The Effect of the Governance Structure of Small and Medium-Sized Enterprises and the Specific Human Capital of their Managers on their Technological Performance
(Case of the Tunisian LLCs)

Mabrouk Najoua*

Department of Economics and Management Sciences, Sfax University, Sfax, Tunisia

Abstract

The main objective of this research is to study the impact of the governance structure and the specific human capital of the leaders of the Small and Medium-Sized (SME) on their technological performance. Empirical tests were conducted on SPSS from companies having the statue of Limited Liability Company (LLC). To address this research issue, we analyzed the link between governance and technologic performance in the first section. Then, based on financial theories we formulated a set of hypotheses related to the influence of corporate social responsibility, the concentration of ownership, the presence of auditor, the behaviour of the risk-taking versus non-risk-taking of manager, the age, the experience and the family ownership of the manager on technological performance. The results of the empirical tests indicate that the governance structure had a positive effect on technological performance. Conversely, the empirical tests show that the age and the plurality of manager had negative effects on technological performance.

Keywords: Corporate governance • Corporate social responsability • Human capital of the manager • Technological performance

Introduction

The study of the specificities of Small and Medium-Sized Enterprises (SMEs) that have the legal status of a Limited Liability Company (LLC) remains, despite everything, the relevant stream of fundamental and empirical research in the field of finance and governance. The majority of works do not give too much importance to the impact of this legal status on the management and control of these companies. One of the characteristics of this specificity, which is particularly interesting, corresponds to the study of the importance of the directors (managers) and their families in determining the overall strategy of their company and its governance. The research on the governance of these companies always relates to the realities of SMEs. This type of enterprise occupies an important place in the economy of many developing countries, as the case for Tunisia.

We therefore wonder about the effectiveness of the various governance mechanisms specific to SME-LLCs and their contribution to improving their technological performance. These mechanisms, which can be internal or external, could help to secure the partners and all the stakeholders of the company while seeking to create value for them. Many authors have focused on governance practices in SMEs and its impact on performance. The rapid analysis of these studies shows that there is a significant correlation between performance and governance of SMEs, taking performance as a basis for evaluation.

In Tunisia, the subject of corporate governance has attracted the attention of several researchers including politicians. This governance can be defined as all the regulations and processes that govern the way the company is managed and controlled while avoiding discretionary practices of managers [1]. Its main stake, is thus to limit the conflict of interest between the leader and the associates and to contribute to the creation of the value. The problem stems from the fact that the manager of the SME-LLC will seek to take advantage of his current status, aiming to promote his personal interests and to put down roots to the detriment of value maximization. This manager always chooses to favour investments whose profitability is in the short term, even if other opportunities may be more advantageous in the long term, in order to benefit from the results, which will be a major asset in his future career. The SME-LLC is characterized by the centralization of power

and decision-making around the owner-manager, the involvement of family members in management or ownership and its ability to organize with few resources. Our research question will therefore be as follows:

What is the influence of this specific human capital of the manager as well as the governance mechanisms specific to the SME-LLC on their technological performance? The answer to this research question will provide an interesting contribution to the existing literature and to practitioners. From a theoretical point of view, our research allows us to combine the influence of complementary theories, often mobilized separately, to understand the concept of governance in LLCs. Thus, the rest of this paper contains a review of the literature and the hypotheses, an empirical part and analysis of the results with econometric tests and ends with a conclusion.

Materials and Methods

The search for a theory of governance that applies and adapts to the reality of the SME requires a synthesis between contractual and cognitive theories. Indeed, in an SME one cannot speak of an agency relationship between the shareholder and the manager, since the main shareholder and the manager are the same. Hence the partnership approach seems more relevant for the SME. Similarly, the cognitive approach aims at creating maximum value while improving knowledge by encouraging innovation and the participation of different stakeholders in the value creation process [2]. All these conditions are well applicable to the reality of the SME.

The various works on governance converge to retain a typology opposing the internal mechanisms to the external mechanisms of the firm. This typology does not take into account either the size of the firm or its legal status. The following typology presented by Charreaux seems to be closer to the reality of the SME. He proposes a typology with two dimensions: Intentionality/spontaneity and specificity/non-specificity. This typology respects the notion of the mental map; the owner-manager is able to shape the governance mechanisms either in an intentional or spontaneous way. Hence, the owner-manager of an SME is likely to apply the mechanisms of governance without realizing it. For example, the reputation of the manager with the employees may lead him by a spontaneous mechanism to prohibit the processes of economic restructuring based on economic layoffs. Based on the existing literature, we will state a series of hypotheses on the link between governance mechanisms, human capital of the manager and technological performance in an SME-LLC.

A more effective integration of environmental or social objectives into management depends on a change in the manager's cognitive system. Porter, stated that Corporate Social Responsibility (CSR) could stimulate innovation and thus improve technological performance [3]. Environmental awareness is thus presented as a potential initiator of value-creating innovations. More recently, have come up with similar results. Kramer et al studied about fifty Danish SMEs engaged in responsible practices. These authors conclude on the link between sustainable innovations (both social and environmental) and economic performance measured by the gain in market share of these SMEs. The study on innovative SMEs in Spain, Italy and the United Kingdom shows a real proximity between innovation and CSR,

even if the respective causalities remain difficult to assess. However, a strong commitment to employees and external stakeholders appears to be a guarantee of competitiveness in terms of the innovation capacities of these companies. Proposes a five-stage model of CSR business opportunities in SMEs, based on the notion of dynamic capabilities, with a focus on innovation. It is true that CSR policies are only weakly integrated into the strategies of LLCs due to limited financial and time resources, economic vulnerability and focus on short-term survival. We propose to study on the one hand the effect of the consideration of responsibility towards customers (CSR1) by the manager of an LLC on technological performance by testing the following hypothesis.

Hypothesis 1

The consideration of responsibility towards customers (CSR1) by the manager in an LLC has a positive effect on technological performance. On the other hand, the effect of the consideration of responsibility to employees (CSR2) by the manager of an LLC on technological performance by testing the following hypothesis.

Hypothesis 2

The consideration of responsibility towards employees (CSR2) by the manager in an LLC has a positive effect on technological performance. The concentration of ownership, particularly when held by the managers of SMEs-LLCs, can be an effective governance mechanism for resolving inter-partner problems in the case of sub-optimal innovation decisions for firm value creation. Several studies seem to confirm the effectiveness of this governance mechanism in terms of value creation.

In general, researchers note a positive link between the intensity of innovation activities and the concentration of ownership held by managers since this concentration makes it possible to attenuate conflicts and align the interests of managers with those of shareholders. Although there is an alignment of interests between managers and shareholders in the case of a concentration of ownership thus favouring investments in R and D projects, this phenomenon seems to be reversed from a certain concentration threshold where the opposite effect occurs [4]. The study indicates that it is the concentration of ownership that favours R and D investments and not the concentration of control. By distinguishing ownership rights from the voting rights of all corporate officers and directors, these authors find that the concentration of control, unlike that of ownership, is detrimental to R and D and innovation activities, which is in line with the entrenchment hypothesis. We propose to study the effect of ownership concentration in an LLC on technological performance by testing the following hypothesis.

Hypothesis 3

Concentration of ownership in an LLC has a positive effect on technological performance. Once the auditor engages with the company, he/she is liable and assumes the consequences provided for by law for any attempt at fraud or non-compliance with the regulations. According to the agency theory the auditor is an agent in charge of looking after the interests of the shareholders in the face of the opportunism of the manager. The state of the relationship between the auditor and his client cannot be understood solely by agency theory. The theory of resource dependence which was mainly

developed by Pfeffer and can also help to understand the relations of power and dependence which exist between the auditor and the manager.

According to this means allows the regulation of information asymmetries and the resolution of agency conflicts. Indeed, the presence of this body in the LLC is a guarantee of the quality of financial information disclosed by the company to its recipients [5]. This can encourage the manager to act in the interest of the partners and to invest in innovation. We propose to study the effect of the presence of an auditor in an LLC on technological performance by testing the following hypothesis.

Hypothesis 4

The presence of an auditor in an LLC has a positive effect on technological performance. In order to gain a clearer picture of his behaviour, personality tests of the owner-manager and close examination were carried out. Several profiles of the executive were identified: The artisan executive and the opportunistic executive. The first is characterized by his business project, which is generally based on the implementation of all his technical skills. The second is characterized by his personality (innovator and risk-taker).

These typologies are identified on the basis of the manager's goals. Three goals emerge from the literature on entrepreneurial typologies: The search for sustainability and survival, the search for decision-making autonomy and finally the search for growth and power [6]. The order of priority given to these goals will depend on personal considerations that may be detected.

Marchesnay then distinguishes the following typologies: The leader of type PIC (Perennity-Independence-Growth) to the leader of type CAP (Growth Autonomy Perennity). The aim is not to convince of the existence of two defined categories of leaders at the head of the SME, but to propose two extreme types, two caricatures, whose leaders would be likely to approach to a more or less large extent. Thus, risk-takers who take the initiative and opt for representative participation are the most likely to innovate. We propose to study the effect of the behavior of the risk-taking *versus* non-risk-taking manager on the technological performance of LLCs by testing the following hypothesis.

Hypothesis 5

The behaviour of the risk-taking versus non-risk-taking manager has a positive effect on the firm's technological performance. Many studies have examined the relationship between age and innovation. Considered risky with a high failure rate, the decision to innovate will be made according to the will of the leader. Some researchers have found that the choice to adopt innovations is related to the age of the leader.

The literature assumes a positive link between the age of the manager or his seniority in the position and the manager's power of expertise. This is particularly due to the influence that age or seniority have on the development of the network of strategic relationships of the leader. These criteria therefore seem to have a positive link with the creation of value. However, the literature analyzes this same criterion (age and/or seniority) as playing negatively on the value of the company because of its influence on the power of ownership of the leader, which itself is presumed to reinforce a negative entrenchment of the leader by its possibility of reinforced control of resources.

Hambrick and Mason, affirm the existence of a negative relationship between age and innovation. In the same idea, Child shows that physical and mental capacities decrease with age [7]. By becoming risk averse, these individuals opt for cautious growth strategies. Finkelestein and Humbrick, state that the age of a leader affects the decision making process. Indeed, they reveal that younger leaders are more creative. Conversely, older leaders are very conservative. According to Tufano, when the manager is old and he is near to retirement, his risk aversion incruse.

Hypothesis 6

The age of the manager has a positive effect on the technological performance of the LLC. Chaganti and Sambharya find that managers with a high number of years in the company become less likely to innovate. Barker and Mueller's, results also support this idea that tenure is negatively correlated with innovation. Vas and Coeurderoy state that innovation is perceived to be compatible with the values, beliefs, past experience of the leaders.

Ucbasaran, et al. showed that experienced business entrepreneurs identify business and innovation opportunities more than other less experienced entrepreneurs. More recent studies have shown that the adoption of innovations by the owner-manager of the SME LLC is influenced by his ability to innovate and his experience.

Hypothesis 7

The experience of the manager has a positive effect on the technological performance of the LLC. The shareholding is mainly derived from the share of capital held by the manager, but also from the status of the manager in terms of the creation of the company: His power is deemed in the literature to be more important over the organization if the manager is the founder or his family, than in the opposite case (independent employee).

Daily and Johnson, do not deduce from their empirical work a clear influence of these variables on the performance of the firm, but they emphasize, like, how much this variable can influence the strategic decisions of the firm. These criteria remain benchmarks of the manager's valuation, which it is relevant to take into account in terms of the influence of his practices on the value creation process [8].

While the literature generally concludes that there is no significant influence on the growth rate of the fact that the manager is a member of the founding family or not, we will hypothesize that he is all the more motivated to grow quickly if he is a member of the founding family of the company.

Hypothesis 8

Family ownership of the manager has a positive effect on the technological performance of the LLC.

Model presentation

To test our hypotheses, we propose the following model:

$$perftechi = a_0 + a_1 RSE_{1i} + a_2 RSE_{2i} + a_3 CP_i + a_4 CAC_i + a_5 COMPORT_i + A_6 Age_i + a_7 EXPER_i + a_8 Act_i + a_9 SECT_i + a_{10} Taille_i + a_{11} Plura_i + s_i$$

We would like to point out that three control variables (size, sector and plurality) have been introduced in this model given their effects on the innovation decision.

Definition of the variables

The following Table 1 summarizes the variables used in this study and their respective measures.

Variable	Coding	Measures
Dependent variable		
Technological performance	Perftech	A composite index calculated on the basis of a combination of several items reflecting the level of innovation of companies
Independent variables		
Corporate social responsibility	CSR1 CSR2	Constructed of 9 items
Concentration of ownership	CP	binary variable that takes 1 if the main shareholder holds more than 50%, 0 in the opposite case
External auditor	CAC	Binary variable that takes 1 if the LLC uses an auditor, 0 in the opposite case
Behaviour of the risk-taking (manager) *versus* non-risk-taking executive	COMPORT	Binary variable that takes 1 if respondents choose "CAP", 0 if "PIC"
Experience of the leader (manager) in the management of the trade	EXPER	Metric variable measured by reference to the number of years the manager has been at the head of the company
Age of the director (manager)	Age	Metric variable measuring the age (number of years) of the executive
Family or non- family ownership of the manager	Act	binary variable that takes the value 0 if the manager is an independent employee and takes the value 1 if the manager is a member of the family holding the capital
Control variables		
Business sector	SECT	Binary variable that takes 1 if the company belongs to a technological sector, 0 in the opposite case
Plurality of leaders (co-management)	Plura	Binary variable that takes 1 if the company has more than one manager, 0 in the opposite case
Size	Size	Metric variable measured by number of employees

Table 1. Variables and their measurements.

Data collection and sample size

Our attention was focused in this research on the problem of governance mechanisms and the specific human capital of the manager of the SME-LLC in the improvement of the technological performance of the company [9]. To achieve this, the choice of the population was guided by an essential criterion, namely the legal criterion. It follows that the first criterion of our choice of the population is the limited liability company.

Given the diversity of variables needed in our research, we have collected our variables from several sources. Some of the information is obtained through a questionnaire administered to the companies in question. Other information about our sample was collected manually from a survey of the companies themselves and from accountants. Our sample contained a total of 192 companies.

The relationship between governance mechanisms and the specific human capital of the manager of SME-LLCs and technological performance is tested using the ordinary least squares multiple linear regression method. The regression is performed using SPSS software.

Results

Results of the exploratory factor analysis

Before assessing the goodness of fit of the model to the data, it should be recalled that the EFA is used at this level to account for the unidimensionality of the measurement scales for each variable, *i.e.,* to reduce the set of observed variables into a smaller number of factors or principal components. The method used for EFA is Principal Component Analysis (PCA) [10].

Any determination of the factor structure is subject to rotation of the axes to ensure better assignment of the items in each factor. Assuming that the dimensions of this research are independent, we opted for the orthogonal rotation, also called VARIMAX; it is a method that minimizes the number of variables with a strong correlation on each variable and facilitates the interpretation of the factors. We will apply all of the above tests on the data of our study. In a first step, we start with statistical analyses to evaluate the unidimensionality of the measurement scales, their reliability and validity [11]. The variables in this study are both quantitative and qualitative. Therefore, only the qualitative variables will be examined.

Study of the unidimensionality of the measurement scales an d reliability: The unidimensionality of the measurement scales is verified using PCA, which is a very useful means of purifying the measurement of each variable to be retained [12]. We retained the items with a factorial contribution higher than 0.4 and the factors with an eigenvalue higher than 1. The results of the statistical analyses performed with PCA to structure the variables of the research model and the reliability tests are presented in the following.

The corporate social responsibility variable: The CSR variable is a construct composed of 9 items. The results indicate that the value of the KMO is equal to 0.732, it is thus acceptable since it is higher than 0.5. The quality of representation of the items is also satisfactory with communities higher than 0.4. It follows from these values that the conditions of application of the PCA are verified (Table 2).

In addition to these conditions, the application of PCA is carried out according to a varimax rotation, which is an orthogonal rotation method that minimizes the number of variables with high correlations on each factor and facilitates the interpretation of the factors. In other words, it ensures a better assignment of the items of each factor. To achieve this, it is necessary to remove all contributions below a given level [13]. In general, this level is set at 40%, so we retained only those items whose factorial contribution is greater than 0.4. The unidimensionality is quite strong since the number of factors needed to recover 54.392% of the information is quite low, namely two factors. We notice that the first factor is the most important factor since it recovers up to 37.668% of the explained variance.

In this work we retained the first two factors with a percentage of explained variance of 37.483% for the first and 16.910% of the total variance of the original data. Examination of the factorial contributions shows that the items; CSR2 to CSR6 belong to the first factor that can be called responsibility towards customers (CSR1). These contributions are greater than 0.753 which confirms the unidimensional factorial structure. However, the second factor, which can be called responsibility towards employees (CSR2), consists of the following three items: CSR7 to CSR9 [14]. These contributions are greater than 0.678, which confirms the unidimensional factor structure.

Items	Quality of representation	Factor contribution
CSR1	0.589	0.753
CSR2	0.462	0.678
Total variance explained	54.392%	
Eigen value	4.895	
KMO	0.732	

Table 2. Principal component analysis applied to corporate social responsibility.

Verification of the conditions for using the regression and preliminary analyses

The first condition for using regression is the nature of the variables. The dependent variable analyzed is a metric variable (technological performance). The explanatory variables, on the other hand, are of a metric and binary nature. Therefore, this condition, concerning the nature of the variables, is well verified. The verification of the conditions of application of the multiple linear regression is carried out by the software SPSS (version 20) under windows.

Verification of the conditions for using multiple linear regression: The following conditions must be verified. The absence of multi-colinearity between the explanatory variables to ensure the existence or absence of this problem, we refer to the pearson coefficient, the Variance Inflation Factor (VIF), the conditioning index and the tolerance values. Based on the correlation matrix (Table 3), the Pearson coefficients are always lower than 0.8, which leads us to conclude that the problem of bi-variate multi-collinearity is perfectly absent.

Variables	SECT	Taille	CAC	CP	COMPORT	Age	EXPER	Act	Plura	RSE$_1$	RSE$_2$
SECT	1	-	-	-	-	-	-	-	-	-	-
Taille	0.069	1	-	-	-	-	-	-	-	-	-
CAC	-0.026	0.015	1	-	-	-	-	-	-	-	-
CP	0.029	0.061	-0.121	1	-	-	-	-	-	-	-
CSURV	0.084	-0.155	0.196	-0.05	-	-	-	-	-	-	-
COMPORT	0.068	-0.123	0.022	-0.115	1	-	-	-	-	-	-
Age	0.056	0.018	-0.059	0.055	0.007	1	-	-	-	-	-
EXPER	0.026	-0.01	0.089	-0.093	0.096	0.276	1	-	-	-	-
Act	0.056	-0.071	0.575	-0.15	0.113	-0.028	0.072	1	-	-	-

Plura	0.101	-0.084	0.09	0.014	0.101	-0.045	-0.173	0.241	1	-	-
RSE$_1$	-0.155	0.036	-0.014	-0.126	0.056	-0.09	-0.17	-0.3	-0.054	1	-
RSE$_2$	0.044	0.014	-0.003	0.05	-0.044	-0.048	-0.143	-0.038	-0.035	0.001	1

Table 3. Correlations between explanatory variables in the first model.

For multivariate multicollinearity, we use the tolerance index and variance inflation factors. The VIF values, presented in, are far from the critical zone. In fact, all Variance Inflation Factors (VIF) are less than 3 and therefore all tolerances are well above 0.25, indicating the absence of any multicollinearity problem (Table 4).

Tests/ Variables	SECT	Taille	CAC	CP	COMPORT	Age	EXPER	Act	Plura	RSE$_1$	RSE$_2$
Tolerance	0.944	0.961	0.653	0.936	0.939	0.904	0.846	0.613	0.878	0.945	0.97
VIF	1.06	1.041	1.532	1.069	1.065	1.106	1.182	1.632	1.139	1.058	1.031

Table 4. Indicators of non-multicollinearity in the first model regression.

From the various indicators of multicollinearity, we can conclude th at the multicollinearity problem is absent. The absence of auto-correlation of the residuals. To ensure that there is not an autocorrelation problem between the residuals, we refer to the Durbin-Watson test. The optimal value for this test would be about two. The value obtained for the sample is 1.622 (Table 5). Therefore, the independence of the residuals can be expected and therefore the postulate of independence of the residuals is met. This proves that there is no autocorrelation problem between the residuals.

Test/Regression	Technological performance (pertech)
Durbin-Watson test	D-W=1.622

Table 5. Durbin-Watson test.

Normality test: This assumption is not necessary to establish the regression equation but it is necessary to establish confidence intervals around the parameters [15]. In practice, this verification is not required beyond about thirty observations.

Indicators for interpreting the results: Three indicators are used to interpret the results of this study.

- The R-two (coefficient of determination) which is interpreted as the percentage of the variance of the variable to be explained returned by the model.
- The F-statistic which allows to assess the significance of the relationship at the global level.
- Student's t-statistic which evaluates the significance of each regression coefficient on each variable.

The assessment of the linear goodness of fit of the regression equation between the dependent and independent variables is determined by the coefficient of determination R-two (R2=SCR/SCT with 0<R2<1). The proportion that remains unexplained 1-R2 is attributable either to the omission of explanatory variables that could contribute to the explanation of the level of innovation of firms or to experimental error.

However, adjusted R-two allows for the comparison of multiple regression equations with the same dependent variable but with equations that differ either in the number of observations n or in the number of explanatory variables. This criterion can be very useful in the search for the best model to explain the phenomenon under analysis. We will apply the ordinary least squares method to estimate the coefficients of this model. This method consists of minimizing the sum of the squares of the calculated residuals.

Multivariate testing and overall model quality: The study of the multiple regression model relies on the significance of the regression as a whole as well as the parameters of the model to verify the contribution of each variable in explaining the variation of the dependent variable.

The results found show that the applied multiple linear regression models are globally significant in terms of the coefficient of determination and the F (Fisher-Snedecor) statistic. This is a statistic (F) that measures the overall significance of the model. It compares the significance of the explanation provided by the model with the variations provided by the residuals. If the model is correct, the correlation coefficient is large, the influence of the residuals is negligible and therefore the F value will be large.

The empirical results show that 62.3% of the variation in technological performance is explained by variables related to LLC specific governance structure, LLC managers specific human capital and control variables. Similarly, the value of adjusted R two is equal to 60% (Table 6). In other words, 60% of the variation in the development of technological performance is explained by LLC-specific governance variables and the specific human capital of the manager retained by this study. We can conclude that the model is statistically significant and explanatory of the studied phenomenon. A positive result of the Fisher test means that at least one of the coefficients is significantly different from zero.

Explanatory variables	Coef.	T-student	Sig
Constant	0.292	11.135	0.000***
Sector of activity (SECT)	0.055	1.166	0.245[ns]
Company size (Size)	-0.005	-0.11	0.913[ns]
Auditor (CAC)	0.015	5.274	0.000***
Concentration of ownership (CP)	0.051	2.074	0.003**
Behaviour of the leader (COMPORT)	0.102	2.151	0.033**
Age of the manager (Age)	-0.011	-0.236	0.813[ns]
Experience of the leader (EXPER)	0.112	2.25	0. 026*
Shareholding of the manager (Act)	0.022	0.377	0.707[ns]
Plurality of leaders (Plura)	-0.014	-0.286	0.775[ns]
Corporate Social Responsibility (CSR-1)	0.789	16.776	0.000***
Corporate Social Responsibility (CSR-2)	0.084	2.81	0.002*

Note: ***significant at the 1 level %; **significant at the 5% level; *significant at the 10 level %; [ns]not significant

Table 6. Multiple linear regression results for the model.

Discussion

The results indicate that six hypotheses are statistically significant. However, the remaining hypotheses are statistically insignificant. The same is true for the control variables in this model.

The corporate social responsibility variable (value creation for customers)

The examination of statistical tests (beta coefficient, student's t and significance level) highlights that this variable has a positive and significant effect on technological performance. Indeed, the examination of the causal relationships shows that the coefficient associated with the link between CSR1 and technological performance is positive (0.789) and statistically significant (the associated t-value is 16.776 with a p=0.000). This confirms the predictions of the hypothesis (H1). These results show that in Tunisia LLCs take into account in their management the social environment, mainly the customers, while trying to create loyalty and value for them. The LLC is obliged to innovate and present products that are of quality and that meet the expectations and needs of customers. Generally speaking, customers are the most important source of new ideas in LLCs. It is often the pressure of the customer that pushes the company to innovate while improving its specific capital (R and D, number of production software, patent).

The corporate social responsibility variable (value creation for employees)

This variable has a positive and significant effect on technological performance. Indeed, the examination of the causal relationships shows that the coefficient associated with the link between CSR2 and technological performance is positive (0.084) and statistically significant (the associated t-value is 2.810 with a p=0.002). This confirms the predictions of hypothesis (H2).

In fact, LLCs take into account the employees in their management, while creating a favorable environment for creation and innovation. This allows the motivation and involvement of the employees in achieving the main objective of the LLC, especially in the field of innovation.

The ownership concentration variable

This hypothesis states that capital concentration positively influences the level of innovation of firms. The examination of the statistical tests shows that this variable positively and statistically influences the innovation capacity of the firms. The examination of the causal effect shows that the statistical coefficient associated with the CP variable has a positive value (0.051). The significance of this coefficient is determined by using the student test. The value of t is greater than 1.96 (t=2.074, p0=.003). This means that ownership concentration has a positive and significant effect on technological performance. This supports the predictions of hypothesis (H3).

In this framework, the concentration of ownership is interpreted positively since the main shareholder is the one who has perfect knowledge about these projects and based on their cognitive and mental patterns in the matter and on the legitimacy of control that they enjoy. Similarly, our results are perfectly in line with the conclusions of the cognitive current of corporate governance. Thus, in certain cases, and based on the postulates of the agency theory, the principal shareholder is not encouraged to commit to specific and risky projects such as the development of innovation projects. As a result, he withdraws his commitment in order to preserve his financial capital. Conversely, if the principal shareholder has knowledge about

the growth opportunities of these projects, he would be in favour of adopting these investments.

Indeed, our empirical results validate our idea that the cognitive contribution of the shareholder is reinforced by the margin of control he enjoys. Nevertheless, in a specific setting, such as the development of innovation projects, the ownership of financial and cognitive capital is an asset to stimulate these activities. As a result, concentration of ownership, particularly if the appropriate shareholders maintain their holdings for long periods, stimulates long-term investment in innovation. Ownership concentration can thus be seen as a form of financial commitment and integration that is necessary for the most innovative firms.

Adopting a broader perspective that does not see the corporate governance system as a matter of agency and conflict, the presence of a large stable shareholder could be a good signal for companies pursuing long-term strategies such as innovation. Furthermore, having a large controlling shareholder allows the company to benefit from their knowledge of strategic investments in order to properly assess the behaviour of the management. On the other hand, in companies without large owners, managers tend to maximize short-term profits while sacrificing long-term objectives related to the development of innovation investments.

Moreover, the behaviour of the main shareholder is also justified by the superiority of the information and knowledge available to him in terms of investments in innovation activities. Managers, fearing job losses, will oppose these takeovers by directing their decisions towards short-term investments likely to generate quick cash flows, alleviate the decline in share prices, and consequently reduce investments in innovation.

The presence of an auditor variable

This hypothesis states that the auditor CAC positively influences the technological performance of LLCs. The statistical results show that this variable has a positive and significant effect at a significance level less than 1%. Indeed, the examination of the causal link shows that the beta coefficient is equal to (0.015), its significance using the t-statistic displays a value of (5.274). Thus, the presence of auditor has a positive and significant effect on the development of innovation projects. Thus, the fourth hypothesis (H4) is validated in the Tunisian context. Indeed, the auditor is among the most important elements that play a considerable role in the control of limited liability companies. His intervention seems very important to safeguard the interests of the partners, by ensuring that the mandated manager's act on behalf of the latter and of the other stakeholders concerned by the company's activity and seek to maximize and create value while adopting profitable innovation projects.

The behavior of manager variable

The empirical results indicate that this variable is statistically significant. The high value of (t=2.151) and its significance (p=0.033) confirm this positive relationship. This result shows the interest of the manager's behavior variable in explaining the variation in the technological performance of Tunisian LLCs. Thus, this fifth hypothesis (H5) that we developed is confirmed. This is in the right direction insofar as we support the idea that technological performance requires a specific behavior in the manager that allows to value his cognitive contribution in the development of innovation projects.

The risk-taking manager with the CAP behaviour values the intangible investment and accepts to take the risk. His behaviour is a determining factor in the creation of value and technological performance. The statistical results corroborate with the idea of Charreaux where the creation of value always passes by the discipline of the leader who has the responsibility to allocate the resources and to make the decisions in the most coherent way with the interests and the expectations of the other stakeholders within the organization.

Similarly, the results of this study corroborate Williamson's idea that specific mechanisms, those that are unique to a given firm, exclusively influence the managers of their firm and delimit their discretionary power, while those that are not specific influence the decisions of the managers of a class of firm.

Overall, our results show the importance of management style in creating technological value. Risk-takers who take the initiative and opt for representative participation are the most likely to innovate. These results confirm the work of Couderc JP and Stephany E. Similarly, the behaviour of managers and the opening up of capital make it possible, on the one hand, to reduce potential conflicts between the various stakeholders in the company and on the other hand, to strengthen the creation of added value in order to redistribute the fruits of the latter. This will give the system of corporate governance a central role in ensuring that the company is able to create value and that this wealth is distributed fairly.

Indeed, managers sometimes have an interest in increasing the firm's risk so as to discourage potential buyers. The firm then becomes more difficult to manage. This would allow managers to increase the value of their managerial capital. From these considerations and insofar as some managers engage in innovation activities not to improve the firm's performance but rather to preserve their place at the head of the firm and gain a good image on the labour market, the efficiency of the deployment of resources in these activities, which is closely linked to the improvement of performance, might not be guaranteed. In fact, by making sub-optimal innovations (over-or under-investment in specific or low-profile activities), managers prioritize maximizing their own utility rather than shareholder wealth.

The age of manager variable

The results found show a negative relationship between the variable age of the manager and technological performance. Thus, the corresponding regression coefficient presents a negative value (beta=-0.023). The student t statistic, which allows us to test the significance of this result, shows that this relationship is not significant (t=-0.236, p=0.813). Based on these results, the sixth hypothesis (H6) is invalidated. We find that the older the manager is, the more he becomes unmotivated by risky intangible investment (innovation). He essentially seeks stability and action in a certain environment.

The experience of manager variable

This hypothesis states that managerial experience positively influences technological performance. The examination of the causal effect shows that the coefficient associated with this variable has a

positive value (0.112). The significance of this coefficient is achieved by using the student's t test. The value of the t-statistic is clearly lower than 1.96 (t=2.250, p=0.026), this means that the experience of the manager has a positive effect on the innovation policy of the LLC firms, but this relationship is statistically insignificant. Thus, the hypothesis (H7) is confirmed in the Tunisian context. The more experienced the manager is in the management of his business, the more he has information and the necessary elements that can help him to initiate innovation projects while limiting the risk of failure of these intangible investments.

The managerial ownership variable

The results found show a positive relationship between the variable managerial ownership and technological performance. Thus, the corresponding regression coefficient presents a positive value (beta=0.022). The student t statistic, which tests the significance of this result, shows that this relationship is not significant (t=0.377, p=0.707). Based on these results, the eighth hypothesis (H8) is invalidated. Indeed, being a family member, the LLC manager is involved in improving the technological performance of the company but its impact remains insignificant.

The business sector variable

The statistical results show that there is a positive relationship between industry and technological performance (beta=0.055). The t-statistic, which tests the significance of this result, shows that this relationship is not significant (t=1.166, p=0.245). Thus, sectoral affiliation has a positive and insignificant impact on the technological performance of LLCs. This is justified by the fact that the exercise of innovation, in this new economy concerns firms in traditional high-tech sectors.

The size of the company variable

The results in Table 7 show that there is a negative relationship between firm size and technological performance (the regression coefficient is equal to (-0.005). The t-statistic, which tests

significance of this coefficient, shows that this relationship is significant (t=-0.110, p=0.913). This result could be justified by the fact that the exercise of innovation in large industries is not the same as in small and medium industries. This is in line with the fact that smaller firms are expected to be more financially constrained than larger firms, especially in terms of financing innovation. This is in line with the results who also validated the idea that the size of the firm does not appear to be related to the intensity of research and development.

The plurality of manager variable

According to Table 7, the plurality of managers is negatively related to technological performance (the statistical coefficient is equal to (-0.014). This could also be explained by the fact that the presence of several managers will create a reluctance to finance innovation which is considered as a risky investment. The t-statistic shows that this relationship is not significant (t=-0.286, p=0.775).

The introduced control variable of the model which is the plurality of managers (co-management) has an influence on the technological performance of the LLCs. This result does not confirm the works of and those of, which are for the idea that the variety of behaviors generates the increase of innovation and dynamic efficiency.

Thus, the co-management that characterizes most LLCs has a significant influence on innovation, but it remains negative. This can be explained by the fact that the relative heterogeneity of the management team brings a greater diversity of information, sources and perspectives. This qualification leads to many consequences especially on value creation, as each leader seeks to achieve his or her personal goals. This could cause problems especially when the company is managed by more than one manager. Thus, the confrontation of different cognitive schemes of different managers may cause conflicts in the decision making of additional investment in intangibles. This could optimize the investment in question by causing ex-ante and ex-post contract costs. This result is consistent with the work.

Control variables	Coefficient	T	Meaning
Business sector	0.055	1.166	0.245
Size	-0.005	-0.11	0.913
Plurality	-0.014	-0.286	0.775

Table 7. Statistical results for control variables.

Conclusion

Our research consists in questioning the effect of governance mechanisms specific to the LLC on its technological performance. We have tried to identify, through a review of the literature and the body of work conducted in this area, the various factors that can influence the technological performance of LLCs. The hypotheses put forward have already mentioned the variables to be dealt with, namely technological performance, CSR, ownership concentration, the auditor, the behavior of the risk-taking versus non-risk-taking

manager, the manager's age, the manager's experience in managing the business and the manager's family or non-family shareholding.

The origin of the research lies in the following observation: Many studies have been made on the governance of large companies. However, the study of the modes of control and management of highly personalized companies such as limited liability companies is a field of research that has not yet been explored. However, these companies deserve specific research given the singularities that the entities concerned display in terms of their strategic and organizational characteristics as well as their financial character. Thus, the implementation of a governance system within SARLs, which represent the most widespread legal form of SMEs in Tunisia,

requires taking into account not only the specificities of the ownership structure, but also the specific human capital of the managers and their impact on value creation. Indeed, following a hypothetical-deductive empirical study on a sample of 192 LLCs, we found that the specific governance structure of LLCs and the specific human capital of their managers have an effect on technological performance.

If agency costs and conflicts are multiple and the effect of information asymmetry, expressed by moral risks and adverse selections, remain notorious, it is because of two realities that have come together: First, there is a problem of asset specificity (innovation and specific human capital of managers). Secondly, the predominance of the family character of the governance and especially of the rooting of the leaders (co-management) allows the creation of value especially in technological terms.

At the end of our research, it seems essential to us to question the main contributions, the limits as well as the perspectives that the present work represents. In this sense, our research has a double interest: At the empirical level, the interest of our work lies in the fact that it adopts a hypothetical-deductive approach of an explanatory nature. Thus, we have adopted a quantitative approach. This multi-variate analysis allows us to take into account the simultaneous effect of the different explanatory variables and not separately as in the uni-variate analysis. At the theoretical level, the purpose of our research was to find the mechanisms, from the literature on governance, that explain and apply to this type of structure, as well as the theoretical basis concerning the impact of these mechanisms on technological performance. Therefore, we established a theoretical framework at the beginning of the research by using theoretical references that allowed us to formulate our research hypotheses.

At the end of our empirical analysis, some of the findings were at odds with what theorists were able to show. This discrepancy forced us to find a theoretical explanation for these results. This back and forth between the literature and the field is the main theoretical contribution of this article. In an emerging country like Tunisia, LLCs are characterized by the dominance of family ownership. This pushes family members to share the profits and rent created from high value-added growth opportunities. But, the problem of managing intangible assets remains persistent, especially the management of human capital and innovation. Thus, the SME-LLC is characterized by the centralization of the power and the decision-making process around the director called manager who is a specific strategic capital. The theoretical aspect has well argued this position of strength but also because of the legal and regulatory aspect of the SARL that grants it appreciable managerial latitude to take root and innovate that the manager dominates.

In conclusion, we consider that the present research could be extended in different ways. A first extension would be to focus on other measures of non-technological firm performance. The second extension could involve comparative studies between common law and civil law countries which differ in terms of accounting, legal and governance regulations for LLCs. Consideration of the impact of general meetings as control mechanisms could be beneficial for the study of LLC governance.

The third extension could concern the integration of other types of governance mechanisms such as debt and the intervention of different types of financial backers.

References

1. Tylecote, Andrew and Paulina Ramirez. "Corporate Governance and Innovation: The UK Compared with the US and Insider Economies." *Res Policy* 35 (2006): 160-180.

2. Andre, Paul and Eduardo Schiehll. "Governance Systems, Dominant Shareholders and Future Performance of Companies." *Financ Contr Strat* 7 (2004): 165-193.

3. Baysinger, Barry D, Rita D Kosnik and Thomas A Turk. "Effects of Board and Ownership Structure on Corporate R And D Strategy." *Acad Manag J* (1991): 205-214.

4. Cho, Myeong-Hyeon. "Ownership Structure, Investment and the Corporate Value: An Empirical Analysis." *J Financ Econ* 47 (1998): 103-121.

5. Daily, Catherine M, Dan R Dalto and Albert A Cannella Jr. "Corporate Governance: Decades of Dialogue and Data." *Acad Manage Rev* 28 (2003): 371-382.

6. Finkelstein, Sydney and Donald C Hambrick. *Strategic Leadership: Top Executives and their Effects on Organizations*. Minneapolis, MN: West Publishing Company (1996).

7. Hambrick, Donald C and Phyllis A. Mason. "Upper Echelons: The Organization as a Reflection of its Top Managers." *Acad Manag Rev* 9 (1984): 193-206.

8. Gompers, Paul, Joy Ishii and Andrew Metrick. "Corporate Governance and Equity Prices." *Q J Econ* 118 (2003): 107-156.

9. Grayson, Davi and Adrian Hodges. Corporate Social Opportunity: Seven Steps to Make Corporate Social Responsibility Work for your Business. *Routledge* 2017.

10. Jensen, Michael C and William H Meckling. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *J Financ Econ* 3 (1976): 305-360.

11. Jenkins, Heledd. "A Business Opportunity Model of Corporate Social Responsibility for Small-and Medium-Sized Enterprises." *Bus Ethics Eur Rev* 18 (2009): 21-36.

12. Kramer, Mark, Marc Pfitzer and Paul Lee. "Competitive Social Responsibility: Uncovering the Economic Rationale for Corporate Social Responsibility among Danish Small and Medium-Sized Enterprises." *Agen Danish Minist Econ Bus Affair* (2005).

13. Lee, Peggy M and Hugh MO Neill. "Ownership Structures and R And D investments of US and Japanese Firms: Agency and Stewardship Perspectives." *Acad Manag J* 46 (2003): 212-225.

14. McConnell, John J and Henri Servaes. "Additional Evidence on Equity Ownership and Corporate Value." *J Financ Econ* 27 (1990): 595-612.

15. Morck, Randall, Andrei Shleifer and Robert W Vishny. "Management Ownership and Market Valuation: An Empirical Analysis."*J Financ Econ* 20 (1988): 293-315.