company intends to achieve.

Thus, developing a strategic compensation policy, by conditionally integrating some measurably integrated traditional elements of remuneration, the board of directors or compensation committee may be able to induce the manager to take decisions in favour of the shareholders interests. Thus, an obvious evident question arises concerning the most efficient remuneration system that would urge leaders to foster innovation strategies. As for the Tunisian context, however, the introduction of buying options on shares offered to executives is still very limited or even nonexistent to our knowledge. To overcome this problem of measurement, we have asked respondents to identify whether the policy adopted by the Board concerning executive compensation is based on achieving objectives to be generally reached over periods ranging longer than three years or between one year and one year and a half.

Hence, two items have been developed on which the compensation plan is based for the achievement of either short-term or long-term objectives. This variable takes the value 1 if the compensation plan is based on the achievement of long-term goals and the value 0 if it is based on objectives to be achieved in the short term.

Choice of indicators for measuring financial performance

A review of the literature concerning the choice of performance measures shows a great diversity of selected performance indicators (return on equity, return on operating assets, turnover...).

According to Charreaux (1991), the choice of indicators depends on the already set perspective. This depends on whether the focus is set on maximizing the equity value or the maximization of the firms' overall value. The first approach is most commonly by dominant in financial theory and leads to the assessment of performance from the shareholders point view. This concerns the return on equity. The second approach consists in retaining, as a benchmark, the firm's overall value, that is to say, its economic viability. In fact, both approaches may diverge substantially. On the one hand, the distribution of profits may be undertaken in favour of creditors to the detriment of shareholders or vice versa. On the other hand, a divergence of interests between shareholders and creditors might lead shareholders to opt riskier projects than those that should be taken in the case of maximizing the firms' value.

As part of this work, two indicators have been applied to measure firms' financial performance. The first is consistent with maximizing the firms' overall value, while the second is consistent with maximizing the shareholder's value (Thornhill, 2006). More specifically, the average return on assets (ROA = earnings before interest and after tax / total assets), the average return on equity (ROE= Net income / equity) during a period of three years (2004 2006) are the predominantly considered items.

Measurement of control variables

The major objective of this study consists in examining the indirect effect of the incentive scheme for executives on the company's financial performance in the presence of an innovation policy. However, it seems important to introduce some control variables that might affect this relationship.

The company size

Three major indicators can be identified to measure the company size, the first of which indicator is the number of employees. The second is the volume of sales and the third is that of total assets. In our case, the “total assets” measure will be used as a measure of this variable. However, to overcome the variability of results due to the presence of firms whose sizes largely differ, to reduce the magnitude of the variable size to large businesses and to reduce heteroscedasticity and sprawl that might result from certain extreme points, we will use the natural log of the companies’ total assets. This measure has been validated by Fama and Eng (1995).

The field of activity

In this study, we focus primarily on industrial companies to in a bid to examine their policies regarding innovation. Companies are classified into two groups according to the classification made by the OECD (quoted by Tylecote and Ramirez, 2006). The first group includes companies which belong to the high technology sector while the second encompasses contains the traditional businesses. According to the OECD, the leading advanced technology sectors are defined by their high intensity in R & D operation, namely the pharmaceutical and medical, telecommunications and information technology industries.

As sectors with medium and low technology are characterized by lower levels of intensity in R&D, their progress can be predicted to be slow. These include mainly electrical and electronics, mechanical engineering, chemicals excluding pharmaceuticals and agribusiness sectors.

Thus, this variable takes 1 if the firm belongs to high-technology industry, 0 if it belongs to the traditional sector. This measure has been applied by Wu (2008).

Listing of companies "TOC"

The opening of capital to shareholders is a key instigator of all types of innovation.

This factor in itself can not be neglected. We therefore deemed it interesting to detect the variation of this relationship by taking into account the listing of companies and their financial performance. The implementation of this variable is undertaken by considering it a binary variable that takes the value 1 if the company is listed and the value 0 in the opposite case.

The method of analysis

As a reminder, the objective of this research is, firstly, to understand the impact of the leaders’ reward system on the level of innovation. Then we try to examine the indirect effect of the executives’ incentive scheme on the firms’ financial performance via the level of innovation. To achieve this objective, we propose to estimate the following first model.

$$INVTIND_i = \beta_0 + \beta_1 REWSYST_i + \beta_2 LOGTA_i + \beta_3 SECT_i + \beta_4 LIST_i + \varepsilon_i$$

With:

$INDINVT_i$: firm innovation index, i =1... 95.

$REWSYST_i$: Binary variable that takes the value 1 if the reward system of the enterprise is based on long-term goals and 0 in the opposite case.

$LOGTA_i$: is the natural logarithm of total assets.

$SECT_i$: Binary variable that takes 1 if the firm belongs to a high-tech industry sector, 0 inversely.

$LIST_i$: Binary variable that takes 1 if the company is listed, 0 in the opposite case.

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$: parameters to be estimated.

ε_i : The random error.

$_i$: 1……..95 firms

To test the indirect effect of the executives’ incentive scheme on the financial performance of the business through innovation, we are going to apply the hierarchical regressions method. Baron and Kenny (1986) have proposed four conditions to test a complete mediating effect of (M) in the context of (XY).

Condition (1): The variable X should have a significant impact on the variable Y

Condition (2): The variable X should have a significant impact on M.

Condition (3): The supposed mediator variable must significantly influence variable Y, when the influence of variable X on Y is controlled.

Condition (4): The significant influence of variable X on Y must vanish when the effect of M on Y is statistically controlled.

The following three equations ranging from 1 to 3 test the indirect relationship between the type of incentive scheme for executives and financial performance through innovation. These equations are used to validate the hypothesis (H2).

$$(1)\ PERF_i = \beta_0 + \beta_1 REWSYST_i + \beta_2 LOGTA_i + \beta_3 SECT_i + \beta_4 LIST_i + \varepsilon_i$$

$$(2)\ INVTIND_i = \beta_0 + \beta_1 REWSYST_i + \beta_2 LOGTA_i + \beta_3 SECT_i + \beta_4 LIST_i + \varepsilon_i$$

$$(3)\ PERF_i = \beta_0 + \beta_1 REWSYST_i + \beta_2 INVTINDi + \beta_3 LOGTA_i + \beta_4 SECT_i + \beta_5 LIST_i + \varepsilon_i$$

With:

$PERF_i$: Financial performance of firm i measured by ROA, ROE

Table 1: Testing Mediator Effects Using Multiple Regression

Testing Step 1		
Outcome: ROA		
Predictor: REWSYST	0.122	2.128**
Control variables: LOGAT	2,676E-02	0.414n.s
SECT	2,723E-02	1.231n.s
LIST	5,226E-02	0.234n.s
Statistic model	adj. R^2 = **0.046**; F value = 2.144*	
Outcome: ROE		
Predictor: REWSYST	0.233	2.190 **
Control variables: LOGAT	-0.066	0.628 n.s
SECT	0.021	0.203 n.s
LIST	-0.039	0.377 n.s
Statistic model	adj. R^2 = 0.017 ; F = **1.396 n.s**	
Testing Step 2		
Outcome: INVTIND	3,437E-02	3.522***
Predictor: REWSYST	1.133	4.774***
Control variables: LOGAT	-7,996E-0	-0.445n.s
SECT	-,170	-2.163**
LIST	1,261E-02	0.141 n.s
Statistic model	adj. R^2 0.148 ; F value = 5.090***	
Testing Step 3		
Outcome: ROA		
Predictor: REWSYST	3,456E-02	1.514 n.s
Mediator : INVTIND	,409	3.612***
Control variables: LOGAT	3,548E-02	0.548 n.s
SECT	3,220E-02	1.547 n.s
LIST	3,605E-03	0.172 n.s
Statistic model	adj. R^2 = 0.159 ; F value = **4.555****	
Outcome: ROE		
Predictor: REWSYST	2,877E-02	1.439 n.s
Mediator : INVTIND	0.313	3.612***
Control variables: LOGAT	-2,970E-0	-0.559n.s
SECT	-2,067E-0	-1.128n.s
LIST	2,332E-03	0.127 n.s
Statistic model	adj. R^2 = 0.133 ; F value = **3.876****	

INDINVTi: innovation index of firm i, i= 1... 95.
$LOGTA_i$: the natural logarithm of total assets.
$SECT_i$: Binary variable that takes 1 if the firm belongs to a high-tech industry, 0 in the opposite case.
$LIST_i$: Binary variable that takes 1 if the company is listed, 0 in the opposite case.
$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$: parameters to be estimated.

ε_i : The random error.
$_i$: 1……..95 firms

RESULTS AND DISCUSSION

At a first stage, the first model results are presented, pertaining to the impact of the executive compensation system on the level of innovation. Then we turn on to present the results of the indirect effect of the executive's reward and incentive system on financial performance through the level of innovation.

Analysis of the impact of the firm's reward and incentive system type on the level of innovation

This hypothesis states that the firm's system of rewards and incentives based on long-term plans positively influences the level of innovation. An examination of the causal effect shows that the coefficient associated with this variable has a positive value (0.016). The signifi-

cance of this coefficient is achieved by means of Student's test. The value of the t-statistic is well below 1.96 (t =3240, p 0001), which means that the long term incentive system has an effect on the firm's innovation policy. Thus, the hypothesis (H1) has been validated through the firms under review. It follows that the firms' type of incentive and reward has an impact on the strategic direction of the company. Similarly, it appears that the Tunisian companies really value their specific human capital. This also shows that the long-term goals to be achieved dominate over the short term ones. Thus, firms subject of our sample tend to favour elements that influence long-term profitability at the expense of the short-term ones.

This is in line with the current assumptions of cognitive governance. In this respect, the board functions have experienced new justifications based on human capital. The executive's remuneration by means of stock options is no longer necessarily explained by the objective of aligning his interests with the shareholders', as has been postulated by the contractual approach of governance, but rather by encouraging the firms' qualified members to come up with new innovative ideas essential source of company value. The reached empirical results discovered in the Tunisian context indicate or highlight Tunisian companies attach great importance to the type of reward system and incentives for executives.

Testing the model hypothesis "type of business reward system and incentive / innovation / Financial Performance"

To identify the mediating role of the innovation level, Baron and Kenny (1986) argue, as stated earlier, that four conditions have to be checked.

Owing to the nature of our hypothesis, the technique of hierarchical regression is going to be applied with the aim of being able to compare the overall effect of the variables' blocks. It is also a favoured type of analysis useful to verify a mediating effect (Kenny et al., 1998). Each of the four steps outlined above will be included in this paragraph for the purpose of testing our research hypothesis. To verify the validity of our hypothesis background, various regression models have been estimated for each step of the procedure of Baron and Kenny (1986). Both models A (reduced model) and B (reduced model) contained the independent variable as well as the control variables while predicting the successive dependent variables: financial performance and the level of innovation (mediating variable in a third step). As for model C (full model), it includes all the variables: the independent variable (the leaders' system of reward and incentive), the mediating variable (innovation level), the control variables (size, sector and listing) together with the dependent variable: financial performance.

The first condition requires that the independent variable "SIRALT" should be connected to the dependent variable (financial performance). Indeed, it is necessary to perform a hierarchical multiple regression analysis while considering the control variables. The regression phases are presented below, in Table 3, together with the hierarchical regression results. The results shown in that table show a positive relationship between the managers' rewards and incentives system and financial performance. According to model (A), this relationship is statistically significant compared to the ROA at a significance level below 5% (Beta = 0.053, t= 2242, p = 0.027) and also with respect to the ROE at a threshold below 5 % (Beta= 0.045; t = 2.190 p = 0.031).

This consolidates the fact that the leaders' reward and incentives system has a direct and significant impact on financial performance. Thus, the first condition is verified.

The model A (reduced model) tests the relationship between the variable "SIRALT" and ROA. Actually, it has a moderately weak explanatory power (adjusted R two = 0.046). The overall quality of the model is statistically acceptable (F = 2144, p is inferior to 10%). On the basis of this test results, it likely appears that at least one of the explanatory variables makes a significant contribution to the overall fluctuations of the financial performance. However, in the cases where performance is measured by ROE, the concerned model appears to have a weak explanatory power (adjusted R-two = 0.017). The global quality of the model is insignificant (F = 1396, p = 0242). At this level, it is worth mentioning that no control variable in Model A, enables to predict the financial performance in the reviewed Tunisian companies subject of study.

As for the second condition, it consists in showing a significant impact of the independent variable "SIRALT" on the mediating variable "INDINVT" considered as dependent variable in a regression analysis of X_M (mediating variable) on X (predictor) in the presence of control variables. It stems from model B (reduced model) that the relationship between the variable "SIRALT" and the level of innovation is statistically significant at a significance level below 1% (see Table 3 below). Indeed, the regression coefficient associated with the variable SIRALT "is positive (0.034) and significant (p = 0.001). Hence, the second condition is in its turn checked. Similarly, it is worth noting that the business sector, as a control variable, significantly and negatively influences the level of innovation.

To verify the third condition pertaining to the mediating effect of innovation between the managers' incentive system and financial performance, we have resorted to Model C (full model) to test this relationship. In fact, the regression analysis results indicate that innovation (potential mediating variable) remains significant in explaining the dependent variable (both measures of financial performance) while taking into account the predictor variable. The variable's regression coefficient "level of innovation" has a positive and significant value

relative to ROA (beta = 0.409, t = 3.612, p is less than 1%) and also relative to ROE (beta= 0.313, t = 3.612, p is inferior to 1%).

The third condition is in turn fulfilled. The last step of the approach of Baron and Kenny (1986) enables to determine the nature of partial or complete mediation by examining the significance of direct links between independent and dependent variables. The results (see Table 4, columns 6 and 7) show that the coefficients associated with the variable "type of business reward system and incentive" are by no means not statistically significant whatever the measure of performance used. The regression coefficient of the variable “leaders’ system of rewards and incentives " has a positive and insignificant coefficient compared to the ROA (beta= 0.034, t =1.514, p = 0.134)) and also with respect to ROE (Beta = 0.029; t = 1.439, p = 0.154). In fact, the relationship between the independent variable, leaders’ system of reward and incentive and the two measures of financial performance, is no longer significant though it was statistically significant at the first stage of the already mentioned approach of Baron and Kenny. It follows, therefore, that mediation via the level of innovation is complete between the manager’s rewards and incentives system and financial performance.

In addition, the indirect effect of the leader incentive structure on financial performance is reliable in this case. Through its effect on the company’s innovation level, the leader rewards and incentives system can significantly increase the financial performance of the company.

Similarly, according to Table 4, the regression model C (full model) presents, for both measures of financial performance, a largely fit, adjusted and adequate explanatory power. Thus, such a comprehensive model that takes into account the mediating effect of innovation enables to increase the percentage of variance explained with respect to Model A. As for the case in which performance is measured by ROA, adjusted R-two passes from 0.046 to 0.159 and the F statistic has a more significantly value at a rate lower than 1%. Similarly, when performance is measured by ROE, adjusted R-two passes from 0.017 to 0.133 and the F statistic shows that the model C becomes more significant compared to model A (model non significant). This increase in adjusted R-two is naturally related to the consideration of the mediating effect of the innovation level. In addition, the variation change in adjusted R-two (11% (ROA), 12% (ROE)) associated with the addition of the mediating variable is significant, which highlight the fact that this variable is an effective predictor of the dependent variable financial performance.

DISCUSSION OF RESULTS

The major result to be derived from model C (full model) indicates the prevalence of a full complete mediation, that the mediator (level of innovation) entirely explains the association between the predictor variable and the dependent one to be explained.

With respect to our objectives, several key findings ultimately emerge after studying the mediating effect of innovation on the relationship between the manager rewards and incentives system and financial performance. In fact, taking into account the level of innovation makes the effect of the managers’ reward and incentive system insignificant on financial performance. One might will infer that the manager's incentives system does have an impact on financial performance, particularly on the ROA, as it acts on the level of business innovation. The loss of significance of the direct effect of the executive reward and incentive system in favor of performance is, in this regard, a particularly important finding.

The direct effect of the executive incentive structure on performance is insignificant when the level of innovation is introduced as a mediating variable. The executives’ system of reward and incentive positively affects the level of innovation. These innovative activities, in turn, positively affect performance and, therefore, the direct effect of the leader’s incentive structure on the financial performance decreases.

Thus, one can conclude that the impact of the executive’s reward and incentive system on financial performance is not straightforward. This impact is indirect due to the perfect mediation perfect of the innovation level.

It is worth noting that the introduction of the mediating effect in the full model enables to improve the model’s overall significance. The inclusion of the mediating variable, level of innovation, significantly increases the explanatory power of the full model in terms of adjusted R-two. In this context, it should be stated that the weak explanatory power of the traditional model of governance could ultimately be explained by the quasi absence of analysis relevant to the mediating effect of intermediary variables that are critical in the causal relationship between the type of manager’s remuneration system and financial performance.

CONCLUSION

The central hypothesis subject matter of this work is the fact that the type of incentive scheme for executives has an indirect effect on financial performance through innovation. Due to the specificity of investments related to innovation, the problems of asymmetric information and conflicts of interest seem to be evident and imminent. To resolve these problems, companies are encouraged, or even compelled, to establish a system of executive compensation based on their skills.

Based on a sample of 95 Tunisian industrial companies, the process of testing the mediating effect

has shown that the link between the independent variable, type of executive compensation system and the two measures of performance, is no longer significant as it has been throughout the first stage of the procedure of Baron and Kenny (1986). It follows that mediation via the innovation level is complete between the type of remuneration system for executives and financial performance. Moreover, the indirect effect of the executives' pay scheme type on financial performance is reliable in this study. Through its direct effect on the company innovation level, the type of executive compensation system can significantly increase the company's performance.

Furthermore, the results depicted by this study have had some important implications both theoretically and practically. On the one hand, our research adds a valuable contribution to existing knowledge by proposing an integrative model that measures the simultaneous effect of the remuneration system type on innovation and performance. The modeling of mediating variables in the context of this current research on corporate governance is not yet developed. Nevertheless, this study provides an initial conceptual as well as methodological response in this field.

Yet, these contributions are subject to two major limitations associated with the constraints imposed by the implementation of such work.

The first limitation pertains to the nature of our sample, namely, convenience as well as its relatively small size and rather limited scope. More explicitly, the generalization of this study does not seem possible. As for the second limitation, it relates to the operationalisation of the variables in this study. Concerning the choice made, some approximations set to measure the variable "level of innovation" remains restricted compared to the whole set of innovation activities. Despite these difficulties, we have relied on previous work as well as on the international recommendations to construct a more appropriate measure of the level of innovation within Tunisian companies.

Finally, future research studies could focus on comparative studies among Mediterranean countries and examine the impact of their companies' governance structures on their level of innovation.

REFERENCES

Allemand I (2006). Les différentes voies d'intervention disciplinaires et cognitives du marché des dirigeants, mécanisme particulier de gouvernance. Cahiers du CEREN 11:2-12.

Ang J, Lauterbach B, Vu, J (2003). Efficient labor and capital markets: evidence from CEO appointments. Financial Management, 2003.

Baron RM, Kenny DA (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic and statistical considerations. J. Personality, Social Psychology 51 :(6) :1173-1182.

Bertrand F (2000). L'utilisation des indices de diffusion en recherche comptable : une revue méthodologique. Série « recherche », université de droit, d'économie et des sciences d'Aix marseille.

Castanias RP, Helfat CE (1991). Managerial Resources and Rents. J. Manage. 17 (1):155-171.

Charreaux G (1991). Structures de propriété, relation d'agence et performance financière. Revue D'économie Financière 3 :521-552.

Charreaux G (2002a). Variation sur le thème A la recherche de nouvelles fondations pour la finance d'entreprise. Finance Contrôle Stratégie 5:(3) :5-68.

Charreaux G (2002b). L'actionnaire comme apporteur de ressources cognitives. Revue Française de Gestion novembre-décembre, n° spécial 28 (141) :77-107.

Charreaux G, Desbrières Ph (1998). Gouvernance des entreprises : valeur partenariale contre valeur actionnariale. Finance Contrôle Stratégie 1:(2):57-88.

Coles JL, Naveen DD, Naveen L (2004). Managerial incentives and risk-taking. Working paper, Arizona State University, Department of Finance, Pp 44.

Core JE, Holthausen RW, Larcker DF (1999). Corporate governance, chief executive officer compensation, and firm performance. J. Financial Econ. 51:371- 406.

Dosi G (1988). Sources, procedures, and microeconomic effects of innovation. J. Econ. Literature 26:1120–1171.

Duhaime L (2007). La rémunération des dirigeants et administrateurs. Fasken Martineau DuMoulin S.E.N.C.R.L, Printemps 2007.

Eng LL, Shackell M (2001). The Implications of Long Term Performance Plans and Institutional Ownership for Firms' Research and Development Investments. J. Acc., Auditing , Finance 16:(2):117-39.

Fama EF, French KR (1995). Size and book-to-market factors in earnings and returns. J. Finance 50 :(1):131-155.

Guay W R (1999). The sensitivity of CEO wealth to equity risk: an analysis of the magnitude and determinants. J. Financial Econ. 53:(1):43-71.

Hall B, Liebman J (1998). Are CEOs really paid like bureaucrats?. Quarterly J. Econ. 113**:**(3):653-691.

Hayes R, Schaefer S (2000). Implicit contracts and the explanatory power of top executive compensation for future performance. Rand J. Econ. 31:273-293.

Holthausen RW, Larcker DF, Sloan RG (1995). Bus. Unit innovation and the structure of executive compensation. J. Acc. Econ. 19**:**(2-3):279-313.

Hutchinson M, Gul FA (2004). Investment opportunity set, corporate governance practices and firm performance. J. Corporate Finance 10:595– 614.

Johnson SA, Ryan HE, Tian YS (2009). Managerial Incentives and Corporate Fraud: The Sources of Incentives Matter. Review of Finance 13:(1):115-145.

Klaus K, Ewald R, Gerhard W (2006). The role of sectoral and regional innovation systems in supporting innovations in forestry. Forest Policy and Economics 8: (7):704-715.

Lazonick WO'Sullivan M (2000). Perspectives on Corporate Governance, Innovation, and Economic Performance. European Institute of Business Administration, Insead.

Loof H, Heshmati A (2006). On the relationship between innovation and performance: a sensitivity analysis. Econ. of Innovation and New Technology 25:317-344.

Miller JS, Wiseman RM, Gomez-M, Luis R (2002). The fit between CEO compensation design and firm risk. Acad. Manage. J.

Murphy K, Zimmerman JL (1993). Financial performance surrounding CEO turnover. J. Acc. Econ. 16:273-315.

OCDE (1997). La mesure des activités scientifiques et technologiques :principes directeurs proposés pour le recueil des données sur l'innovation technologique, Manuel d'Oslo, Éd. de l'OCDE et Eurostat.

Pugh WN, Jahera J, Oswald S (1999). ESOPs, Takeover Protection, and Corporate Decision Making. J. Econ., Finance 23 :(2):170-83.

Rogers EM (1983). Diffusion of Innovations. The Free Press, New York. 3rd Ed.

Shleifer A, Vishny R (1989). Management Entrenchment: The case of manager specific investments. J. Financial Econ. 25:(1):123-139.

Stammerjohan W (2004). CEO compensation and subsequent firm performance: An empirical investigation. Corporate Ownership and Control 2:86-103.

Thornhill S (2006). Knowledge, innovation and firm performance in high- and low-technology regimes. J. Bus. Venturing 21:687-703.
Tylecote A, Ramirez P (2006). Corporate governance and innovation: The UK compared with the US and 'insider' econ. Research Policy 35:160-180.
Wu HL (2008). When does internal governance make firms innovative? J. Bus. Res. 61:(2): 141-153.
Zahra SA (1996). Governance, ownership and corporate entrepreneurship: the moderating impact of industry technological opportunities. Academy of Manage. J. 39:1713-1735.