Journal of Applied Economics and Business Research
JAEBR, 3 (2): 95-117 (2013)

Corporate Governance and Disclosure Quality: Taxonomy of Tunisian Listed Firms Using the Decision Tree Method based Approach

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Abstract

This study aims to establish a typology of Tunisian listed firms according to their corporate governance characteristics and disclosure quality. The paper uses disclosed scores to examine corporate governance practices of Tunisian listed firms. A content analysis of 46 Tunisian listed firms from 2001 to 2010 has been carried out and a disclosure index developed to determine the level of disclosure of the companies. The disclosure quality is appreciated through the quantity and also through the nature (type) of information disclosed. Applying the decision tree method, the obtained Tree diagrams provide ways to know the characteristics of a particular firm regardless of its level of disclosure. Obtained results show that the characteristics of corporate governance to achieve good quality of disclosure are not unique for all firms. These structures are not necessarily all of the recommendations of best practices, but converge towards the best combination. Indeed, in practice, there are companies which have a good quality of disclosure but are not well governed. However, we hope that by improving their governance system their level of disclosure may be better. These findings show, in a general way, a convergence towards the standards of corporate governance with a few exceptions related to the specificity of Tunisian listed firms and show the need for the adoption of a code for each context. These findings shed the light on corporate governance features that enhance incentives for good disclosure. It allows identifying, for each firm and in any date, corporate governance determinants of disclosure quality. More specifically, and all being equal, obtained tree makes a rule of decision for the company to know the level of disclosure based on certain characteristics of the governance strategy adopted by the latter.

Jel Codes:D20, G34, L10.

Keywords: *Competitiveness, Corporate Governance, Disclosure, Decision Tree*

1. Introduction

The financial scandals have drawn the attention of regulators and policymakers, especially in the developing markets (S&P, 2008; Mulili and Wong, 2011; Feleaga, N. and al., 2011; Shanikat and Abbadi, 2011 and Erkens and Hung, 2012). Disclosure and transparency are considered as an important component and one of the main indicators of an effective corporate governance structure. Indeed, according to Mangena & Tauringana (2007) the issue of corporate governance was long ignored in developing countries. Also, many studies tried to

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examine the effect of one or several corporate governance mechanisms on disclosure quality (Ho and Wong, 2001; Chau and Gray, 2002; Bushee and Noe, 2001; Chen and Jaggi's, 2000 and Wong, 2001). This paper aims to contribute to the literature on corporate governance by providing taxonomy of Tunisian listed firms according to corporate governance characteristics and disclosure quality using a new approach based on the Decision Tree Method. In other words, we try to explain differences in disclosure quality of Tunisian Listed Firms using various attributes of corporate governance. The disclosure quality is appreciated through the quantity and also through the nature (type) of information disclosed. Corporate governance attributes used in this study consists of ownership structure, board of directors and audit committees. Indeed, it is to show that the quality of disclosure is related to a corporate governance structure specific to each type of firm. To do this, we will start by constructing an index of disclosure, for each category of information disclosed, which translated for each company, the scope of the quality of disclosure from a target company that discloses all information. In other words, we will explain the results based on the importance of the information disclosed on the market. Indeed, financial, forecasting or non-financial information certainly has a larger value for investors than a general or relating to executive information. Thus, we will consolidate the information disclosed in two types: important information (combining Financial, forecasting and non-financial information), which can reflect the health and the situation of the company in question and information of average importance (it means general or relating to the management and shareholders information). In other words, we interpret the scope of the quality of disclosure for a company based on the degree of importance of the information disclosed. Specifically, we will identify characteristics of governance to improve the quality of disclosure for each type of information, but we will concentrate mainly on the information of high importance. Thus, we try to verify the existence of a convergence between the recommendations on corporate governance and the quality of disclosure. So, following this logic, a company that has a good system of governance, and which adopts recommendations for governance has to disclose Financial, forecast and nonfinancial information (i.e. of high importance). Then, we use a decision tree model to analyze the profile of companies groups in terms of corporate governance. In other words, we will try to build a decision tree to understand the characteristics of a particular firm regardless of its level of disclosure. More specifically, and all being equal, we will try to establish a decision rule, which allows to any firm to know its level of disclosure using corporate governance strategy adopted by the latter.

The reminder of this paper is organized as follows. The second section presents the information disclosure in the Tunisian context. Section three provides a description of the sample, variables measurement and empirical model and results. Section four presents results. The last section is reserved to the conclusion.

2. Information Disclosure in the Tunisian Context

Transparency and disclosure have gained increased importance by many researchers, which attribute the problem to great weakness in corporate governance and this was considered a contributing factor to broader systematic problems in emerging markets (standard & Poor's, 2008). Previous research has been made mainly in the USA where investors are relatively highly protected. Tunisian context is worth to study because it presents much specificity.

The aim of this paper is to identify the correspondence between the quality of disclosure and characteristics of corporate governance of Tunisian listed firms, in order to establish taxonomy of Tunisian listed firms according to their disclosure quality level and corporate governance features.

In the Tunisian context several laws define and regulate the mandatory information, in order to provide to all investors transparency and an equal level of information. These regulations are listed in several legal sources which are:

- The companies accounting system;

- The commercial companies' code;

- Act No. 1994 - 117 of November 14th, 1994;

- Order of Chartered Accountants of Tunis;

- Law n ° 2005-96 of October 18th, 2005.

The Accounting System: The accounting system defined the set of principles and rules used to the establishment and presentation of the accounting documents. It aims to reduce the uncertainty of its users as well regarding the knowledge of the past than predicting the future. According to the accounting Act, each company must prepare and submit financial statements no later than three months following the closing date of the fiscal year. The financial statements are formed by a whole structure whose elements (balance, the result State, the State of cash flows and the notes to the financial statements) are inter-related.

The Commercial Companies' Code: It includes a set of laws and obligations, to comply with financial information. Indeed, according to article 128 of the code of commercial companies (CCC), the Annual Ordinary General Assembly must be held within three months from the closing of exercise and twenty days at least before the General Assembly which is the approval management accounts. In addition, under article 201 of the CCC Board of Directors must establish, at the close of each fiscal year, under his responsibility the financial statements of the company in accordance with the accounting system of the companies act.

Act No. 1994 - 117 of November 14th, 1994 Relating To The Reorganization Of The Financial Market: It presents in the title I the different procedures for information and publications required by the regulations in force in the Tunisian Stock Market. Indeed, according to this law, each undertaking using public savings has to put at the disposal of the Board of the Financial Market (BFM) and the Stock Exchange Securities of Tunis (SEST) a number of documents no later than 4 business days after the holding of the general meeting. In addition, it must publish a prospectus for the information of the public and its conditions of preparations. Moreover, companies admitted to the side of the stock exchange are required to provide to the BFM and the SEST an interim States established under the responsibility of the Board of Directors no later than one month after the end of each semester ran from the exercise.

The order of accounting experts in Tunisia sets the statements as being "accounting documents established, in principle, each year and usually are the subject of communication to three parts (shareholders, bankers and tax administrators).

Law n ° 2005-96 of October 18th, 2005 on strengthening the security of financial relations includes provisions for strengthening the transparency of financial transactions, in compliance with the rules of financial disclosure for all forms of companies and given their size, their commitments and their activities. The distinction between the obligations borne by corporations for securing the information they disclose is no longer, now linked to the public call for savings only. This fundamental change is based essentially on the principle that financial transparency is a vital condition in transactions and an overarching principle between the company and its environment with all its components including shareholders, lenders, clients, suppliers and the listeners.

 ISSN 1927-033X

3. Materials and Methods

The main goal of our approach was to provide taxonomy of Tunisian listed firms basing on the relation between corporate governance features and disclosure quality.

3.1. Sample Selection

Data were collected on companies listed on the Tunisian stock exchange, using content analysis; the sample consisted of 46 Tunisian listed firms from 2001 to 2010.

3.2. Measurement of Corporate Governance Variables

Corporate governance is approached by a set of variables related to the ownership structure, board of directors and audit committees. The Table 1 bellow summarizes definition and measurement of the different variables of corporate governance used in this study:

Table 1. Definitions and Measurements of corporate governance variables

Variables		Variables Definitions and Measurements
Board of directors	TAILCO	*The board size*: number of directors in the board
	ADMEXT	*The Percentage of outsiders in the board*: number of outsiders/ total number of directors in the board
	DUAL	*Duality*: A binary variable equal to 1 if the manager is member in the board and 0 if not.
	MANDAD	*Director mandatory*: number of years as a member of the board of directors
	MANDMA	*Manager mandatory*: number of years as a member of the board of directors.
	ROPDG	*CEO turnover* A binary variable equal to 1 if the manager is was replaced and 0 if not.
Ownership structure	FAM	*Family ownership* : percentage of ownership held by family
	CONCP	*Ownership Concentration :* percentage of ownership held by majority shareholders (more than 5%)
	ETAPR	*State Ownership*: percentage of ownership held by the State
	INSTPR	*Institutional ownership* : percentage of ownership held by institutional
	ADMPR	*Directors ownership* : percentage of ownership held by directors
	PMDG	*Managerial ownership* : percentage of ownership held by managers
Audit committee	CADT	*Existence of an audit committee* : A binary variable equal to 1 if the there is an audit committee and 0 if not
	BIG4	A binary variable equal to 1 if the audit committee is a Big4 one and 0 if not

3.3. Disclosure Index Construction

The study uses 42 attributes or items in all to measure extent of disclosure in Tunisia. This attributes have been compiled by Botosan (1997).and used by many previous studies on disclosure. Using an objective methodology, annual reports are analyzed for common disclosure items grouped into five sub-categories (S-C):

S-C 1 - General information on the company;

S-C 2 - Information on the direction and shareholders;

S-C 3 - Non Financial information;

S-C 4 - Forecasting information;

S-C 5 - Financial Information.

The Table 2 gives an example of items relative to the first sub-category, Items relative to the General information on the company:

Table 2 . Example of items relative to the Sub-category 1 of the Evaluation Grid

Items	**S-C (1) : General Information on the company**	Situation	Evolution	Comments	Graphics
Item1	Historic and presentation of the company (legal form, capital, creation date, organization chart,…)				
Item2	Presentation of the company objectives				
Item3	Presentation of the general strategy of the company				NO
Item4	Presentation of the economic environment of the company sector and its impact				
Item5	Actions taken by the company to achieve its objectives				NO
Item6	Description of the main features associated with the company market				NO
Item7	Data on the company information system		NO		NO

- *Situation* : that is to say, presenting basic information without any details (amount, values).
- *Comments* : presentation of information, explanation and analysis by management.
- *Graphics :* in cases where the item would be presented as a histogram or other graph.
- *Evolution* : presentation of the evolution of the item on a period > or = 3 years.

For each sub-category and for each company, a disclosure score is developed from a binary evaluation of the number of items present in their annual reports: if a company discloses a particular attribute, a score of 1 is awarded and if not a score of 0 is awarded. A similar approach has been adopted by previous studies on disclosure and corporate governance such as Pateonel and al., (2002) and Tsamenyi and al. (2007).

The second step consists on locating the position of each company relative to a target one (a company which is considered as a reference).Thus, we proceed by insertion of an additional observation: a fictitious company (for reference) that discloses all information and which will be used as a reference for the companies of the sample. Indeed, as shown in table 2, each item is evaluated according to four criteria (situation, graphics, comments and variation), the use of Non Linear Principle Components Analysis (NLPCA) is an important step, which allows to identify, for each item, a combination of factors built on the basis of correlations between the different criteria of each item.

The application of the NLPCA to the different items of each sub-category allows identifying, for each company (the companies of the sample and the reference company) its co-ordinates from the different axes identified for each item as below:

 ISSN 1927-033X

$$f_i \begin{pmatrix} x_1^1 \\ x_2^1 \\ x_1^2 \\ x_2^2 \\ \cdot \\ \cdot \\ \cdot \\ \cdot\cdot \\ \cdot \\ x_1^k \\ x_2^k \end{pmatrix} \qquad f_R \begin{pmatrix} y_1^1 \\ y_2^1 \\ y_1^2 \\ y_2^2 \\ \cdot \\ \cdot \\ \cdot \\ \cdot\cdot \\ \cdot \\ y_1^k \\ y_2^k \end{pmatrix}$$

Where;
k is the number of items of the evaluation grid
fi represents coordinates of the company i on different axes, i = 1,..., 46;
fR represents coordinates of the reference company on the various axes.
x_1^k and x_2^k represent coordinates of each firm relating to the item k, k = 1,…..,42;
y_1^k et y_2^k represent coordinates of the reference company relating to the item k.

The Table 3 below presents results of the NLPCA applied to the first three items of the first sub-category:

Table 3 . Results of the NLPCA applied to the first sub category

Items	**S-C (1) : General Information on the company**	**axes**	
		X_1	***X_2***
Item1	Historic and presentation of the company (situation)		0.641
	Historic and presentation of the company (evolution)	0.776	
	Historic and presentation of the company (comments)	0.449	
	Historic and presentation of the company (graphic)		0.658
Proper values		*1.864*	*1.106*
% of the variances explained by the factor		*46.597*	*27.644*
Total variance		*74.242*	
Item2	Presentation of the company objectives (situation)	0.774	
	Presentation of the company objectives (evolution)		0.673
	Presentation of the company objectives (comments)	0.769	
	Presentation of the company objectives (graphic)		0.699
Proper values		*1.692*	*1.338*
% of variances explained by the factor		*42.294*	*33.459*
Total variance		*75.753*	
Item3	Presentation of the general strategy of the company (situation)	0.924	
	Presentation of the general strategy of the company (evolution)		0.992
	Presentation of the general strategy of the company (comments)	0.918	
Proper values		*1.713*	*0.997*
% of variances explained by the factor		*57.087*	*33.221*
Total variance		*90.308*	

The next step consists on computing a disclosure index for each sub-category of the grid. So, for each sub-category, the extent of the disclosure of the firm i is measured by the Euclidean, distance which is the root of the sum of the squares of the differences of the coordinates of the firm in question and the firm of reference. Indeed, the objective here is to describe the proximities between the sample companies and the reference company, which discloses all information and which is considered as a referential for disclosure: more the distance that separates the company i of the company of reference is high and more the company is qualified as a company which has a bad policy of disclosure policy. The formula for calculating these distances is then as follows:

$$\text{dis}\tan\text{cej}(f_i\ ,f_R)=[\sum_{k=1}^{7}(y_1^k-x_1^k)^2+(y_2^k-x_2^k)^2]^{1/2}$$

Where j is the number of distance calculated; j = 1, 2.,..5

This work has allowed to calculate, for each company, five distances or indexes measuring the extent of the disclosure quality:

- An index that reflects the quality of disclosure on general information noted *Index1*;
- An index that reflects the quality of disclosure information about direction and shareholders noted *Index2*;
- An index that reflects the quality of disclosure about non-financial information noted *Index3*;
- An index that reflects the quality of disclosure about forecast information noted *Index4*;
- An index which reflects the quality of disclosure about financial information noted *Index5;*

Results of indexes computation are given by the table 4 below:

Table 4. Distribution of disclosure indexes

	Index 1	**Index 2**	**Index 3**	**Index 4**	**Index 5**
Minimum	3.35	3.9	5.7	2.68	3.07
Maximum	4.43	4.71	6.6	3.67	4.28
Mean	4.07	4.21	6.28	3.20	3.81
Standard deviation	0.23	0.21	0.19	0.26	0.28

4. Results and Discussion

In this part, we'll try to establish connections between scores of information disclosure and governance characteristics of Tunisian listed firms. In other words, the object is to divide firms of the sample into subgroups according to values of the variables of governance which, at each stage, discriminates the best variable to model, i.e. the quality of disclosure. To do this, we will use a decision tree model to analyze the profile of groups of companies in terms of corporate governance characteristics, allowing to improve the disclosure quality.

In this step, for each type of information disclosed, we started by dividing the companies of the sample based on the distribution of scores of disclosure obtained. This operation conduct to three classes reflecting the extent of the disclosure quality (good, average, bad). The class characterized by a high quality of disclosure is composed by companies with the lowest scores (i.e. less than 33rd percentile). The class characterized by a an average quality of disclosure is composed by firms with scores between the 33rd percentile and the 66th percentile. Class characterized by poor quality of disclosure is composed by companies with the highest scores (i.e. higher than 66th percentile). The classification of firms following scores of information disclosure led therefore to a structure formed of three classes for all types of disclosed information except for non-financial information. For this type of information we have considered two classes: the class composed by firms with scores lower than the median is considered as the class of good disclosure quality. However, the class of the firms with scores higher than the median is considered as the class of poor disclosure quality (see the Appendix A).

The next step consists to build a decision tree for each type of information disclosed to identify the characteristics of corporate governance leading to the good quality of disclosure.

Having constructed the decision trees, we will extract, from each tree, the leaves with the highest percentage of observations with the quality of disclosure as shown in Appendixes B, C, D, E and F. Then, for every sheet we will determine its corporate governance characteristics.

4.1. Decision Trees: disclosure quality explained by corporate governance features

The decisions trees obtained show that the sector variable is the best independent variable of the quality of disclosure for all types of disclosed information: For the companies of the financial sector, the variable that allows better discrimination for the general information and on management and shareholders is the existence or not of an audit committee in the companies (see Appendixes B and C).

If companies have an audit committee, the ownership concentration is the following independent variable. Where this percentage is low, the model includes a different additional independent variable for each type of information: the percentage held by families for information on management and shareholders and the percentage held by administrators for the general information. However, if this percentage is high, the duality is the discrimination variable for the quality of disclosure of information on the direction. However, for firms belonging to the non-financial sector, independent variables are completely different. For general information, the best variable is the percentage held by institutional. For companies where the presence of institutional is not significant, the variable that provides the best discrimination is the size of the Board of Directors. Similarly, if the size is not important, the percentage held by families remains the best following independent variable. For information relative to the board of directors, the best variable is the State ownership. if this part is high, the family ownership is the following independent variable, followed by the existence of a big 4 audit committee in the firm.

For companies of the financial sector, the concentration of ownership is the independent variable which allows better discrimination on financial and non-financial information (see Appendixes D and F). Where this percentage is high, another independent variable will be included: the institutional property. Finally, if the latter is low, the following variable is the property of administrators. However, for the non-financial sector companies, the variables of discrimination are totally different. Indeed, for the non-financial information, the most important variable is the percentage of outside directors in the Board of Directors, followed by the share held by the families. For financial information, the best independent variables are the percentage held by families and the concentration of ownership. If the latter is high, the model includes an additional variable which is the size of the Council. Where the size is small, the following variable is the use of one of the large audit firms.

The last type is the forecast information. Corporate Governance variables that explain the good qualities of disclosure of such information are totally different (see Appendix E).

Indeed, for companies of the financial sector, the best variable which allows better discrimination is the percentage of outsiders in the board of directors followed by the size of the Board of Directors. However, for companies belonging to the non-financial sector, the best independent variable is the size of the board followed by concentration of ownership. If the latter is high, the managerial ownership is the following variable; otherwise it is the percentage of outsiders in the board of directors. Finally, if the managerial ownership is low the pattern includes another variable that is the percentage of outside directors in the Council.

4.2. Taxonomy of Tunisian listed firms

As shown above Structures provided by the decision trees provide ways to build groups to identify optimal combinations of characteristics of corporate governance to achieve good quality of disclosure. Indeed, the use of this method is justified by the fact that firms differ, and each company has its specificities. Thus, we cannot talk about an optimal corporate governance structure for all firms and even for those belonging to the same activity sector.

In what follows, we will try to make sense of the different results depending on the type of information disclosed. Indeed, we were able to get 23 groups where the contribution of corporate governance characteristics in the improvement of the quality of disclosure differs. Distribution and combinations of the corporate governance characteristics of each group are given by the Table 5 below:

S C 1 - General Information. Groups 1, 2 and 3 include companies of the financial sector. G1 is the group with a low ownership concentration but with no audit committee. This result is explained by the fact that in firms with dispersed ownership interest conflicts are more important than in firms with concentrated ownership. In addition, these companies have no way of internal control, to reduce these conflicts and to ensure that their interests are optimized, some shareholders require leaders to disclose more information. Therefore, the disclosure of information is likely to be more intensive in this type of firms. Indeed, disclosure can go up to present the information of medium importance to investors. G2 and G3 are characterized by the existence of an audit committee but different levels of concentration. For the Group 3 with a low concentration of ownership, to the share held by administrators has not to be important

In fact, where the ownership is concentrated, the quality of disclosure is more complicated. Conflicts of interest are no longer between managers and shareholders but between the majority shareholders and minority shareholders (Ho and Wong, 2001). In such situations, leaders are encouraged to behave against the interests of the minority in retaining information on the firm. Similarly, Archambault and Archambault (2003) have advanced that investors are regarded as the main beneficiaries of the strategy of information disclosure. However, investors who hold a high percentage of the shares that constitute the capital of the company have the advantage of information directly from the company. Therefore the need for disclosure may decrease, where the existence of a Committee at the breast of this type of firms remains necessary to resolve such problems. The characteristics of Group 2 show that in companies with a strong concentration of ownership, an audit committee allows to achieve a good quality of information disclosure. However, since major carriers get the information directly from the company, the type of information disclosed is not of considerable importance. Group 3 is distinguished from other groups by an additional characteristic which is a small proportion owned by administrators. In fact, due to the concentration of property conflicts can be resolved by the existence of an audit committee, but if administrators property is high, the latter being closest to the company, can reduce the information disclosed to investors, so for this group administrators ownership is low.

Table 5. Taxonomy of Tunisian Listed Firms according to the corporate governance features and disclosure quality

Nature of the information disclosed	Groups	Corporate governance features
S-C 1 – Good disclosure quality of General information on the company	Group 1	Financial sector, no audit committee, low ownership concentration.
	Group 2	Financial sector, existence of an audit committee, high ownership concentration
	Group 3	Financial sector, existence of an audit committee, low ownership concentration, low directors ownership.
	Group 4	Non-financial sector, low institutional ownership, big size of board of directors
	Group 5	Non-financial sector, low institutional ownership, small size of board of directors, average family property
	Group 6	Non-financial sector, high institutional property.
S-C 2 – Good disclosure quality of Information on the direction and shareholders	Group 1	Financial sector, no audit committee, audit committee belong to a big4
	Group 2	Financial sector, existence of an audit committee, low ownership concentration, high family property.
	Group 3	Financial sector, existence of an audit committee, high ownership concentration, duality.
	Group 4	Non-financial sector, high state property, high family property, high institutional property, audit committee is not a big4
	Group 5	Non-financial sector, high state property, low family property.
S-C 3 – Good disclosure quality of Non Financial information	Group1	Financial sector, low ownership concentration.
	Group 2	Financial sector, high concentration, low institutional property, low property of directors.
	Group 3	Financial sector, high concentration, high institutional property
	Group 4	Non-financial sector, low percentage of outsiders in the board, high family property,
	Group 5	Non-financial sector, an average percentage of outsiders in the board, low family property
S-C 4 – Good disclosure quality of Forecasting information	Group 1	Financial sector, high percentage of outsiders in the board, small size of the board.
	Group 2	Non-financial sector, big size of the board, high concentration, low managerial property, low percentage of outsiders in the board.
	Group 3	Non-financial sector, big size of the board, high ownership concentration, high managerial property.
	Group 4	Non-financial sector, big size of the board, low ownership concentration, low percentage of outsiders in the board.
S-C 5 – Good disclosure quality of Financial Information	Group 1	Financial sector, low concentration
	Group 2	Non-financial sector, low family property, high concentration, small size of the board, audit committee is a big4.
	Group 3	Non-financial sector, low family property, high concentration, .

Groups 4, 5 and 6 are composed by firms belonging to the non-financial sector. G6 is characterized by a high institutional property. This result can be explained by the fact that the institutional have become key players in governance structures, they may therefore compel the leaders to perform frequent disclosures. (Elgazzar, 1998 and Bushe and Noah, 2001). Also, institutional investors are considered as the most demanding of a regular and timely published financial information. However, where this share is low (G4 and G5), other characteristics of governance are involved. G4 is characterized by a large size of the Board of Directors. This is explained by the fact that the presence of administrators in the Council is likely to control the actions of the leaders in the institutional property is low, and encourage him to disclose more. In fact, some authors assume that the size is small increase more chances of manipulation on the part of the leaders; however a large Council may have more expertise and managerial opportunism. However, a Council of small size can be effective in cases where a part of the property of the company is owned by families. These are generally reluctant in their communication of information and consider the company as a family business, where outsiders have no right to access to information. In this case, over the Board of Directors is of reduced size more effective will be the control of managerial expediency and thus companies will be more encouraged to announce more information (Chen and Jaggi, 2000 and Mak and Li, 2001) (*see Figure 1).*

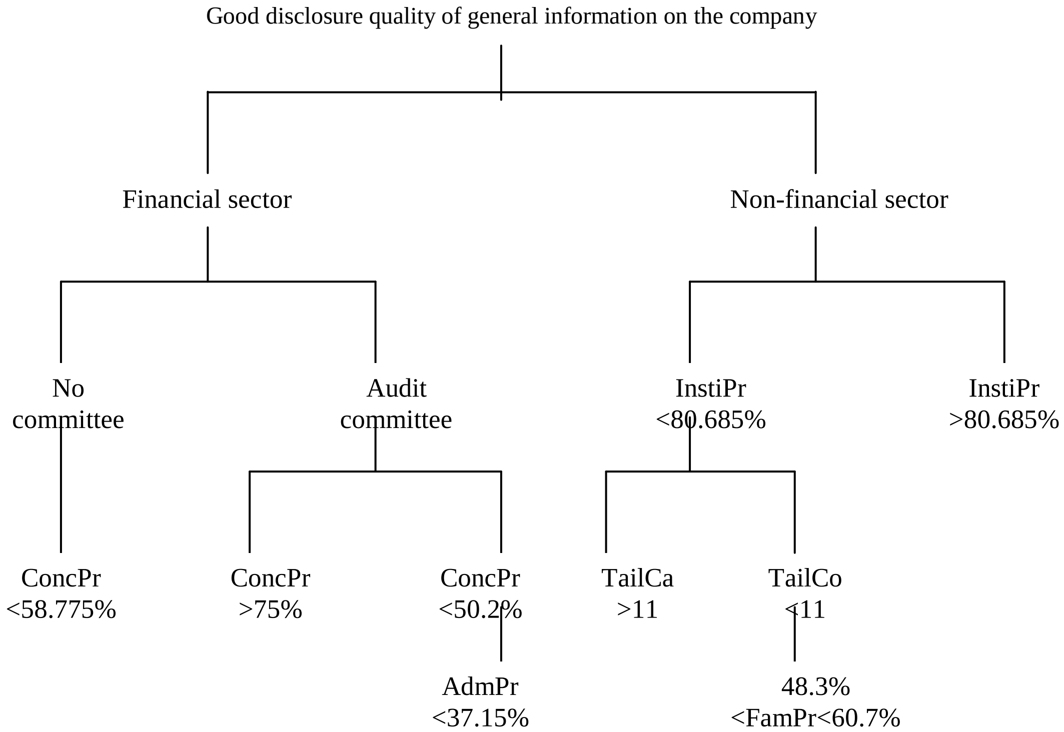

Figure 1 – Firms Taxonomy According to Governance and Good Disclosure Quality of General Information on The Company

S C 2 - Information on The Direction And Shareholders. Groups 1, 2 and 3 includes financial firms. G1 is the group composed by firms that does not have internal audit committee, and so to limit the opportunistic behavior of their managers, companies in this group tend to have a big 4 external audit committee. They are more likely to encourage leaders to disclose as much information to protect their reputation. G2 and G3 are characterized by the existence of an audit committee. However, G2 has a low concentration and incorporates another governance characteristic that is a significant presence of families. Such situation is characterized by a significant presence of families led to a reluctance to disclose information outsiders. Thus, the existence of a committee within the company and a low concentration of ownership may be a good way of reducing information asymmetry between insiders and outsiders, especially because the information disclosed has not a considerable importance for investors. G3 is characterized by a high concentration of ownership and combine the functions of management and control. Because the information is not of high importance in a situation where both roles of CEO and Chairman of directors Board may harm the independence of the board and increase conflicts of agency within the business and therefore the quality of the information disclosed is no longer credible (Gul and Leung, 2004) and where the high concentration of ownership is likely to create conflicts between majority and minority shareholders, the existence of an audit committee can be a good incentive to disclose information about the management and shareholders.

Groups 4 and 5 include non-financial companies. G4 is characterized by a high family ownership which is likely to limit the information disclosed. However, this problem is solved by the intervention of the State and institutional who hold a significant part of the property and the use of large firms audit. In addition, companies that form the group 5 have a small family-owned and high state-owned, which is already justified by previous studies (*see Figure 2).*

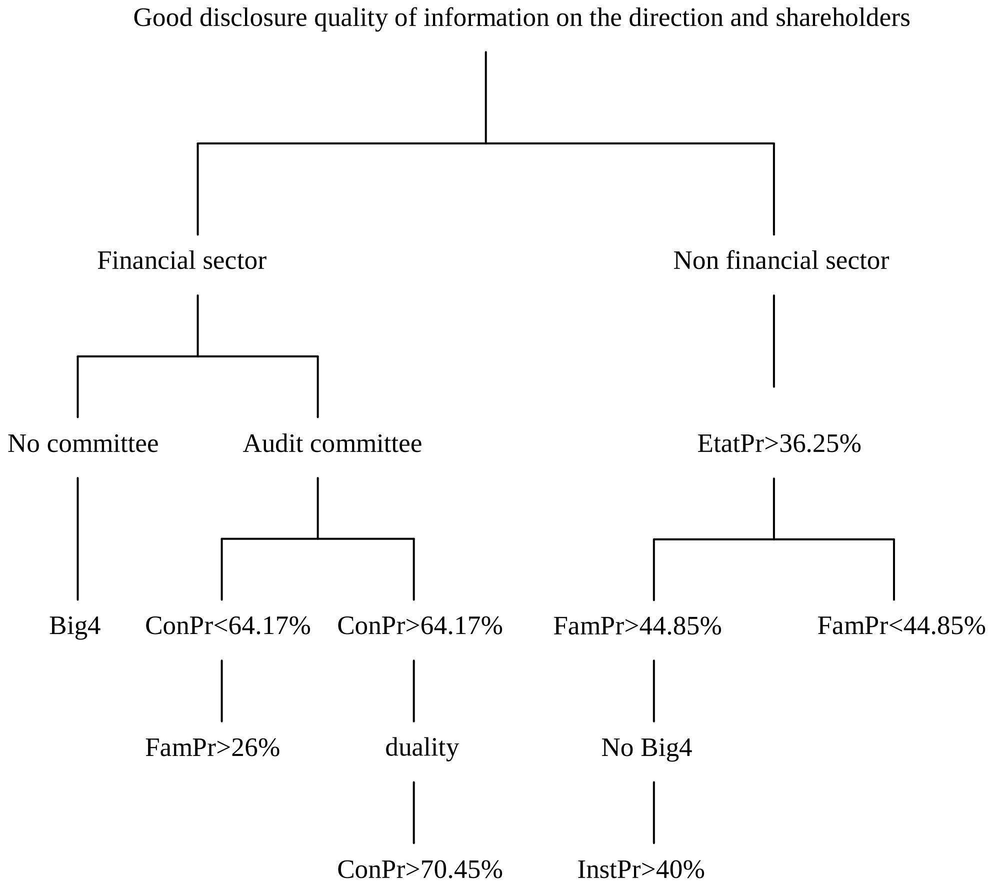

Figure 2. Firms Taxonomy According to Governance and Good Disclosure Quality of Information on The Direction and Shareholders

S C 3-Non Financial Information. Firms of groups 1, 2 and 3 belong to the financial sector. G1 has a single characteristic of governance which is likely to improve the quality of disclosure of non-financial information: a low concentration of ownership, which is justified by the literature. The two groups 2 and 3 are characterized by a high concentration of ownership. Problems of interest between majority and minority shareholders related to this concentration are accompanied in group 3 with a strong institutional presence which is likely to enhance the disclosure of non-financial information. Group 4 differs from Group 3 by a low institutional and administrators. In groups 4 and 5 we find are the non-financial firms. The attributes of these two groups are similar, but the level of family ownership and the number of outside directors in the board are different. Group 4 is characterized by a low number of outside directors, but a high family ownership, while Group 5 is composed of firms whose board is formed by a percentage of external medium and low family ownership *(see Figure 3).*

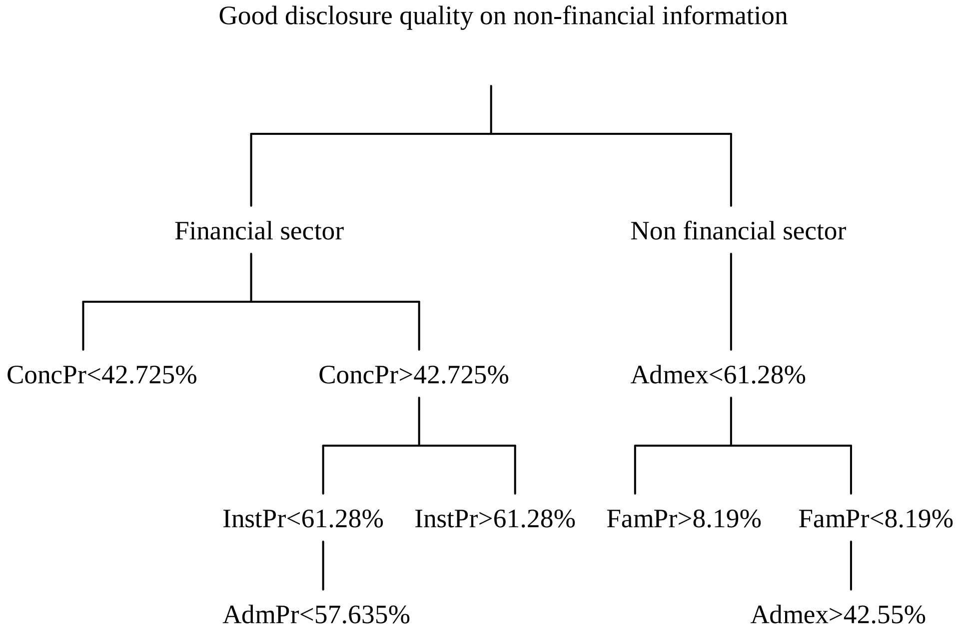

Figure 3 – Firms Taxonomy According to Governance and Good Disclosure Quality of Non-Financial Information

***S C 4 - Forecasting Information*.** Group 1 is formed by companies in the financial sector. Characteristics of corporate governance tend to improve the quality of disclosure looking for this type of business are related only to the composition of the board of administration. In fact, this group is characterized by a small board dominated by outside. This result was suggested by Jensen (1993), who stated that a board filled effectively its supervisory board is composed mainly by small external directors. According to the agency theory in the presence of external counseling helps reduce agency problems, and subsequently, the information asymmetries due to their independence and objectivity.

Groups 2 and 3 have the same attributes for membership industry, board size and the degree of concentration of ownership. In fact, they are formed by the non-financial sector businesses with highly concentrated ownership and whose board of directors is composed of a large number of administrators. However, they differ in the percentage held by the manager. G3 is the group with high managerial ownership. This result can be explained by the fact that managerial ownership reduces agency problems and managerial opportunism arising from the separation of ownership and control. Therefore, owner-managers will no longer retain information and can improve the quality of disclosure. G2 is characterized by a low percentage of outside directors. This deficiency is corrected by a low managerial ownership. According to Gelb (2000) companies whose leaders hold a small proportion of capital better meet the informational needs of investors and those whose participation is important. In fact, when leaders do have a small percentage of equity, the increase in value due to good communication is the risk of loss of human capital tied to their employment and various benefits attached thereto.

The group is composed of four companies belonging to the non-financial sector, with a large board formed by a small number of outside directors. However, this group is characterized by a low concentration of ownership that is likely to improve the quality of disclosure (*see Figure 4).*

 ISSN 1927-033X

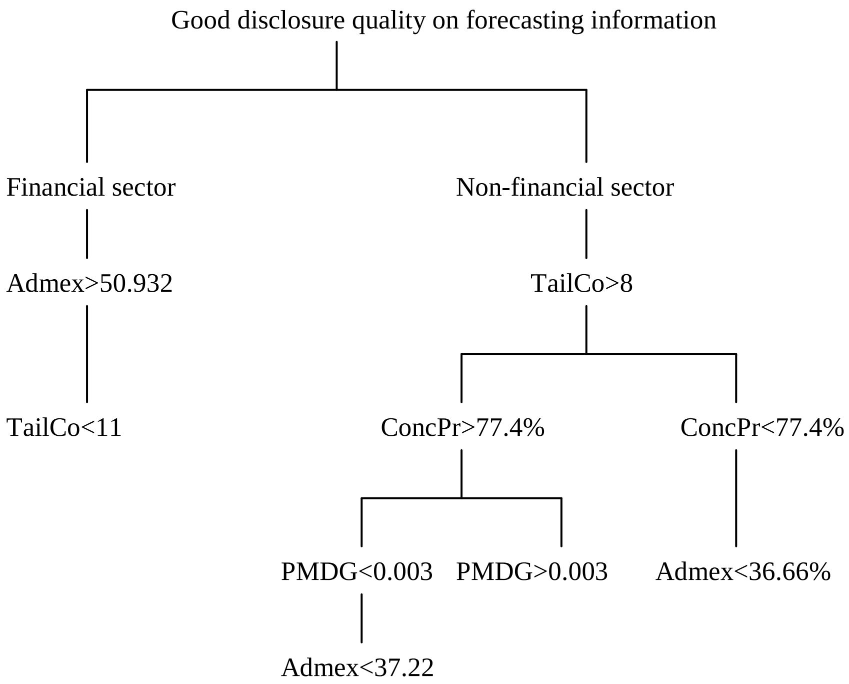

Figure 4 – Firms Taxonomy According to Governance and Good Disclosure Quality of The Forecasting Information

S C 5 - Financial Information. Group 1 consists of firms in the financial sector with a low concentration of ownership. This group has the same characteristics as the first group of companies with a good quality of disclosure of non-financial information. This result is partly explained in the literature that firms with a low concentration tend to have a more extensive disclosure. On the other hand, it shows that firms in the financial sector with a low concentration tend to insist on disclosure of non-financial and financial.

Groups 2 and 3 is that non-financial firms characterized by low family ownership and a high concentration of ownership. However, they are distinguished by the size of the board. For companies where the board has a reduced size, the use of a large audit firms is an important feature in improving the quality of disclosure of financial nature (*see Figure 5).*

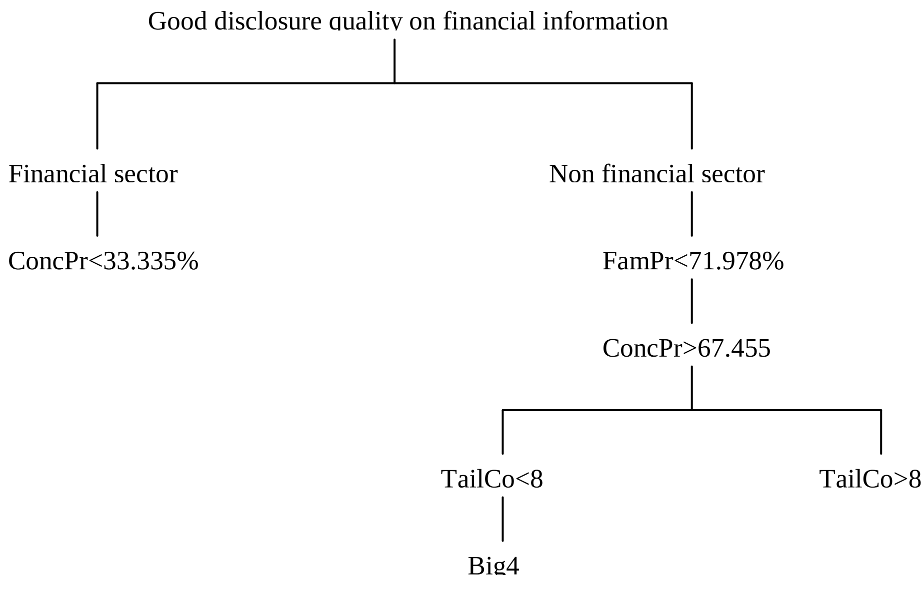

Figure 5 – Firms Taxonomy According to Governance and Good Disclosure Quality of The Financial Information

5. Conclusion

This study aims to use correspondence between corporate governance characteristics and disclosure quality in order to establish taxonomy of Tunisian listed firms using a new approach based on the Decision Tree Method, and to show that good quality of disclosure is related to a governance structure specific to each firm. To do this, we started by constructing an index allowing to assess the extent of the quality of disclosure in annual reports for Tunisian listed firms. Indeed, the disclosure quality is appreciated through the quantity and also through the nature (type) of information disclosed. This idea is explained by the fact that an overall score of disclosure may not reflect the actual strategy of disclosure of the company in question. A firm may have a good score of disclosure but the disclosed information is not important for investors. This work has enabled us to calculate, for each company, five indexes measuring the extent of the quality of disclosure by type of information disclosed

In the next step, we tried to relate scores of information disclosure to corporate governance characteristics of Tunisian listed firms. Tree diagrams obtained provide the means to know the characteristics of a particular firm regardless of its level of disclosure. They enable to identify corporate governance factors of its quality of disclosure for any types of information for each company, and in any date. More specifically and everything being equal, this tree makes a decision rule that allows the company to know its level of disclosure based on certain characteristics of the strategy of governance adopted by the latter. Add that we were able to identify several groups reflecting a difference in the structures of governance but whose objective is the same: improving the disclosure quality. These results show that the characteristics of corporate governance to achieve the high quality of disclosure are not unique for all businesses. Indeed, although there are governance standards that should be adopted by firms, they may not be respected all at once. In other words, a company can, for example, have a large board of directors (which is not recommended by most of the codes of best practices), but can have a good quality of disclosure. This shows the complementarities of governance characteristics: Governance is a brand, a set of practices that it is impossible to ungroup them. Therefore, it is more interested to treat these mechanisms together and to identify for each firm a corporate governance target structure, related to a good quality of disclosure. These structures are not necessarily all good practice recommendations, but converge towards the best combination. Indeed, in practice, there are companies that have a good quality of disclosure but that are not well-governed. However, we can estimate that by improving their system of governance their level of disclosure may be best. These results show, in a general way, a convergence towards the standards of corporate governance with a few exceptions that are not such as to call in question the corporate governance best practices, but to show the specificity of Tunisian listed firms and show the need for the adoption of a code for each context.

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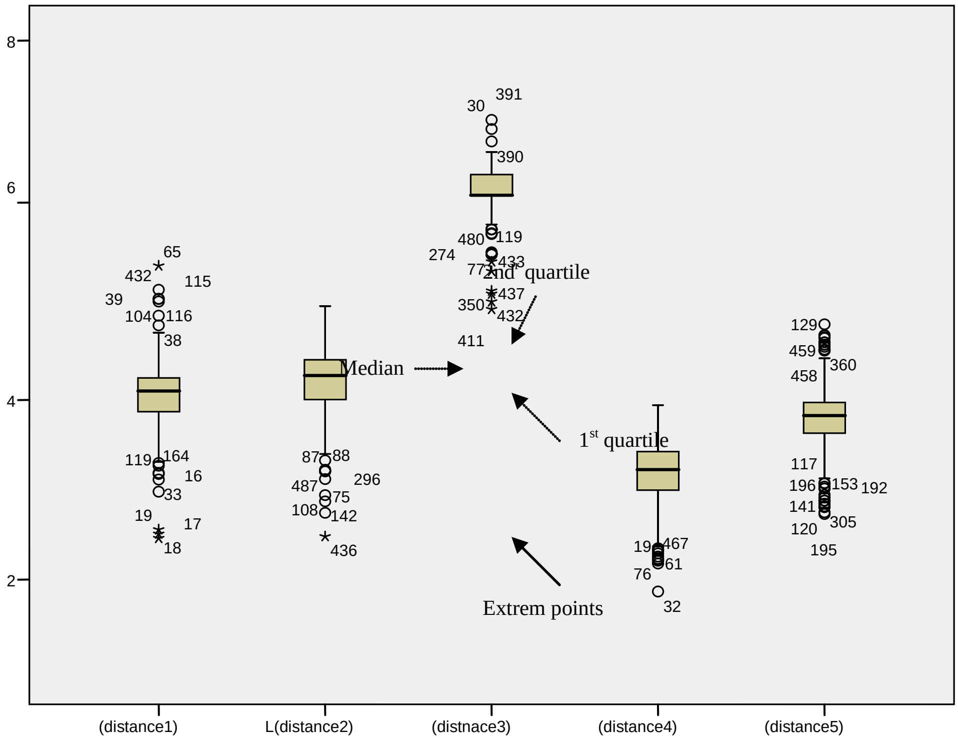
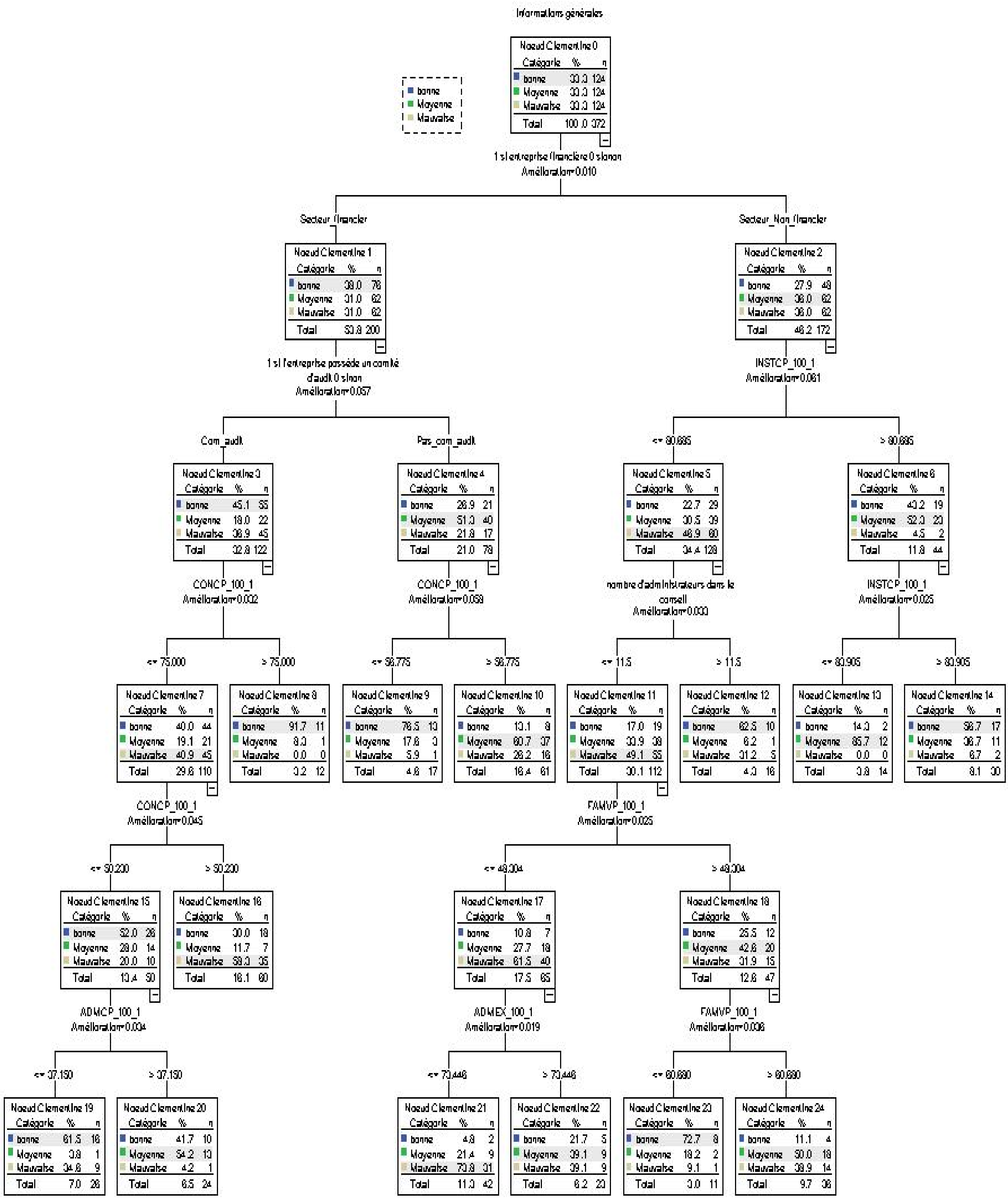
Appendix A - Distribution of the firms of the sample according to the disclosure scores

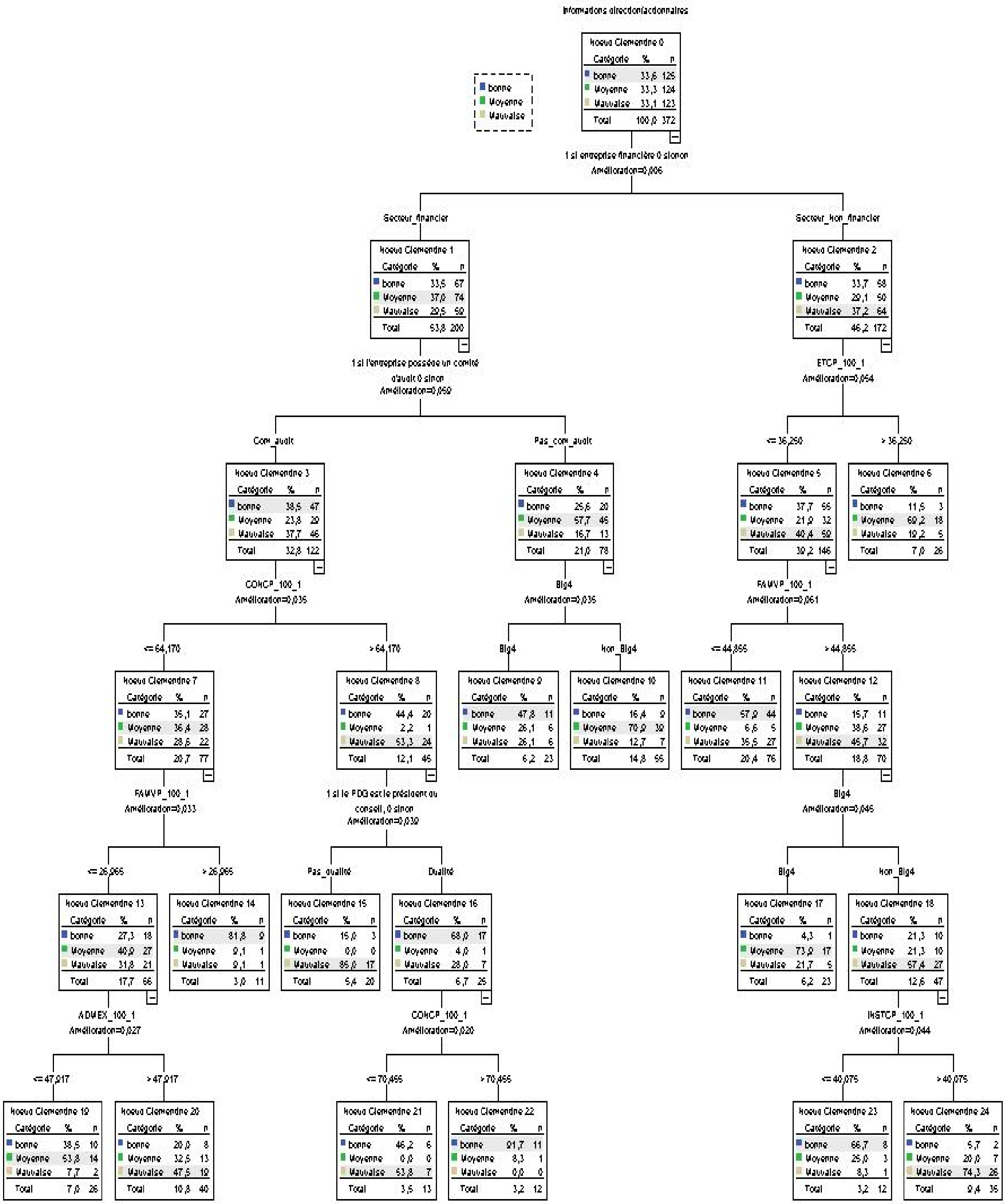


 ISSN 1927-033X

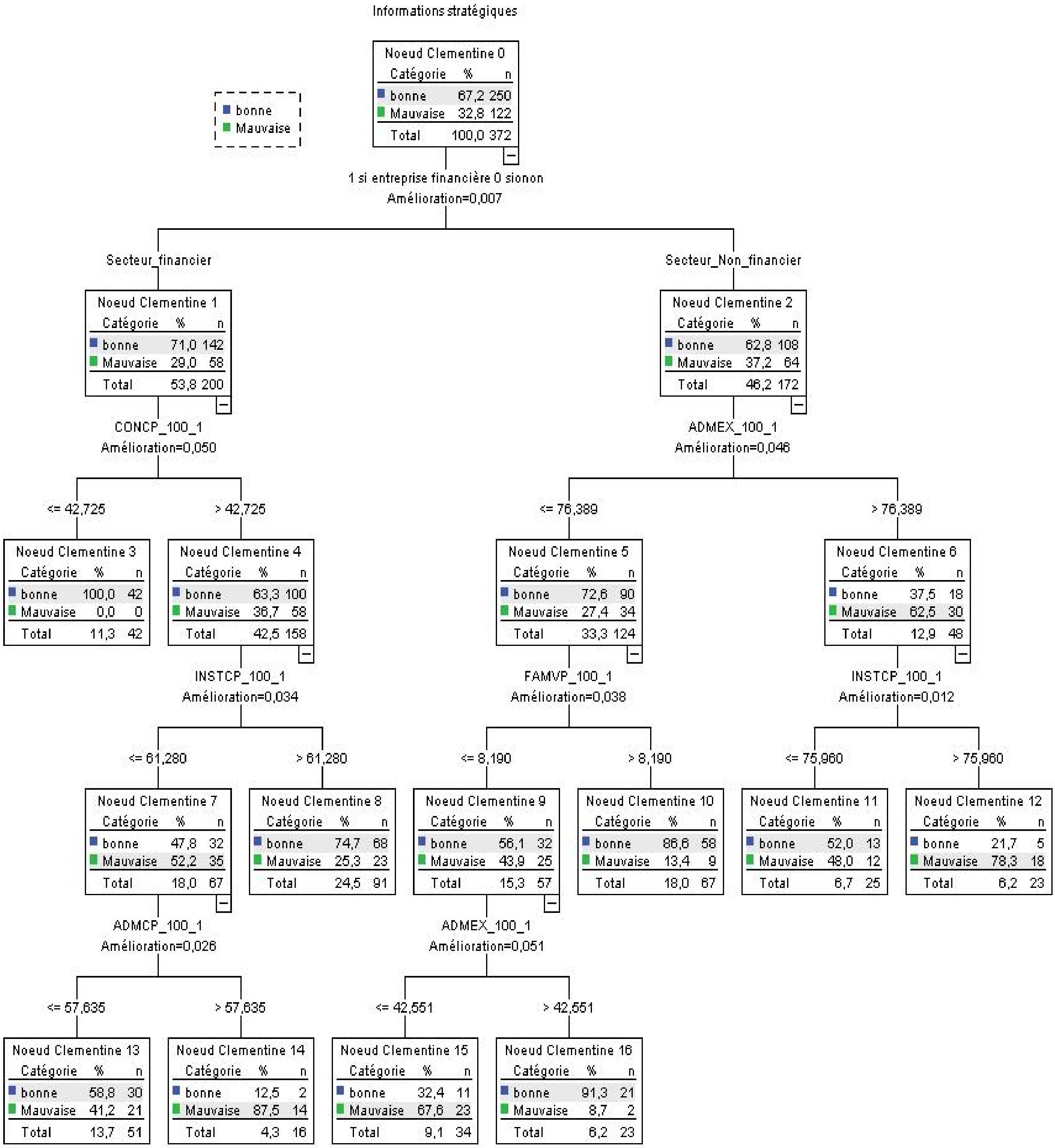
Appendix B. Decision tree: General Information on the company


Informations générales
bonne
Moyenne
Mauvaise
Noeud Clementine 0
Catégorie % n
bonne 33.3 124
Moyenne 33.3 124
Mauvaise 33.3 124
Total 100.0 372
1 si entreprise financière 0 sinon
Amélioration=0.010
Secteur_financier
Secteur_Non_financier
Noeud Clementine 1
Catégorie % n
bonne 38.0 76
Moyenne 31.0 62
Mauvaise 31.0 62
Total 53.8 200
Noeud Clementine 2
Catégorie % n
bonne 27.9 48
Moyenne 36.0 62
Mauvaise 36.0 62
Total 46.2 172
1 si l'entreprise possède un comité d'audit 0 sinon
Amélioration=0.057
INSTCP_100_1
Amélioration=0.061
Com_audit
Pas_com_audit
<= 80.685
> 80.685
Noeud Clementine 3
Catégorie % n
bonne 45.1 55
Moyenne 18.0 22
Mauvaise 36.9 45
Total 32.8 122
Noeud Clementine 4
Catégorie % n
bonne 26.9 21
Moyenne 51.3 40
Mauvaise 21.8 17
Total 21.0 78
Noeud Clementine 5
Catégorie % n
bonne 22.7 29
Moyenne 30.5 39
Mauvaise 46.9 60
Total 34.4 128
Noeud Clementine 6
Catégorie % n
bonne 43.2 19
Moyenne 52.3 23
Mauvaise 4.5 2
Total 11.8 44
CONCP_100_1
Amélioration=0.032
CONCP_100_1
Amélioration=0.058
nombre d'administrateurs dans le conseil
Amélioration=0.030
INSTCP_100_1
Amélioration=0.025
<= 75.000
> 75.000
<= 56.775
> 56.775
<= 11.5
> 11.5
<= 80.905
> 80.905
Noeud Clementine 7
Catégorie % n
bonne 40.0 44
Moyenne 19.1 21
Mauvaise 40.9 45
Total 29.6 110
Noeud Clementine 8
Catégorie % n
bonne 91.7 11
Moyenne 8.3 1
Mauvaise 0.0 0
Total 3.2 12
Noeud Clementine 9
Catégorie % n
bonne 76.5 13
Moyenne 17.6 3
Mauvaise 5.9 1
Total 4.6 17
Noeud Clementine 10
Catégorie % n
bonne 13.1 8
Moyenne 60.7 37
Mauvaise 26.2 16
Total 16.4 61
Noeud Clementine 11
Catégorie % n
bonne 17.0 19
Moyenne 33.9 38
Mauvaise 49.1 55
Total 30.1 112
Noeud Clementine 12
Catégorie % n
bonne 62.5 10
Moyenne 6.2 1
Mauvaise 31.2 5
Total 4.3 16
Noeud Clementine 13
Catégorie % n
bonne 14.3 2
Moyenne 85.7 12
Mauvaise 0.0 0
Total 3.8 14
Noeud Clementine 14
Catégorie % n
bonne 56.7 17
Moyenne 36.7 11
Mauvaise 6.7 2
Total 8.1 30
CONCP_100_1
Amélioration=0.045
FAMVP_100_1
Amélioration=0.025
<= 50.200
> 50.200
<= 48.304
> 48.304
Noeud Clementine 15
Catégorie % n
bonne 52.0 26
Moyenne 28.0 14
Mauvaise 20.0 10
Total 13.4 50
Noeud Clementine 16
Catégorie % n
bonne 30.0 18
Moyenne 11.7 7
Mauvaise 58.3 35
Total 16.1 60
Noeud Clementine 17
Catégorie % n
bonne 10.8 7
Moyenne 27.7 18
Mauvaise 61.5 40
Total 17.5 65
Noeud Clementine 18
Catégorie % n
bonne 25.5 12
Moyenne 42.6 20
Mauvaise 31.9 15
Total 12.6 47
ADMCP_100_1
Amélioration=0.004
ADMEX_100_1
Amélioration=0.019
FAMVP_100_1
Amélioration=0.006
<= 37.150
> 37.150
<= 73.446
> 73.446
<= 60.690
> 60.690
Noeud Clementine 19
Catégorie % n
bonne 61.5 16
Moyenne 3.8 1
Mauvaise 34.6 9
Total 7.0 26
Noeud Clementine 20
Catégorie % n
bonne 41.7 10
Moyenne 54.2 13
Mauvaise 4.2 1
Total 6.5 24
Noeud Clementine 21
Catégorie % n
bonne 4.8 2
Moyenne 21.4 9
Mauvaise 73.8 31
Total 11.3 42
Noeud Clementine 22
Catégorie % n
bonne 21.7 5
Moyenne 39.1 9
Mauvaise 39.1 9
Total 6.2 23
Noeud Clementine 23
Catégorie % n
bonne 72.7 8
Moyenne 18.2 2
Mauvaise 9.1 1
Total 3.0 11
Noeud Clementine 24
Catégorie % n
bonne 11.1 4
Moyenne 50.0 18
Mauvaise 38.9 14
Total 9.7 36

Appendix C. Decision Tree: Information on the direction and shareholders

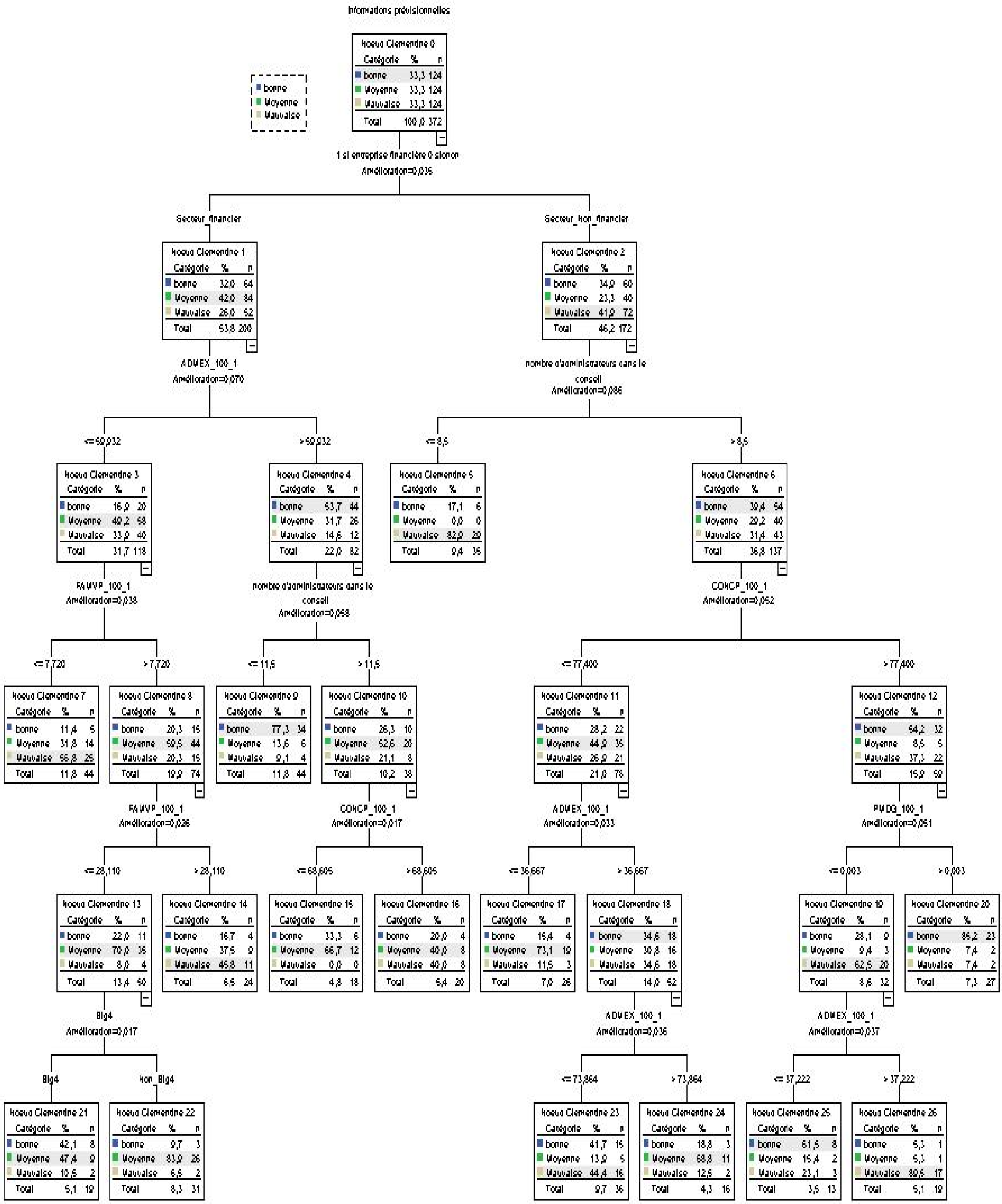


Appendix D. Figure IV – Decision Tree: Non Financial information



 ISSN 1927-033X

Appendix E . Decision Tree: Forecasting information



Appendix F . Decision Tree : Financial information