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WHY ENTREPRENEUR OVERCONFIDENCE AFFECT ITS PROJECT FINANCIAL CAPABILITY: EVIDENCE FROM TUNISIA USING THE BAYESIAN NETWORK METHOD

Salima TAKTAK
University of Sfax, Sfax, Tunisia
salima.taktak@yahoo.fr

Mohamed Ali AZOUZI
University of Sfax, Sfax, Tunisia
mohamed_azouzi@yahoo.fr

Mohamed TRIKI
University of Sfax, Sfax, Tunisia
mohamed.triki@mes.rnu.tn

Abstract
This article discusses the effect of the entrepreneur's profile on financing his creative project. It analyzes the impact of overconfidence on improving perceptions financing capacity of the project. To analyze this relationship we used networks as Bayesian data analysis method. Our sample is composed of 200 entrepreneurs. Our results show a high level of entrepreneur's overconfidence positively affects the evaluation of financing capacity of the project.
Keywords: Overconfidence, Behavioral biases, Entrepreneurship, Funding decision Bayesian networks.

1. INTRODUCTION

Overconfidence refers to the state of a person who overestimates his personal capacity against the actual data. Broihanne et al, (2006) indicate that over the task and the environment are complex, individuals tend to be subject to bias behaviour that led to non-rational judgments.

According to studies, overconfidence affects a large number of professions such as clinical psychologists (Oskamp, 1965), engineers (Kidd, 1970), investment bankers (Stael von Holstein, 1972), lawyers (Wagenaar and Keren, 1986) and managers (Russo and Schoemaker, 1992).

In the field of finance, its influence on decision making has led to extensive work, the most famous are those of Odean (1998), Daniel et al (1998) and Malmendier and Tate (2005 , 2008) in corporate finance.

Although overconfidence is one of the most documented behavioural biases in corporate finance, financial literature gives little attention to the implications of this psychological bias on investment decisions and financing of small and medium enterprises. Our study aims to fill this gap in financial theory.

In our research paper, we study the effect of psychological bias "overconfidence" on entrepreneurial financing decisions.

In fact, the literature provides some evidence existing financial theory and empirical evidence regarding the effect of managerial overconfidence on the capital structure of large listed firms. However, overconfidence has a greater impact on the capital structure of SMEs than large enterprises. In fact, there are several control mechanisms at the level of large companies may limit the irrational behaviour of leaders. However, these internal governance mechanisms (such as the board of directors) and external (such as labor) are not available in SMEs. Hence the interest to conduct a study on the financing choices overconfident entrepreneurs.

Whether in developing countries or developed countries SMEs play an important role. Indeed, SMEs are one of the most dynamic economic growth and social development strategy of each country.

Tunisian economic fabric consisting mainly of SMEs (It represents 97% of the Tunisian economic fabric), now more than ever, companies must find funding in the medium and long term development necessary to ensure that their needs sustainability and growth in some cases survival. In Tunisia, SMEs suffer from many constraints mainly related to the lack of capital, access to funding and financing conditions.

Our goal in this research is to identify the effect of overconfidence of Tunisian entrepreneurs on the choice of funding sources.

This research paper is organized as follows: Section 2: to test the hypotheses, Section 3: Methodology, Section 4: results and Section 5: conclusion.

2. THE HYPOTHESES TO BE TESTED

In this section, we will discuss briefly the literature of overconfidence and capital structure, then we will develop the hypotheses that deal with the effect of overconfidence on entrepreneurial financing decisions of small businesses.

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The role of psychological bias Overconfidence in investment decisions and financing is the subject of a debate in the literature of corporate finance.

The majority of research works have addressed the effect of psychological bias "Overconfidence" leaders in large listed companies. Few studies have examined the impact of entrepreneurial overconfidence on the capital structure of start-ups. The exploration of this field of research is interesting for several reasons.

First, the funding policies of the company in the early stages of their life cycles have a significant impact on its future, its future development and performance. Second, in small and medium enterprises governance mechanisms are not all available. Therefore, the financial behaviour of entrepreneurs may be irrational. Third, for developed countries and countries in development paths, access to various sources of funding for small businesses is a matter of government policy. In fact, a study on entrepreneurial overconfidence and its impact on funding decisions can help politicians and financial institutions.

Roll (1986) was the first who studied the role of overconfidence of managers in the mergers and acquisitions business.

In his research, Hackbarth (2004, 2009) indicates that entrepreneurs surconfiant pursue an aggressive funding. Therefore, they believe that the volatility of cash flow of their business is much lower than the reality. Therefore, they underestimate the risk of bankruptcy.

In his research, Heaton (2002) introduced the model of capital structure behaviour. The author indicates that overconfident executives attribute to good corporate performance probabilities too high that the capital market. In fact, they see that the market underestimates the firms whose securities are risky, so in an efficient market the issuance of risky securities is perceived by overconfident managers as a project that has a negative net present value. The model induces a hierarchy Heaton preference capital structure. In fact, overconfident managers prefer internal financing or debt not risky debt and risky debt issuing risky action.

Landier and Thesmar (2009) examined the effect of overconfidence on financing decision for a sample of French start-ups. These authors find that overconfident entrepreneurs prefer internal financing rather than external, they choose the more short-term debt. In fact, capital is cheaper than debt since bankers underestimate the chances of success.

The failure to open its capital company created to external capital is a sign of a high level of overconfidence in a leader. Different theoretical models are based on a main effect of bias:

overestimation of the value of the company and its investment projects. This naturally leads to overinvestment and the reluctance to issue risky securities which are part of the capital increase and the issuance of debt risk.

In the research work of Shane and Stuart (2002), overconfidence of entrepreneurs affects the amount of the initial capital contribution of the founders and operates through a longitudinal view by not providing other rounds. Yet an initial equity contribution significant as would Brüderl and Schussler (1990) creators to invest more in recruiting in the technical, organizational, social and other resources that would reduce its failure rate.

Giat et al. (2010) show that overconfident entrepreneurs spend huge amounts of investment in their own businesses. In fact, overly confident entrepreneurs overestimate the expected returns of their projects. Therefore, they use a self masse. An empirical study by Moskovitz and Vissing-Jorgensen (2002) confirms this result. In fact, they indicate that (on average) over-invest entrepreneurs in their own business instead of diversifying their investments in listed companies (private equity puzzle).

Malmendier and Tate (2005) show that overconfident managers overestimate the returns of their projects. In addition, they are sources of external funding extremely expensive. Therefore, they overinvest when they have abundant internal resources while reducing their investments in the event of a need for external funding.

In their research work, Dawson et al. (2012) show that the presence of psychological bias "overconfidence" among entrepreneurs affect their choice of financing. In fact, they overestimate the likelihood of success of their projects. Thus, they prefer the use of self as the primary source of funding.

On the basis of this theoretical development, there is the existence of a positive relationship between entrepreneurial overconfidence and the choice of the self as an internal source. Hence the following hypothesis:

H1: Entrepreneurs overly confident prefer the self as a source of internal financing.

Malmendier et al. (2005) include the difference between the market value and the value perceived by the leaders of shares or bonds issued to finance investment and formally deduced preferences financial structures of leadership. The leader is then rational indifferent to sources of funding, while the leader surconfiant prefer cash or non-risky debt beyond a level of overconfidence defined by the model. These results are consistent with the pecking order theory.

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With regard to funding decisions Hackbarth (2008) suggests that the bias of overconfidence and risk perception are important factors in explaining the decisions of debt.

In fact, this author believes that overconfident managers tend to choose debt as the external source of funding because they are more efficient and / or less risky.

Malmendier et al. (2011), following an empirical study found that overconfident managers are using debt as the primary source of external financing and the issuance of action. In fact, they believe that the value of debt is undervalued, where there is a very high level of debt.

Model Heaton (2002) suggests that overconfident entrepreneurs of small businesses preferred debt as a source of external financing and the issuance of shares.

Meza and Southey (1996) modelled the capital structure of a start-up entrepreneur whose surconfiant. One of the main predictions of their model is that entrepreneurs prefer self-financing or debt without risk to risky debt, and prefer risky debt to the share issue.

On the basis of this research work, we test the following hypothesis:

H2: overconfident entrepreneurs are more likely to prefer debt to equity financing.

Small firms borrow large sums from banks and concentrate their borrowing by commercial banks although they can not offer great warranties. Therefore, Berger and Udell (1998) report that nearly 50% of small business financing is in the form of debt.

Ben David et al. (2007) find that firms whose managers are overconfident resort to debt and especially the choice of long-term debt.

Standard bargaining models based on the capital structure (the company that will provide both short-term debt and long-term Berglöf and Thadden, 1994). Bank lending to small businesses are usually short-term debt (Gertler and Gilchrist (1994), Chittenden, Hall and Hutchinson (1996), Berger and Udell (1998)). In their research work Thesmar and Landier (2009) discuss the effect of overconfidence of entrepreneurs on the choice of short-term debt or long-term. They indicate that overconfident entrepreneurs choose short-term debt for two reasons: (1) it allows the entrepreneur takes a gamble on the success of the project, and (2) it allows investors to impose decisions adaptation in bad situations. Thus, our second hypothesis to be tested is as follows:

H3: Entrepreneurs overly confident use of short-term debt

3. METHODOLOGY

3.1. Sample

In our research, we investigate the impact of psychological bias "overconfidence" on the financing choices for a sample of Tunisian entrepreneurs.

The choice of the sample is carried out on the basis of two main criteria. The first criterion is the industry, in fact, our study focuses on innovative sectors and risky. So we chose the field of new technologies of information and communication.

Our sample consists of 200 Tunisian entrepreneurs. Table 1 presents descriptive statistics of these entrepreneurs.

TABLE 1 – DESCRIPTIVE STATISTICS OF THE SAMPLE

Characteristic										
Gender	**Male = 78%**					**Female= 22 %**				
Age	<25	6%	25-35	26%	35-45	46%	45-55	18%	≥55	4%

3.2. Measurement of Variables

In this context it is necessary to separate those exogenous variables endogenous.

3.2.1. Endogenous variables: the choice of financing

The objective of this paper is to show the impact of the overconfidence of the contractor on the choice of financing its business to know the flow, debt and capital increase. Appropriate measures in the literature to assess these three modes of financing are:

3.2.1.1. The cash flow

The research is in the context of the financial theory of investment, has made use of many measures of internal resources. Which represents cash flow stream generated by the activity of any business, is one of the most appropriate (Lehen and Poulsen, 1989; Molay, 2006; Naoui et al, 2008; ...).

$$CF = \text{Net income} + \text{Depreciation} - \text{Dividend}$$

$$\text{Flow rate (Tauf)} = CF / \text{Total assets}$$

3.2.1.2. The Debt

We observe a variety of variables that measure the level of debt in the company. Measures such as the ratio of total debt were used by several authors (Hovakimian et al, (2004), Demaria and Dufour (2007), Jarboui and Olivero (2008)).

Others have used the debt ratio over the medium and long term (Myers, 2001). On the ratio of short-term debt, it has been used by Titman (1984) in their research work.

In our analysis we propose to use leverage ratios as a measure of this variable. It should be noted that these ratios are calculated by the following formulas:

LEV = (total debt / total assets) as a percentage

LTLEV= (long term debt / Total debt) as a percentage

SHORTLEV= (short-term debt / Total debt) as a percentage

3.2.1.3. Equity

This variable is measured by the equity value recorded in the balance sheet of the company. To show that the manager chooses whether the capital increase, we can use the variation in the percentage of invested capital. A positive change indicates an increase in capital.

The funding decision takes the 10 following manner:

• 1 if the leader chooses the flow: positive change in flow rate

• 2 if the manager chooses the short-term positive change in the ratio of short-term debt.

• 3 if the manager chooses the long-term debt: positive change in the debt ratio in the long term.

• 4 if the leader chooses the capital increase: positive change in the percentage of invested capital.

• 5 self-financing debt + short-term positive change in the rate of flow and debt ratios in the short term.

• 6 self-financing debt + long-term positive change in flow rate and ratio of long-term debt.

• 7 + equity flow: positive change in flow rate and percentage of invested capital.

• 8 short-term debt + equity: positive change in debt ratios in the short term and the percentage of capital invested.

• 9 long-term debt + equity: positive change in debt ratios in the short term and the percentage of capital invested.

• 10 self + debt + equity: positive change in flow rate, debt ratios and percentage of capital invested.

3.2.2. Exogenous variables

3.2.2.1. Overconfidence

The questionnaire aims to measure the confidence of the contractor. This variable is measured by psychological issues of general knowledge (Russo and Schoemaker (1992)). This methodology was widely replicated by other researchers (Simon et al. (1999), Biais et al. (2005); Bensimhon (2006)). Indeed, participants must indicate confidence intervals at 90% which is they believe are the correct answers to each series of 10 questions. For example, the question of general culture,

"The length of the Nile (in kilometers)? "They must indicate two terminals so that the answer does not exceed the upper limit with 95% chance. A good answer to this question can be [6490-6510] as the correct answer is 6500. A calibration score (number of correct answers) is computed from these confidence intervals. A subject is considered well "calibrated" if he gets 9 correct answers out

10. Insofar another good answer to this question could be [0-7000], we measure the relative magnitude of the interval, that is to say the width of the given interval relative to the mean value this interval.

NB To facilitate the construction of the Bayesian network overconfidence takes the following two ways:

• 1 if the entrepreneur has a positive score of overconfidence

• 0 if not.

3.2.2.2. Entrepreneur age

Age is a demographic characteristic of entrepreneurs (Busenitz and Barney, 1997). It is also a crucial variable in our study since it allows to give the age structure of entrepreneurs. And age is a key variable in the behavior of the individual. This variable is one of the measures of individual characteristics that may influence the choice of financing. For this variable, respondents were asked to check one of the proposed age and which they belong.

3.2.2.3. Entrepreneur experience

The entrepreneurial experience is recognized to allow the acquisition of tacit knowledge and to facilitate decision making in a context of uncertainty and pressure (Politis, 2005).

3.2.2.4. Education

Education can be an important source of knowledge, skills, motivation, self-confidence and an ability to solve problems (Cooper et al. 1988). The level of education is a factor in determining the behavior, actions and practices of individuals with regard to the financing choices. This variable can have an idea about the level of education of entrepreneurs. The variable "education" has been measured by the specification of the level of the entrepreneur. These levels range from primary to doctoral level. This is an ordinal variable.

3.2.2.5. Entrepreneur status

The owner-manager is a person to which a thing belongs property. He or she is who manages and directs his company.

In small businesses including family leader is usually the main or even the sole provider of capital. It is the owner (single capital provider) or the owner (a capital providers).

In other circumstances the contractor may be the owner of the business without having the mission to lead the case.

3.2.3. Control variables

3.2.3.1. Size

The size of the firm affects its financial structure (Rajin and Zingales, 1995; Molay and Dufour, 2010). Thus, large firms are considered as having good performance (Booth et al 2001), more diversified (Rajan and Zingales 1995) and with a lower risk of bankruptcy than small firms. They use external sources of funding without incurring additional costs compared to smaller ones. This variable can be measured in different ways. The measures most commonly used are: the log of total assets, the number of sales. Indeed, most studies use total assets or turnovers as a measure of firm size (Bujadi and Richardson, 1997). We will retain the following formula:

FSIZE= Ln (total assets)

3.2.3.2. Legal status

The undertaking is in all countries governed by a regulation. Most companies operate within a predetermined law. It is the right companies.

The choice of legal form is probably a question to all essential pre-start activity. The legal form is the legal framework within which the activity will be carried out. The legal form is an essential element of the functioning of the economy. It determines the rules of a market that will frame and condition of business activity.

The types of companies most applied and most suited to certain activities are mainly: Anonyme Society (SA), the Limited Liability Company (SARL) and Uni Limited Liability Company (SUARL).

3.2.3.3. Creation date

As a control variable, we chose the date of creation. In fact, a company in the first years of creation may have a funding policy different from those who exceeded the inevitable step of the first four years.

For the sake of simplicity we see a summary measure of each variable in the model, its name and its influence on the expected financial structure of the company (cash flow, debt and equity) in the following table:

TABLE 2 – DESCRIPTION OF STUDY VARIABLES

Category:	Phenomenon:	Measurement:	Variable:	Prediction		
Variable to explain:						
CAPITAL STRUCTURE CHOICE	Cash flow	Rate = CF/Total assest (CF= net income+depreciation-dividend)	**CF**			
	LEVEARGE	Rate of debt = total debt/total Assest	**LEV**			
		long-term debt/ Total debt	**LTLEV**			
		Court-term debt / Total debt	**SHORT LEV**			
	equity	Percentage of equity (PCI)= equity / total assest	**EQ**			
Explanatory variables:						
				AUTOF	**END**	**CP**
STATUS	Le statut de l'entrepreneur : Propriétaire/dirigeant ou uniquement propriétaire	Variable dichotomique	**STATUS**	+	+	-
Over-confidence	Over-confidence in personal skills assessment from the leader	Confidence Intervals: Measure from the calibration intervals answers to 10 questions of culture General	**OVERC**	+	+	+
		Confidence Intervals: Measure over-confidence from the length of the intervals of responses to 10 questions on general				

		knowledge.				
Age	Age of the entrepreneur's	age is a demographic characteristic of entrepreneurs	**AGE**	+	+	+
Experience	Entrepreneurial experience	Do you have experience in your area of interest?	**EXP**	+	+	+
Education	The education	This is an ordinal variable. These levels range from primary to doctoral level.	**EDUCATION**	+	+	+
Control variables:						
Firm size	Indicates the size of the capacity of corporate finance	Ln (total assets)	**FSIZE**	-	+	+
Firm Legal status	Legal status of the company Société Anonyme (SA), the (LLC) and A Kingdom (SUARL).	Anonyme Society, Limited Liability Company and Uni Limited Liability Company.	**FL STATUS**	+	+	+
Firm Creation Date	The date of establishment of the company	less than a year, [1, 2 [, [2,3 [, [3, 4 [, 4 years and over	**FC DATE**	+	+	+

3.3. Methods of data analysis

The methodology is to present the different correlations between the financing decision and the above variables with the help of a probabilistic graphical model called Bayesian network. Bayesian networks are a method of artificial intelligence explanatory. This method is used in this article to describe quantitatively the effect of overconfidence on the contractor's choice of financing. In what follows, we describe in detail the various tests are realized.

A Bayesian network is a probabilistic model using Bayes's theorem to reason. It is defined by (Becker and Naim, 1999):

an acyclic graph (that is to say, without loops) and oriented G, consisting of nodes (variables Vi) and directed arcs (Aij);

finite probability space (Ω, Z and p), where Ω is the universe of possibilities, Z is a tribe of events Ω and a Z p → R with domain image [0,1] for which p (Ω) = 1;

a set of random variables corresponding to the nodes of the graph defined on (Ω, Z and p), such that the overall probability of the network is the product of the probabilities of each node Vi conditional on all of its parent nodes C (Vi):

$$P(V1, V2, \ldots, Vn) = \prod_{i=1}^{n} p(Vi|C(Vi))$$

Where C (Vi) is the set of parents (or causes) of Vi in the graph G.

3.4. Model construction and parameterization

The objective of this paper is to show the effect of overconfidence on the entrepreneur's decision to finance their businesses. Thus, it has been shown theoretically that the financing decision of a firm depends on:

Confidence level of the entrepreneur

- Age
- Experience
- The level of education
- The size of the company.
- Legal status
- Creation date

3.5. Identification of variables and their modalities

The first step in building a Bayesian network expert is to list the variables recursively, starting from the target variable to the causes. It is in this order that the variables are presented in the following table:

TABLE 3- DESCRIPTION OF THE TERMS OF THE STUDY VARIABLES (DF)

Variable name	Variable type
Capital Structure Choice (CSC)	Discrete [1 ; 2 ; 3 ;4 ;5 ;6 ;7 ;8 ;9 ;10]
Status	Discrete [1 ; 2]
Over-confidence (OVERC)	Discrete : YES/NO
Sexe	Discrete [1 ; 2]
Age	Discrete [1 ; 2 ;3 ;4 ;5]
Experience(EXP)	Discrete [1 ; 2 ;3 ;4 ;5]
Education	Discrete [1 ; 2 ;3 ;4 ;5]
Firm size (F SIZE)	Discrete [1 ; 2 ; 3]
Firm Legal status (FL STATUS)	Discrete [1 ; 2 ; 3]
Firm Creation Date (FC DATE)	Discrete [1 ; 2 ;3 ;4 ;5]

4. ANALYSIS AND INTERPRETATION OF RESULTS

4.1. Graphical model

The second step in the construction of a Bayesian network is to express relations between the variables. The software allows a BayesiaLab learning of the Bayesian network in the database taking

discretized as process input without data strobe. The Bayesian network constructed is the result for the total database.

According to the data that we have received through the questionnaire, we have established the following graph relationships (Figure 1).

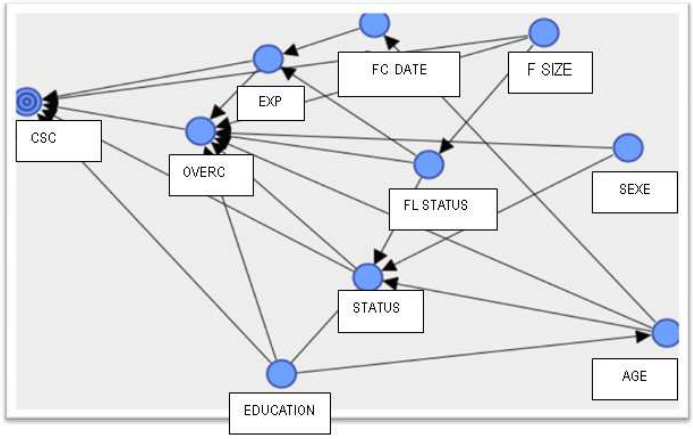

FIGURE 1 – BAYESIAN NETWORKS – THE CHOICE OF FINANCING AN ENTREPRENEURIAL PROJECT

The graphical model that explains the above funding options for an entrepreneurial project in Tunisia. This decision is affected by overconfidence leader of the leader. This level of overconfidence to the original situation of the company (size, legal status) and personal characteristics of the leader (education, experience, gender, age, status ...).

In what follows, we describe in detail the various correlations between these variables and their effect on the target variable (financing decision: DF).

4.2. Analysis of the relationships discovered

Relationships between variables in the database are oriented from the parent node to the child node. Each relationship consists of three different measures: the Kullback-Leibler relative weight and Pearson correlation (direction of the relationship). Indeed, the Kullback-Leibler divergence and relative weight are two measures indicating the strength of the relationship and the level of correlation between the variables while Pearson correlation measures the direction and significance of the relationship. The scale of relative weight is 0-1. Thus, the following table shows the analysis results of the relationship between the variables of the network through the Pearson correlation.

TABLE 4 – ANALYSIS OF THE RELATIONSHIP

Parent node	Child node	Divergence of Kullback-Leibler	Relative Weight	Pearson Correlation
Age	FC DATE	1,0265	1,0000	0,8506
FC DATE	EXP	0,9423	0,9179	0,6165
EXP	CSC	0,6267	0,6105	0,0550**
EDUCATION	AGE	0,5130	0,4997	0,3484
EDUCATION	CSC	0,5077	0,4946	0,0517**
FSIZE	CSC	0,4618	0,4499	-0,0292***
FL STATUS	EXP	0,4504	0,4388	0,0969**
OVERC	CSC	0,3077	0,2998	0,0276***
FL STATUS	STAUS	0,1940	0,1890	0,2365
STATUS	CSC	0,1835	0,1788	-0,0433**
EDUCATION	STATUS	0,1775	0,1729	0,0509**
FSIZE	FL STATUS	0,1676	0,1633	-0,0124***
AGE	STATUS	0,1459	0,1421	0,1129
SEXE	STATUS	0,1422	0,1385	0,1437
EXP	OVERC	0,1089	0,1060	0,0382**
FSIZE	OVERC	0,0993	0,0967	-0,0156***
EDUCATION	OVERC	0,0823	0,0802	0,0102***
FL STATUS	OVERC	0,0776	0,0756	-0,0323**
SEXE	OVERC	0,0561	0,0547	-0,0639**
AGE	OVERC	0,0545	0,0531	0,0339**
STATUS	OVERC	0,0048	0,0047	-0,0595**

Kullback -Leibler close to 1: strong correlation between variables.
Relatif Weight : converges to 1: strong correlation between variables.
Pearson correlation coefficient: the meaning of correlation between the variables: *, **, *** significance at respectively 10%, 5% and 1%.

The results in Table 4 show the existence of a strong and positive relationship between the financing decision and the experience of the entrepreneur (Divergence

Kullback-Leibler = 0.6267, β = 0.0550) and the financing decision and the education of the entrepreneur (Divergence

Kullback-Leibler = 0.5077, β = 0.0517). While the size of the company has a negative effect on the financing decision.

The analysis of the relationships noted the presence of a moderately strong relationship (Kullback-Leibler = 0.3077 / weight ratio = 0.3) and positive (β = 0.0276) between the overconfidence of entrepreneurs and the financing decision . This empirical finding confirms our hypotheses (H1, H2 and H3) and validates the graphical model (Figure 1).

By referring to the above table, we see that the size of the company has a negative and significant effect on the financing decision (Divergence Kullback-Leibler = 0.4618, β = -0.0292).

Based on these results, we find that the characteristics of the entrepreneur (age, sex and education) have a negative impact on the Overconfidence, whereas experience has a positive effect on overconfidence.

4.3. Analysis of the financing decision (CSC)

To analyze the financing decision, we must choose the financing decision variable (DF) as the target variable in the Bayesian network. Then, we can use the function that generates the analysis report of the target financing decision. In this report, the relationship of the financing decision variable with other variables are measured by mutual information binary, binary relative importance.

In probability theory and information theory, mutual information is the information provided by several sources of information simultaneously. Its existence is related to the following question: given an event, how do I change it the amount of information provided by another event? The mutual information of two random variables is a quantity measuring the statistical dependence of these variables. It is measured in bits.

The table below shows the importance of the variables in our study in terms of providing information on the value of the financing decision.

TABLE 5 – IMPORTANCE NODES IN TERMS OF PROVIDING INFORMATION ON THE KNOWLEDGE OF THE FINANCING DECISION (DF)

CSC = CF+LEV+EQ (18,0870%)				
NODE	**BINARY MUTUAL INFORMATION**	**RELATIVE IMPORTANCE OF BINARY**	**MODAL VALUE**	
EXP	0,0138	1,0000	[1, 2[	28,8077%
FC DATE	0,0073	0,5303	[2, 3[	29,8983%
AGE	0,0048	0,3484	[35, 45[	40,4268%
STATUS	0,0038	0,2788	OWNER /MANAGER	82,6986%
EDUCATION	0,0037	0,2676	UNIVERSITY (1 OR 2 CYCLE)	36,3796%
FSIZE	0,0030	0,2151	MEAN	47,5620%
SEXE	0,0006	0,0406	MALE	80,4280%
FL STATUS	0,0005	0,0360	SARL	62,7246%
OVERC	0,0005	0,0357	YES	59,5503%
CSC = LTLEV (12,9788%)				
NODE	**BINARY MUTUAL INFORMATION**	**RELATIVE IMPORTANCE OF BINARY**	**MODAL VALUE**	
EXP	0,0120	1,0000	[2, 4[	27,9656%
FSIZE	0,0091	0,7567	SMALL	40,4417%
FC DATE	0,0089	0,7391	[2, 3[	31,2936%
EDUCATION	0,0087	0,7254	UNIVERSITY (1 OR 2 CYCLE)	45,3440%
AGE	0,0044	0,3627	[35, 45[	48,5509%
OVERC	0,0027	0,2246	YES	64,5780%
STATUS	0,0013	0,1101	OWNER /MANAGER	80,8876%
SEXE	0,0007	0,0576	MALE	81,2653%
FL STATUS	0,0004	0,0371	SARL	63,0335%

CSC= CF+LEV+EQ (11,7227%)				
NODE	**BINARY MUTUAL INFORMATION**	**RELATIVE IMPORTANCE OF BINARY**	**MODAL VALUE**	
EXP	0,0138	1,0000	[4, 6[	32,8311%
FC DATE	0,0083	0,5999	[2, 3[	36,6898%
EDUCATION	0,0077	0,5601	UNIVERSITY (1 OR 2 CYCLE)	47,9432%
AGE	0,0077	0,5589	[35, 45[	58,3141%
OVERC	0,0057	0,4126	YES	68,6873%
FSIZE	0,0038	0,2790	MEAN	44,7169%
FL STATUS	0,0011	0,0786	SARL	57,0108%
STATUS	0,0007	0,0494	OWNER /MANAGER	79,7981%
SEXE	0,0000	0,0032	MALE	78,8781%
CSC = CF+LTLEV (10,7338%)				
NODE	**BINARY MUTUAL INFORMATION**	**RELATIVE IMPORTANCE OF BINARY**	**MODAL VALUE**	
EDUCATION	0,0075	1,0000	[2, 4[	32,4919%
EDUCATION	0,0036	0,7681	UNIVERSITY (1 OR 2 CYCLE)	38,4241%
AGE	0,0029	0,6149	[35, 45[	45,8149%
FC DATE	0,0018	0,3909	[2, 3[	28,6207%
FSIZE	0,0005	0,1027	MEAN	45,2623%
OVERC	0,0002	0,0463	YES	53,9939%
STATUS	0,0002	0,0435	OWNER /MANAGER	73,9175%
SEXE	0,0000	0,0078	MALE	77,0345%
FL STATUS	0,0000	0,0004	SARL	60,0334%
CSC = CF (8,3510%)				
NODE	**BINARY MUTUAL INFORMATION**	**RELATIVE IMPORTANCE OF BINARY**	**MODAL VALUE**	
EXP	0,0108	1,0000	NONE	31,1325%
EDUCATION	0,0061	0,5653	UNIVERSITY (1 OR 2 CYCLE)	32,3782%
FC DATE	0,0037	0,3404	[2, 3[	31,9032%
FL STATUS	0,0020	0,1889	SARL	51,7005%
AGE	0,0010	0,0942	[35, 45[	43,7700%
STATUS	0,0003	0,0299	OWNER /MANAGER	73,2486%
SEXE	0,0003	0,0275	MALE	75,1769%
FSIZE	0,0003	0,0267	MEAN	44,1024%
OVERC	0,0000	0,0014	YES	56,0449%
CSC = CF+LTLEV+EQ (8,2266%)				
NODE	**BINARY MUTUAL INFORMATION**	**IMPORTANCE RELATIVE BINAIRE**	**MODAL VALUE**	
OVERC	0,0027	1,0000	NO	53,3197%
EXP	0,0022	0,8131	[2, 4[	26,1246%
FC DATE	0,0014	0,5312	[2, 3[	34,1188%
AGE	0,0004	0,1608	[35, 45[	47,4234%
STATUS	0,0004	0,1528	OWNER /MANAGER	72,8439%
FSIZE	0,0002	0,0807	MEAN	42,8565%
EDUCATION	0,0001	0,0475	UNIVERSITY (1 OR 2 CYCLE)	36,8422%
SEXE	0,0001	0,0280	MALE	76,5822%
FLSTATUS	0,0001	0,0197	SARL	58,6241%
CSC= EQ (7,5341%)				
NODE	BINARY MUTUAL	RELATIVE IMPORTANCE	MODAL VALUE	

	INFORMATION	OF BINARY		
FSIZE	0,0018	1,0000	SMALL	39,2309%
EDUCATION	0,0013	0,7681	UNIVERSITY (1OR 2 CYCLE)	41,4117%
STATUS	0,0013	0,7540	OWNER /MANAGER	69,7305%
OVERC	0,0011	0,6121	YES	50,0849%
EXP	0,0010	0,5692	[4, 6[	26,4666%
AGE	0,0008	0,4734	[35, 45[	49,4579%
FC DATE	0,0007	0,3791	[2, 3[	33,5756%
FL STATUS	0,0003	0,1550	SARL	58,4819%
SEXE	0,0001	0,0562	MALE	76,2904%
CSC= SHORTLEV (7,2595%)				
NODE	BINARY MUTUAL INFORMATION	RELATIVE IMPORTANCE OF BINARY	MODAL VALUE	
STATUS	0,0017	1,0000	OWNER /MANAGER	68,7350%
EXP	0,0015	0,9012	[4, 6[	27,4676%
OVERC	0,0012	0,7402	NO	50,5640%
EDUCATION	0,0010	0,5689	UNIVERSITY (1 OR 2 CYCLE)	40,5842%
FC DATE	0,0007	0,3896	[2, 3[	33,9986%
AGE	0,0006	0,3350	[35, 45[	49,1360%
FSIZE	0,0005	0,2731	SMALL	39,9670%
FL STATUS	0,0003	0,1581	SARL	58,0382%
SEXE	0,0002	0,0922	MALE	75,8132%
CSC =CF+EQ (6,5412%)				
NODE	BINARY MUTUAL INFORMATION	RELATIVE IMPORTANCE OF BINARY	MODAL VALUE	
OVERC	0,0034	1,0000	NO	56,1168%
STATUS	0,0030	0,8952	OWNER /MANAGER	65,4066%
EXP	0,0021	0,6283	[2, 4[	22,6557%
EDUCATION	0,0021	0,6103	UNIVERSITY (1 OR 2 CYCLE)	30,4234%
AGE	0,0010	0,3063	[35, 45[	41,6746%
FC DATE	0,0010	0,2912	[2, 3[	30,1710%
FL STATUS	0,0007	0,2150	SARL	55,3081%
SEXE	0,0005	0,1429	MALE	73,8594%
FSIZE	0,0003	0,0789	MEAN	39,3776%

Mutual information: it is the amount of information given by a variable on the value of the target.
Relative importance: it is the importance of the variable to the value of the target.
Modal value: the average value of the independent variable value for each of the target.

The analysis of the financing decision shows that 7.5341% of small and medium Tunisian enterprises opt for the capital increase, 10.7338% chose self over long-term debt, 11.7227% use three funding (cash flow plus debt plus equity), 8.3510% exploit sources of funding (cash flow), 6.5412% prefer the torque flow more capital increase, 12.9788% finance its investments and long-term debt 7 , 2595% in short-term debt, 8.2266% prefer self more long-term debt plus equity, then que18, 0870% of Tunisian entrepreneurs use the cash flow plus the short-term debt plus equity.

Table 5 shows that in the case where the entrepreneur chooses the capital increase the node size (relative = 1) node is the most dominant in terms of providing information on the knowledge of the financing decision (capital increase).

Then the other important variables were education (relative importance = 0.7681), status (relative importance = 0.7540), level of overconfidence (relative importance = 0.6121) and experience (importance relative = 0.5692)

Thus, the results show that the small size of the company 39.2309%, the status of the contractor "owner / manager of 69.7305%, a level of overconfidence Entrepreneur of 50.0849% 26.4666% experience of the contractor, an age range of between 35 entrepreneur and 45 years of 49.4579% and a creation date between 2 and 3 years of 33.5756% and legal status of the company SARL type of 58.4819% and a contractor type "man" of 76.2904% involves the use of the capital increase with a probability of 7.5341%.

Based on the data from the table above, we see that the node experiment (relative = 1) is the node most prominent in terms of providing information about the decisions of funding: self + debt short-term + equity + debt + flow equity Long-term debt, cash flow.

If the Contractor opts for two funding decisions following flow + long-term debt + equity + equity and cash flow node overconfidence (relative importance = 1) is the node most prominent in terms of contribution to information on the knowledge of the financing decision.

Decision on short-term debt, the results show that the node status of the contractor (relative = 1) is the node most prominent in terms of providing information on the knowledge of the financing decision.

Thus, the results show that the small size of the company 39.2309%, the status of the contractor "owner / manager of 69.7305%, a level of overconfidence Entrepreneur of 50.0849% 26.4666% experience of the contractor, an age range of between 35 entrepreneur and 45 years of 49.4579% and a creation date between 2 and 3 years of 33.5756% and legal status of the company SARL type of 58.4819% and a contractor type "man" of 76.2904% involves the use of the capital increase with a probability of 7.5341%.

Based on the data from Table 5, we see that the node experiment (relative = 1) is the node most prominent in terms of providing information about the decisions of funding: debt + short flow term + equity + debt + flow equity, long-term debt, cash flow.

If the Contractor opts for two funding decisions following flow + long-term debt + equity + equity and cash flow node overconfidence (relative importance = 1) is the node most prominent in terms of contribution to information on the knowledge of the financing decision.

Decision on short-term debt, the results show that the node status of the contractor (relative = 1) is the node most prominent in terms of providing information on the knowledge of the financing decision.

4.4. Maximization of the average of the target (CSG)

After presenting the set of explanatory variables for each category of the target variable, it is necessary to introduce the variables maximizing each category of the target variable. Thus, the Profile feature dynamic target software can query about a posteriori maximization of the average of the target variable financing decision. This test presents scenarios to maximize the value of the target variable. In other words, it seeks or the terms of the variables that must change (increase or decrease) to maximize or terms of the target variable. The table shows the dynamic profile of the financing decision (DF).

TABLE 6 – PROFILE OF THE DYNAMIC TARGET FINANCING DECISION (DF)

CSC = CF			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		8,3510%	100,0000%
EDUCATION	UNIVERSIY (3 CYCLE)	19,4296%	6,0000%
FLSTATUS	SUARL	29,2543%	1,6800%
FSIZE	MEAN	39,9511%	0,6000%
EXP	[4, 6[	85,1500%	0,2391%
SEXE	MALE	100,0000%	0,1865%
CSC = CTLEV			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		7,2595%	100,0000%
STATUS	OWENER	9,5658%	23,7272%
FSIZE	SMALL	10,2518%	8,4980%
EXP	8 YEAR AND OVER	13,1485%	0,6797%
EDUCATION	VOCATIONAL TRAINING	19,6492%	0,2218%
OVERC	YES	25,0000%	0,1427%
CSC = LTLEV			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		12,9788%	100,0000%
FC DATE	[1, 2[	23,4603%	10,0000%
FSIZE	BIG	38,8358%	2,0000%
EDUCATION	SECONDARY	67,0700%	1,0769%
FL STATUS	SARL	90,1000%	0,7538%
OVERC	NO	100,0000%	0,6709%
CSC= EQ			
NOEUD	**OPTIMAL MODALITY**	**PROBABILITE**	**PROBABILITE JOINTE**
A PRIORI		7,5341%	100,0000%
EDUCATION	PRIMARY	9,8622%	8,0000%
EXP	:[1, 2[	13,7745%	1,4297%
FSIZE	SMALL	18,0350%	0,6716%
AGE	UNDER 25 YEARS	22,9252%	0,3013%
OVERC	NO	24,8099%	0,2630%
FL STATUS	SUARL	25,0000%	0,2563%

CSC = CF+SHORTLEV			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		8,5652%	100,0000%
EDUCATION	PRIMARY	15,4524%	8,0000%
EXP	:[1, 2[	26,3563%	1,4297%
FSIZE	SMALL	44,8184%	0,6716%
AGE	UNDER 25 YEARS	66,0093%	0,3013%
OVERC	NO	74,1761%	0,2630%
FL STATUS	SUARL	75,0000%	0,2563%
CSC = CF+LTLEV			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		10,7338%	100,0000%
EXP	:[6, 8[	17,9554%	14,4284%
EDUCATION	VOCATIONAL TRAINING	36,7652%	4,8136%
FSIZE	MEAN	74,0283%	2,1731%
OVERC	YES	89,7089%	1,7456%
STATUS	OWENER/MANAGER	100,0000%	1,5460%
CSC = CF+EQ			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		6,5412%	100,0000%
EDUCATION	PRIMARY	9,9334%	8,0000%
EXP	8 ANS ET PLUS	13,8118%	0,4533%
FSIZE	GRANDE	19,6000%	0,1800%
OVERC	YES	22,6316%	0,1368%
STATUS	OWENER	25,0000%	0,1152%
DFIN = AUTOF+ENDCT+CP			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		18,0870%	100,0000%
FC DATE	[1, 2[	29,3155%	10,0000%
EDUCATION	UNIVERSITY (1 OR 2 CYCLE)	38,3527%	3,0769%
FSIZE	BIG	75,4688%	0,6154%
FL STATUS	SARL	100,0000%	0,4308%
DFIN = AUTOF+ENDLT+CP			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		8,2266%	100,0000%
OVERC	NO	10,1544%	43,1971%
EXP	:[4, 6[	14,2659%	8,5899%
EDUCATION	SECONDARY	25,7051%	2,3332%
FSIZE	MEAN	43,8013%	1,0841%
STATUS	OWENER/MANAGER	50,0000%	0,9161%
CSC = CF+LEV+EQ			
NODE	**OPTIMAL MODALITY**	**PROBABILITY**	**JOINT PROBABILITY**
A PRIORI		11,7227%	100,0000%
EXP	[4, 6[	17,2773%	22,2761%
EDUACTION	VOCATIONAL TRAINING	34,7165%	4,1675%
OVERC	YES	55,5319%	2,2623%
STATUS	OWENER/MANAGER	81,5500%	1,4396%
FSIZE	MEAN	100,0000%	0,5648%

Based on the results from the table above, we see that increasing the level of overconfidence Entrepreneur of 25.00%, vocational education as 19.6492%, reducing the size of the business 10.2518%, 8 years experience and more than 13.1485% and the status of 9.5658% owner are positively correlated with the increase in short-term debt with a probability of 7 2595%. This result confirms the positive correlation between short-term debt and overconfidence of the contractor (H3) shows the role of

experience and training on access to external financing mode. This result shows the effect of psychological bias "overconfidence" of Tunisian entrepreneurs on their financing choices. Thus, an entrepreneur and experienced surconfiant overestimates his personal capacity, so it opts for external sources of funding primarily short-term debt.

The decrease in the level of overconfidence Entrepreneur of 100%, the presence of legal status "SARL" of 90.1000%, level of education "secondary" 67.0700%, a large size 38.8358% and creation date between 1 and 2 years of 23.4603% are positively correlated with the increase in long-term debt with a probability of 12.9788%. This finding contradicts the positive effect of overconfidence on long-term debt (H2 rejected).

The increase in excess of 89.7089% confidence are positively correlated with the increased torque flow more long-term debt of 10.7338%. This finding indicates the presence of a significant correlation between financing decisions and the psychological bias of the contractor. Thus, the entrepreneur chooses overly confident flow to reduce the risk of funding external (risk of bankruptcy and takeover). This contractor uses debt in order to finance a second the rest of the growth opportunities of the company. This result confirms the predictions of the theory of finance manager.

An increase in the level of overconfidence in the contractor 55.5319%, an average size of 100.0000%, an experience of 4 to 6 years of 17.2773%, vocational training and 34.7165% status of owner / manager of 81.5500% are positively correlated with the increase in the choice of three modes of financing 11.7227%. This result is explained by the fact that any excessively confident entrepreneur seeks to show good management through its financing choices.

5. CONCLUSION

In this research, our aim is to test empirically and theoretically the effect of overconfidence of the Tunisian entrepreneur the choice of funding sources.

The theoretical analysis shows the existence of a positive relationship between psychological bias "overconfidence" and different forms of financing. In fact, an overly confident entrepreneur opts for the self as the primary source of funding and debt arrangements with both short and long term and finally the capital increase.

Empirically the application of Bayesian networks allows us to verify the Pecking order theory (POT). Using the software Baysienlab 5.1, we found that overconfidence in the Tunisian entrepreneur is positively correlated with the flow. In fact, these entrepreneurs overestimate the success of their

projects as outlined by Dawson et al. (2012). On debt as a source of external financing, we found that overconfidence in the contractor positively affects the decision to short-term debt, while the psychological bias has a negative impact on long debt term. In addition, the results show that the three funding sources combined (cash flow plus debt plus capital increase) are influenced by behavior surconfiant the contractor, which confirms the findings of Heaton (2002).

Finally, this study shows the effect of overconfidence or even the introduction of the behavioral dimension in the enhancement of the capacity analysis of financing an entrepreneurial project. Indeed, using the resources of the decrease start-ups involved in obtaining a small amount of capital formation and limiting the opening of capital to private investors.

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