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Article
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The venture capitalist’s cognitive approach: Validation through the Tunisian context

Dziri Houda1* and Jarboui Anis2

Abstract: This study is aimed to examine the major determinants of cognitive approach investigated with according to a set of 150 firms financed by Tunisian venture capital agencies observed over the period 2010–2015. We are led to conclude that some venture capitalist's characters do appear to affect the cognitive contribution within funded firms. In addition, it has been revealed that the manager's share held, the venture capitalist' participation in the capital and the firm age appear to have a significant influence on the cognitive approach adopted by the venture capital.

1. Introduction

It is worth mentioning that research works dealing with the area of governance mechanisms have been predominantly influenced by the agency theory-related analysis within the context of listed firms (Barney, Busenitz, Moesel, & Fiet, 1994; Becher & Frye, 2011; Fernandes, 2008; as well as Finet, 2012). Nevertheless, the disciplinary conception of governance remains still insufficient, and appears to necessitate further investigation concerning its cognitive aspect, particularly with respect to unlisted firms. This fact seems to be also justified by the criticism directed to the traditional corporate governance model, which appears to suffer from several drawbacks or limitations. Within the scope of...
of the present study, an attempt will be made to analyze the cognitive aspect of corporate governance mainly, with respect to the venture capital funded firms. Based on the previously elaborated research work, taking financial participation of venture capitalists participation may well be accompanied by an active participation with the management team thanks to their experience business, their skills, and professional relationships network (Bocken, Short, Rana, & Evans, 2014; Leete, Xu, & Wheeler, 2013; Weber & Kratzer, 2013) enabling them to take part in the various managerial and control tasks of the firm (Appelbaum, Batt, & Clark, 2013; Bacon, Wright, Meuleman, & Scholes, 2012; Davis, Haltiwanger, Jarmin, Learner, & Miranda, 2011; Marcus, Malen, & Ellis, 2013). For in, seeking the project be successful, the entrepreneur will want to cooperate with the venture capitalist (Armstrong, Jagolinzer, & Larcker, 2006), while the venture capitalist, on seeking the achievement of significant added value in the return for capital release output should go further beyond the financial contribution toward an intervention and a contribution for the sake of more effective development of the firm funded by the mobilization of financial and human resources in a bid to meet their financial needs (Marcus et al., 2013). In this regard, and with respect to the Tunisian context, we propose to examine the cognitive contributions brought about by venture capitalist through participation in the firm’s capital.

Using logistic regression analyses, a negative relationship has been discovered between the percentage of share held by the entrepreneur and venture capitalist’ cognitive contribution. In addition, a negative relationship has been also discovered between venture capitalist’ cognitive contribution and his ownership structure. Their affiliation seems significantly and negatively associated with its dynamism within the funded firm. This finding is unexpected. Another finding is the negative relationship prevailing between the firm age at the time of the venture capitalist’ participation in its capital and the venture capitalists cognitive contribution. The paper adds to existing literature on cognitive governance provided by the venture capital organizations.

Worth highlighting, this work repartitioned over three sections as follows: the first section deals with a literature review and hypotheses’ development. It involves an investigation of certain exogenous factors likely to affect cognitive contribution, which are considered as useful procedures that could improve the quality of our results perfectly well. As for the second section, it is conceived to delimit the study sample and the data collection method; it defines the study of endogenous and exogenous variables’ set, along with their corresponding measures. It is also designed to specify the theoretical model to be tested, and present the analytical method adopted. As for the achieved results analysis and discussion, they make the subject of the third section. Finally, the work is concluded with a depiction of the major attained findings and paves the way for prospective work horizons.

2. Literature review and hypotheses development
Based on previously conducted studies, we consider identifying certain factors likely to help influence the venture capitalist’ cognitive contribution. In this context, some governance-related factors will be examined, namely, the ownership structure, the share held by the venture capitalist and the entrepreneur, the firm age at the time of the venture capitalist’ participation in its capital.

2.1. The venture capitalist shareholding
The cognitive conflicts are not always inconvenient, as they help enhance discussions negotiations, and could, therefore, generate new constructive ideas (Berry & Junkus, 2013). Such innovative conflicts seem to be even crucial and critically necessary for company growth and essential for the team performance. In the same context, and on analyzing the different contributions and advantages, the capital investor could bring about while investing the enterprise, Sheen Albert and Shai (2014) and Learner, Leamon, and Garcia-Robles (2014), stress highly the latter strategic role, through joint collaboration of the other managers for the conception of their visions, by influencing the way how strategic decisions concerning strategic matters should be taken and through guiding the company’s strategic choices and investment policy. The venture capitalist may also intervene at a more operational level through appealing to external consultants and consolers to fill their proper lack in
matters of skills and knowledge, as well as the executive’s lack regarding certain specific areas such as human resources, marketing, company environment, and market (Gerber & Hui, 2013). Added to these contributions or inputs is the organizational contribution maintained through the employment of skillfully experienced executives, through the new financial resources provisions, as well as through the disposition of their professional relations. Furthermore, the venture capitalist provides an informal contribution through the intervention and presence within the company, which already exhibit a signal of organizational and managerial quality as well as a guarantee for the company. Such a signal ensures easy raising of new resources for the firm. Such a guarantee is actually more important than that of companies which do not enjoy the presence of venture capitalists (Weinstein, 2012). As a result, the relationship between the venture capitalist and the entrepreneur/manager would rather take the form of an instructional, or apprenticeship, relationship, in which each party is considered as an acquirer of knowledge and skill. Thus, appealing to venture capital as a funding source turns out to be a simultaneous source of cognitive contributions.

A significant stake participation from the part of the venture capitalist would denote and imply financial investments as well as a time investment for an effective accompanying of the entrepreneur. Noteworthy, however, once their financial interests prove to be too weak, venture capitalists would not necessarily be motivated to maintain any kind of sharing and apprenticeship process with the entrepreneur (Finet, 2012; Lamarche & Rubinstein, 2012; Rosenbusch, Brinckmann, & Müller, 2013; Siegel, Wright, & Filatotchev, 2011; Wood & Wright, 2010). The venture capitalists’ participation rate influences their propensity to get involved in the firm governance firm and offer the funded firm new resources other than the financial ones. This participation would affect several specific characteristics of the funded firm. As a synthesis of the link between the venture capitalist’ involvement and the financed companies performance, several empirical studies have revealed that the venture capitalist, as a medium- and long-term investor and partner, helps provide some surplus or contributions other than the financial one to the companies they sustain and support (Arthus & Busenitz, 2002; Bacon et al., 2012). Hence, the following hypothesis could be advanced:

H1: The percentage of the venture capitalist detained shares has a positive and significant effect on their cognitive contribution to the funded firm.

2.2. The entrepreneur’s shareholding

It is worth highlighting that both the venture capitalist and executive entrepreneur’s perception of investment opportunities and business evolution appear to differ noticeably. Characterized by a strong subjective dimension, it, then, results in a variety of cognitive models. Actually, the confrontation of these different models induces the appearance of conflicts between both these partners (Wirtz, 2011).

Owing to their daily contact with the production factors, the entrepreneurs/managers would enjoy specific knowledge of the firm. Yet, they do not always have the experience more do they enjoy the expertise is necessary for managing the major problematic issues related to the development of the company. Still venture capitalists enjoy an overall knowledge of the company (Cable & Shane, 1997). Hence, the more significant this knowledge gap is, more intense the problem of knowledge asymmetry problem will be which is likely to help promote cognitive costs and conflicts. In parallel with the appearance of cognitive conflicts, the confrontation of perception and sharing of experiences and competences skills related to both parties capacity to cooperate, (Bocken et al., 2014) giving rise to cognitive gains. The entrepreneur’s shareholding, measured by his percentage detained share, has been introduced. Boselie and Koene (2010) have postulated that the higher entrepreneur’s share in the company’s capital is, the more aligned his preferences would be with those of the venture capitalist, and the more extended, the latter’s cognitive intervention scope, would be field it will be more extensive (Gompers, 1995). The post-investment relationship between the venture capitalist and the entrepreneur should be considered as a source of interaction and success rather than an agency type of relationship (Finet, 2012; Gerber & Hui, 2013; Jengfang, Woody, & Lu, 2012; Wirtz, 2011). Both actors will then be strongly dependent on one another. Thus, the hypothesis below can be put forward:

H1: The percentage of the venture capitalist detained shares has a positive and significant effect on their cognitive contribution to the funded firm.
H2: The percentage of the entrepreneur detained shares has a positive and significant effect on the venture capitalist’ cognitive contribution.

2.3. The ownership structure
The venture capitalist’ ownership structure will also be introduced, as measured by the bank affiliate, as most of the Tunisian venture capital organisms are affiliated with bank institutions (Tunisian Association of Capital Investors). In this regard, Desbrières and Schatt (2002) have documented that the venture capitalist’s ownership structure exerts an influence on their relations with entrepreneurs/managers. Captive or semi-captive venture capitalist’ raising their funds from institutional investors or business angel, look primarily to maximize their profitability for a particular risk level and structure their resources in such a way as to secure significant values, while independent capital investors, as a bank, insurance company or industrial company affiliate most often target objectives that go beyond the financial performance of their investments, such as job creation purposes (Bacon et al., 2012). So, the following hypothesis can be maintained:

H3: The venture capitalist’ affiliation negatively influences his cognitive contribution.

2.4. The firm development stage
The venture capitalist cognitive contribution depended on the firm’s development stage, during their financial intervention, measured through the company age. At advanced development stage, the firm is characterized by a remarkable amount of knowledge, which is likely to restrict its need in the venture capitalist’ cognitive resources (Amess & Wright, 2012; Goergen, O’Sullivan, & Wood, 2011; Sapienza & Gupta, 1994). Hence, the following hypothesis can be formulated:

H4: The firm age negatively influences the venture capitalist’ cognitive contribution.

3. Data collection and research methodology

3.1. Sample description and data collection
Our sample consists of 220 Tunisian firms funded through venture-capital organizations, observed over the period 2010–2015. To these firms, a questionnaire has been addressed, with an introductory cover letter exposing the research theme and objective, while ensuring data confidentiality information. Among the sent questionnaires, only 150 responses have been received, thus reducing our sample to 150 firms. Given our particular study context, we have considered it useful to find our empirical study on a questionnaire survey, with the major objective being to test the research advanced hypotheses.

On elaborating the survey, special care has been paid to combine two different objectives, namely: the questionnaire should help in accurately measuring the entirety of the theoretical model’s variables and It should be clear enough and not too long for responders.

In addition, a particular attention has been made to develop a coherently structured questionnaire (Table 1).

So, our sample companies’ activity sector turns out to be decomposed follows: 48.57% of the activities are dedicated to industrial goods and services, 12.85% to the informatics and Software, 8.57% to the health sector and 30% to the services (Table 2).

Table 1. Sample firms’ distribution by activity sector (N = 150)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sample percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial good and services</td>
<td>48.57</td>
</tr>
<tr>
<td>Computing and software</td>
<td>12.85</td>
</tr>
<tr>
<td>Health</td>
<td>8.57</td>
</tr>
<tr>
<td>Services</td>
<td>30</td>
</tr>
</tbody>
</table>
During the venture capitalist’s financial intervention, 17.4% of our sample firms have been in the seed stage (upstream creation stage for the product technological-process development prior to the marketing phase and the setting up of prototypes), 31.43% of the sample have been in the establishment phase (for product development and marketing), and 51.42% of firms have already exceeded the creation stage (towards funding of either new production capacities, or the development of new products within the maturity and development stages, or for corporate buyouts).

Hence, our final sample turns out to consist of 150 firms financed by Tunisian venture capital agencies observed over the period 2010–2015 (see Table 3).

### 3.2. Research methodology
For the sample-adapted character to be preserved, a logistic regression (Hosmer, Lemeshow, & Sturdivant, 2000) has been applied given that our dependent variable “cognitive contribution” is dichotomous, taking value 1 if the venture capitalist takes part in the council and in the entrepreneur support, or if he participates in the firm’s strategic orientation choice or if he participates in creating investment opportunities and 0 otherwise. Hence, the following logistic regression model turns out to be worth estimating:

\[ C_C = \beta_0 + \beta_1 \text{Share}_{VC} + \beta_2 \text{Share}_E + \beta_3 \text{Aff}_{VC} + \beta_4 \text{stage} + \epsilon \]

### 4. Results and discussion

#### 4.1. Descriptive analysis
Regarding our study case, the venture capitalists’ average participation in the sample firms’ capital is equal to 34.04%. During this financial intervention, the firms tend to display an average
development stage, as measured by the firm age at the time of the venture capitalist’ participation in its capital, which seems to equal 4.47 years. Against 34.04% the venture capitalist’s average financial contribution, the entrepreneur’s average participation in the firm’s capital has been discovered to equal 32.21%. Hence, it seems that there exist investors, other than the venture capitalist, that have participated in the firm’s capital, which leads us to talk about the investors’ syndication measured by their financial participation, which seems to be equal to 8.28%, on average.

The sample firms’ major characteristics are depicted in Table 4.

In regard of our case, it has been noticed that 58.57% among the venture capitalists who have provided support to our study sample firms appear to be affiliated with banks (see Table 5).

4.2. The multivariate analysis

4.2.1. Matrix of Pearson and multicollinearity

Table 6, illustrates the Pearson’s rho correlations persisting among the logistic regression applied variables. The sample consists of 70 firms. What matters most in a regression analysis is the multicollinearity problem prevailing among the independent variables. According to Table 6, all the correlation coefficients are below 0.8, the limit starting from which one starts to have a serious problem of multicollinearity. In addition, the variance inflation factors (VIFs) test, which also helps test the presence of collinearity among the explanatory variables, has also been implemented with regard to all cases, the VIFs are sited below two, bearing in mind that the critical value is 10 (Tabachnick & Fidell, 1996). Hence, one could well deduce the absence of any multicollinearity problems with respect to our study case.
4.2.2. Regression analysis

Table 7 summarizes the logistic regression attained results. The model’s logistic regression results, demonstrate that the $\chi^2$ test, relevant to the adjustment, is discovered to have a value of 24.67 and to be significant at the threshold 1% with $p = 0.000$. The Nagelkerke $R^2$, which corresponds to the $R^2$ determination coefficient in the linear regression, indicates that 36% of the cognitive contribution has been explained through the venture capitalist shareholding, the entrepreneur shareholding, venture capitalist's ownership structure along with the firm stage. In addition “Hosmer and Lemeshow” test indicates an insignificant $\chi^2$ of 15, 34 ($p = 0.012$).

An examination of the statistical tests reveals that the venture capitalist’s financial participation “Share_VC” appears to have a positive effect on his cognitive contribution to the funded firm. Indeed, the variable’s regression coefficient has a positive and significant value at the 10% level as compared with the dependent variable ($\beta = 0.25$ and $p$ is lower than 10%). These results appear to be consistent with the hypothesis H1 predictions, stipulating that the percentage of the venture capitalist detained shares has a positive and significant effect on their cognitive contribution to the funded firm. It seems that the cognitive dimension is used as a means where by new productive opportunities can be invented and coordination between the different company stakeholders can be further enhanced and the venture capitalist’s intervention in matters of managerial consultations, counseling and support is considered as some of their greatest contributions. This result turns out to be consistent with those documented by the studies elaborated by Wilson, Wright, Siegel, and Scholes (2012), and Croce, Marti, and Murtinu (2013).

According to Table 7, the Share_E variable regression coefficient proves to be positive and significant at the threshold of 5% ($\beta = 0.06$). Such results seem to be consistent with the predictions of hypothesis H2 predictions, stipulating that the percentage of the entrepreneur detained shares has a positive and significant effect on their cognitive contribution to the funded firm. Yet, some elaborated work, (Dimov & Murray, 2008) have shown that the venture capitalist seems less motivated to set up a process of transfer and exchange of expertise and knowledge with the entrepreneur once the latter, appears to significantly important have financial contribution and interests. In this respect, and on treating corporate governance of venture capital funded firms, mechanisms, some previously conducted works (Armstrong et al., 2006; Bocken et al., 2014; Leete et al., 2013; Sapienza, Manigart, & Wermeir, 1995) have found that the venture capitalists’ participation appears to lead, conversely, to a reduction in the managers’ detained, capital share, in such a way as the venture capitalists would, more or less take part in the company management affairs and exercise their power in terms of their relative detained proportion of shares. Involvement within the company and participation in elaboration strategy and management also highly depend on the venture capitalist’s financial power in respect of that of the entrepreneur. His remarkable majority participation denotes well financial investments together with an investment of time, favoring an effective accompaniment of the entrepreneur through knowledge sharing, advice and help, for the sake of to identifying good investment opportunities. Nevertheless, should his financial interests prove to be too low, he then, would not be necessarily motivated to jointly construct with the entrepreneur an apprenticeship likely to process be costly in terms of transfer time and difficulties.

<table>
<thead>
<tr>
<th>Table 7. The model’ logistic regression results</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 150</td>
</tr>
<tr>
<td>Dependent variable C_C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Predicted sign</th>
<th>Coef.</th>
<th>Wald</th>
<th>Sig.</th>
<th>$R^2$ of Nagelkerke</th>
<th>Test of specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>+</td>
<td>0.55</td>
<td>1.20</td>
<td>0.23</td>
<td>0.36</td>
<td>24.67 p = 0.000</td>
</tr>
<tr>
<td>Share_VC</td>
<td>+</td>
<td>0.25</td>
<td>7.12</td>
<td>0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share_E</td>
<td>+</td>
<td>0.06</td>
<td>4.39</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aff_VC</td>
<td>−</td>
<td>−1.314</td>
<td>2.012</td>
<td>0.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>−</td>
<td>−0.294</td>
<td>2.41</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The “Aff_VC” variable-related coefficient is negative at $\beta = -1.314$ in harmony with the expected sign and very significant. Hence, these results allow validating our hypothesis 3. Some previously works conducted have shown that the venture capitalists’ ownership structure appears to have noticeable influence on the relationship with the funded company, (Gompers & Lerner, 2001). They have established a distinction between the an independent investors and the affiliated capital-ones, on the basis of their greater incentive to transfer knowledge to the funded firm, furthermore, they have demonstrated that firms financed by such investors would certainly enjoy greater financial, strategic and stock-market profitability. Besides, they have also noticed that group affiliated capital investors would be primarily interested in maximizing their proposes profitability for a given risk level, while the independent capital investors would target objectives other than the investment financial performance, namely, the transfer of knowledge to the financed firm (Bottazzi, Darin, & Hellmann, 2008; Hellmann & Puri, 2000).

The regression coefficient relevant to the variable “stage” seems negative and significant at the threshold of 5% $\beta = -0.294$. These results appear to be consistent with the hypothesis H4 predictions. This implies that the cognitive contribution of the venture capitalist turns out to be negatively associated with the firm’s development stage. At an early development stage, the firm appears to have a low knowledge reserve in relation to capital investors, who are generally more experienced. This asymmetrical distribution of knowledge helps create a divergent discrepancy among the different mental models schemes and strategic visions themselves. Several previously conducted studies (Amess & Wright, 2012; Barney, Busenitz, Fiet, & Moesel, 1996; Bocken et al., 2014; Goergen et al., 2011) have stated that at a less-advanced development stage, the firm appears to display a high cost of transfer from the parts of capital investor to the entrepreneur, in terms of time and integration difficulty. Indeed, knowledge transfer would be more difficult in case of a mature enterprise.

5. Conclusion

The present study has been proposed to examine the impact of venture capital financing mode on the establishment of the funded firms’ cognitive resources. The research advanced theoretical framework is predominantly based on the corporate governance theory. For a thorough analysis of the contractual contribution likely to be brought about by shareholding, a special examination of the percentage of the venture capital detained shares. The logistic regression’s results have shown that the venture capitalist’ cognitive resources turns out to be an increasing function of his financial participation and the capital percentage held by the entrepreneur. In addition, a negative relationship has been discovered to persist between the venture capitalist’ cognitive resources and both of the venture capitalists’ ownership structure and the firm’ development stage. To note, most of the Tunisian venture capitalists who have funded or formed our sample have been affiliated with a bank. Consequently, their investment strategy and the nature of their contributions to the company would then seem to be highly dependent on those of the parent company “the bank” so identification of any investment projects will be predominantly determined by the already set or adopted strategy. In addition the goals achieving vision or policy should coincide harmoniously with those defined by the parent company. Despite the crucial importance of the achieved results, our study bears certain limitations. Firstly, in theoretical terms, the number of variables tested in this work seems to be relatively reduced in respect of the number of cognitive governance variables. Secondly, the size of our study sample is quite small (150 firms). Despite these limitations, the results achieved by this study seem to be potentially useful to promoter and investor for the purpose of improving and further consolidating the relationship between the Tunisian venture capital agencies and managerial team in order to create added value and improve the firm performance. The paper adds to existing literature on corporate governance by establishing a relationship between venture capitalist’ shareholding and its cognitive contributions.
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Page 9 of 10


