



Top Management Evaluation in Italian Food & Beverage Industry.

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Keywords: Quality Management System Certification; ISO 9001:2015 Implementation; Knowledge Management; Probability of Default; Leadership Styles.

1. Introduction

The Quality Management Certification System stems from the desire of companies to have an independent external body verify that the system of planning, control and organization of the overall production activity indicated in its quality documents conforms to the reference standards produced by the International Organization for Standardization (ISO).

The principles outlined by the ISO 9001: 2015 standard clearly indicate that the success of the Quality Management System is in essence strongly linked to the "quality of top management".

The strategic management process creates the organizational structure, operating conditions and motivation system that influence company results. However, given the materiality of top manager's leadership style, the certification of the quality system *should* cover this relevant topic. In our view, the ISO 9001 requirements appear to be too general and not directly focused on the analysis of the leadership styles (please see sections n.5 (*leadership*), n.8 (*operation*) and n.9 (*performance evaluation*) of the standard).

2. Aims and structure of the present work.

The aim of this work is to provide a methodological contribution to develop an evaluation model of top management quality to be used for the certification of the quality system. The applied research is focused on the Italian Food & Beverage Industry. There is a material research gap on this topic and the aim of our proposed evaluation model is intended to support both (i) the ISO quality management system certifiers and (ii) financial analysts and auditors in order to assess the going concern and the business sustainability. This is the first study exploring the relationship between leadership styles, business performance and credit risk/survival probability in the food and beverage industry.

The research design is discussed in section 3 and the literature follows is presented in section 4.

Section 5 is devoted to the illustration of the proposed evaluation model. This model is based on the combination of quantitative approach (section 5.1) and a qualitative approach (section 5.2). The quantitative part of the model estimates the probability of default and the average expected life of a company. The quantitative outcome is grouped in 10 risk classes, ranging from 1 (high risk) to 10 (minimum risk)

The qualitative part of the model (section 5.2) is based on the analysis of seven key parameters in order to assess the leadership style. Each of the seven variable is evaluated with a scoring ranging from 1 (least effective style) to 10 (most effective style).

The combined approach is presented in section 5.3 and it provides an integrated framework (quantitative and qualitative) to evaluate the Quality of the Management System in the Italian Food

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3 & Beverage Industry and its effectiveness in financial performance and credit risk. The outcome is a
4 relevant information in lending decisions, both in the banking channel and in private debt
5 alternative channel.
6

7 The final outcome divides the companies in the Italian Food&Beverage Industry in four clusters: (1)
8 Best quality of management; (2) Worst quality of management; (3) Fallen angel candidate; (4) Rising
9 star candidate.
10

11 Section 6 summarizes the results of the research and indicates the limits of this study and
12 suggestions for future research.
13
14
15

16 **3. Research approach**

17
18 The methodology used in the research is both quantitative and qualitative and it is based on the
19 analysis of a selected and inter-disciplinary literature belongs to various fields of applied research.
20 We have followed the Sequential Mixed Methods Design (Creswell & Plano Clark, 2007; Almalki,
21 2016) belonging to a practice perspective (Tashakkori and Creswell 2007). Our goal is to present a
22 better understanding of the business system and the related effectiveness of the leadership style.
23

24 Regarding ISO quality certification, it seemed that according to the standard it is sufficient to involve
25 the top management, with a strong commitment, in the organizational process, without analyzing
26 its leadership style. In our opinion, this is something the *must* be considered in order to assess the
27 quality of the management. A second methodological improvement is to assess the level of the
28 survival probability of the companies (ie: 100% less the probability of default) and to have a clear
29 understanding of the relationship between the leadership style and the company's survival
30 probability.
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32

33 In a nutshell, according to the prevailing literature there is a positive correlation between
34 participating styles of leadership and the success of the companies in the medium term; while there
35 is a positive correlation between authoritative styles of leadership and poor financial performance
36 in the medium term. However, there is no published applied research having the aim to explore the
37 link between the leadership styles and the credit risk, and there is no publishes applied research on
38 the abovementioned link in the food and beverage industry.
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40

41 The proposed evaluation model is based on a quantitative approach and on a qualitative approach.

42
43 Regarding the measurement of the probability of default and the associated company expected life
44 (section 5.1), we applied the current state-of-the-art standards in the development of a private
45 credit model for the Italian Food&Beverage Industry. A brief description of the applied research
46 evolution in the last decades can support our proposition.
47

48 Since the 1990s, the development of the "actuarial models" based on the study of historical default
49 frequencies in a sample of companies under observation has speed up the assessment of the credit
50 risk in the SME lending market.
51

52 In relation to the quantitative part of the proposed evaluation model, we have analyzed 3,175 Italian
53 companies belonging to the Food & Beverage Industry from 2005 up to 2015. A Logit model has
54 been developed and in section 5.1.1 univariate and multi-variate accuracy ratio are presented and
55 discussed.
56
57

58 The qualitative component of the proposed evaluation model (section 5.2) come from the results
59 of various organizational applied researches. We have defined a range of leadership styles with two
60 well-defined leadership models at the two extremes: participative vs authoritative/traditional

1
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3 leadership style. A judgmental scoring is assigned to seven key behavioural variables ranging from
4 1 to 10.
5

6 The proposed evaluation model is based on a combination of the outcome on the quantitative and
7 qualitative analysis: the integrated results are grouped according four clusters according to the
8 expectation on the evolution of the credit risk/survival probability and discussed in section 5.3.
9

10 11 12 **4. Literature review**

13 There are several academic and professional papers on the effectiveness of the managerial styles of
14 leadership; however, as stated before, this is the first applied research having the aim to explore
15 the link between the leadership styles and the financial performance in terms of credit risk in the
16 food and beverage industry.
17

18 We have summarized the main contributions coming from different fields of research in the
19 following two streams:
20

- 21 (1) quality systems and financial performance/financial health;
- 22 (2) leadership styles, decision making and company performance.
23
24

25
26 The development of the quality system ISO is mainly based on the contributions of Ishikawa (1985),
27 Juran (1951), Deming (1986) and Oakland (2014) and the benefits regarding the implementation of
28 the quality system ISO 9001 are well documented (Cianfrani and West (2015), Fonseca (2015)).
29 However there is not yet any applied research on the link of the benefits of quality system ISO and
30 company's financial performance/financial health measured as probability of default/survival
31 probability over time (ie: credit risk).
32
33

34 The economic and accounting literature on company's financial health measured through the
35 analysis of financial statements is quite extensive (Gilman (1925), Ferrero and Dezzani (1979),
36 Paganelli (1986), Caramiello (1989), White, Sondhi and Fried (2014)). It is worth noting that the shift
37 from the financial analysis based on indexes and flows into the credit risk rating models has been
38 the premise for the development of the current lending private markets (Corporate and SME
39 lending, Leveraged lending, Private Bonds and Notes, Banking Loans, etc.). The main applied
40 researches on "credit risk actuarial models" in order to estimate the probability of default/survival
41 probability of private and unlisted companies are the following: Gordy (2001), Kirchesch (2004),
42 Moody's (2016), White (2002), Zanda, Oricchio and Solimene (2010).
43
44
45
46

47 In our research on leadership styles, we have been largely inspired by four main Authors (Maslow
48 (1954), McGregor (1960, 1966), Likert (1961, 1967), Goleman (1998, 2000) and the following
49 contributions on how the management styles affect and shape the organization (Thorpe, Beasley
50 (2004); Zanda G. (2012); Coluccia, Fontana, Solimene (2016); Santoro, Bresciani, Papa (2018);
51 Ballestra, Fontana, Scuotto, Solimene (2018); Ferraris, Santoro, Bresciani, Carayannis (2018);
52 Caputo, Cillo, Candelo, Liu (2019); Sanjay et al (2019); Singh, Del Giudice, Tarba, De Bernardi (2019)).
53
54

55 In the literature there is a clear separation between "universal models" and "contingent models" of
56 leadership. According to the "universalistic approach", the participative style of leadership is the
57 best model in each situation/organization (March and Simon (1958), Simon (1958,1960); Del
58 Giudice (2002), Del Giudice, Maggioni (2014); Guzman, Wilson (2005); Del Giudice, Della Peruta
59 (2016); Vrontis, Thrassou, Santoro, Bresciani (2017); Santoro Vrontis, Pastore (2017); on the other
60 hand, under the "contingent" approach there is no optimal model valid in all cases, independently

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3 from the "circumstances", i.e. the characteristics of the external and internal environment. The main
4 scholars who follow this approach include: Vromm and Yetton (1973); Fiedler (1967, 1971); Yukl
5 (1989); Hersey and Blanchard (1969); Goleman (1998, 2000).
6

7 More in details, we have reviewed all the available research on the relationship between managerial
8 styles of leadership and the financial performance of the organization/company. There are several
9 papers on how an effective management can simultaneously promote both productivity and
10 employee satisfaction (Drucker (1964, 2007), Amabile and Khaire (2008), Wu, Chen (2014);
11 Franceschelli, Santoro, Candelo(2018); Vrontis, Bresciani, Giacosa (2016); Carayannis, Grigoroudis,
12 Del Giudice, Della Peruta, Sindakis (2017)), however there is no yet research on the above
13 mentioned link on financial performance measured in terms of default probability/survival
14 probability of the organization/company.
15

16 According to the prevailing literature, the main link between managerial styles of leadership and
17 the financial performance is measured in terms of intangible assets (knowledge management) and
18 intellectual capital. Moreover the intellectual capitalism shapes the organizational structures, the
19 management models and the business results (Amistead (1999); Darroch (2005); Carayannis, Del
20 Giudice and Della Peruta (2014), Del Giudice, Della Peruta and Carayannis (2011 and 2012); Del
21 Giudice, Della Peruta and Maggioni (2015); Del Giudice, Della Peruta (2016); Heilbroner and Thurow
22 (2008), Rifkin (2001), Thurow (2000), Zanda S (2017); Scuoto, Del Giudice, Bresciani, Meissner
23 (2017); Giamapoli, Ciambotti, Bonits (2017); Papa et al (2018); Dezi et al (2019); Caputo, Garcia-
24 Perez, Cillo, Giacosa (2019)).
25

26 In summary, the approach underlying our proposed valuation model (i) is inspired by the "universal
27 models" and (ii) the financial performance/financial health of the company/organization is
28 measured in terms of default probability/survival probability.
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39 **5. Findings of the research.**

40 As mentioned above, the model we propose to use for the evaluation of the quality of top
41 management concerns companies that do not have an official external rating. However, in section
42 5.1.1 a method will be used to calculate the probability of default and the company expected life
43 applicable to companies with an external official rating. This is to allow us to present some concepts
44 and formulas that will be useful in the subsequent analysis.
45

46 It should be remembered that the model is divided into two parts that must be interpreted as a
47 system in order to make an overall judgment on the quality of top management.
48
49
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51 *5.1 Quantitative module of the proposed evaluation model: rating assignment; estimate of the*
52 *normalized annual probability of default and of the associated company expected life expressed in*
53 *years*
54

55 *5.1.1 The hypothesis of companies with an external rating assigned by the International Rating*
56 *Agencies*
57

58 In order to evaluate the corporate life cycle and estimate the *company expected lifespan* the starting
59 point is the concepts of *credit rating* and *default probability*. The evaluation of the counterpart
60 credit risk on a generally objective basis (so called rating) is an element of central importance in the

operation of modern financial markets. In the international scenario, the three most qualified Rating Agencies are Moody's, Standard & Poor's and Fitch IBCA. The evaluations issued by these agencies are expressed by letters of the alphabet, ranging from AAA to C, spaced out either by Arabic numbers (1,2,3) or algebraic signs "+" or "-". In table 1, the main symbols and a definition of the valuations issued by the abovementioned Rating Agencies are listed.

Table no.1: Rating Scales and Definition

[INSERT TABLE NO.1]

The highest ranking is expressed by "AAA", "AA", "A", and so forth until the "BBB" rank. Conversely, medium-high levels of credit risk range from "BB" to "CCC" and "D" (default). Periodically, Rating Agencies draft a "table of mortality" of companies based on the frequency of insolvency during the companies' multi-year experience. Insolvency frequency represents an estimate of default probability (PD). In the best international practice, the cumulative frequency of a class "A" issuing enterprise during a 10-year span is about 3.1%; conversely a "B" rated enterprise has a cumulative frequency of insolvency of approximately 34.3%. Generally, cumulative frequency of insolvency is relatively low before the "Baa" threshold, increasing as creditworthiness worsens. In particular, frequency of insolvency measured over a 10-year span ranging from "Ba" to class "Caa-C" varies from 18% to approximately 49%.

The long-term historical study of the series of company defaults having an external rating allows the estimation of some useful parameters for a prospective period, for example of 10, 15 or 20 years. Considering a 20-year period, the following parameters may be calculated:

- a) *cumulative company default rate* at time "T" (20 in this case): $PD_{20 \text{ years}}$;
- b) *probability of survival* at time "T": $(1 - PD_{20 \text{ years}})$;
- c) *average through the cycle probability of default over 12 months*: $PD_{\text{normalized 12 months}}$.

This parameter is calculated assuming that the 12 months default probability remains constant over time (on our hypothesis, 20 years). In particular, we assume a compensation of positive and negative economic cycles; we also assume that in the period there are no changes of rating. In other words, the estimate of average default probability is standardized over 12 months. Considering a time period of 20 years, the calculation is the following:

$$(1 - PD_{\text{normalized 12 months}})^{20} = (1 - PD_{20 \text{ years}}) ; \text{ from which:}$$

$$PD_{\text{normalized 12 months}} = 1 - \sqrt[20]{(1 - PD_{20 \text{ years}})}$$

- d) *average expected lifespan of company from the moment in which it is subject to rating*.

This duration is expressed in years and is calculated as: $1 / (PD_{\text{normalized 12 months}})$.

From our calculations based on the default frequencies accumulated from 1920 to 2015 (source Moody's Investor Services, Default Study, 2016), we estimated the probability of annual survival and its complement (the probability of default). The long period of observations allows us to achieve normalized averages both in relation to the economic cycle and with regard to contingent factors relating to individual companies (see table below).

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4
5 *Table no. 2: Average survival probability (accumulated in 20-year cycles of observation); normalized*
6 *average annual probability of default; average expected life of companies.*
7
8

9
10 [INSERT TABLE NO.2]
11

12
13 The average probability of default standardized over twelve months and the average expected life
14 are calculated using the formulae previously indicated in points c) and d).
15
16

17
18 *5.1.2 The hypothesis of companies belonging to the Italian Food & Beverage Industry without an*
19 *external rating assigned by International Rating Agencies*
20
21

22 These companies generally have an "internal rating" prepared by the main banks following the
23 regulatory requirements of the Basel III regulations. The model of credit risk assessment presented
24 here was developed by Capital Investment Research in relation to a "database" of companies
25 provided by leading commercial banks. The reference sample consists of about 45,000 capital
26 companies and the observations on the default frequencies refer to the period 2005-2015, of which
27 3.175 belong to the Food & Beverage Industry. From a methodological perspective, a general credit
28 risk model has been developed on the full sample, while a specific calibration based on the 3.175
29 Food & Beverage companies has been applied in order to capture the specific industry risk (please
30 refer to table no.3 for Data Summary and table no.4 for Model Summary).
31
32
33

34
35 *Table no.3 – Data Summary – Italian Food & Beverage Industry (sample used in the analysis)*
36
37

38
39 [INSERT TABLE NO.3]
40
41

42 *Source: Capital Investment Research, 2018, from data supplied by leading Commercial Banks operating in Italy and made anonymous*
43
44
45
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48

49 *Table no.4 – Model Summary (4 Key Univariate Accuracy Ratio & Model Accuracy Ratio)*
50
51

52 [INSERT TABLE NO.4]
53
54

55 *Source: Capital Investment Research, 2018, from data supplied by leading Commercial Banks operating in Italy and made anonymous*
56
57
58
59

60 The use of the model involves two fundamental moments:

1
2
3 1) assignment of a rating to the company to be evaluated based on four economic, financial and
4 equity parameters, to which a score ranging from 1 to 10 is given;

5
6 2) estimate of the probability of normalized annual default rate and the expected average life
7 expressed in years in relation to the Italian Food & Beverage Industry.
8

9 In relation to the first point, see table no. 5.
10
11

12 *Table no. 5: Calculation of score to be assigned to evaluated company.*
13

14
15 [INSERT TABLE NO.5]
16
17

18 *Source: Capital Investment Research, 2018, from data supplied by leading Commercial Banks operating in Italy and made anonymous*
19 *Financial Debt: financial debts; source financial statement of companies to be evaluated*
20 *EBITDA: Gross operating income; source financial statement of companies to be evaluated*
21 *EBIT: operative income; source financial statement of companies to be evaluated*
22 *Credit reserve: (Cash credit lines granted – Cash credit lines used / Cash credit lines granted); source Centrale dei Rischi; only revoked*
23 *and fixed term cash credit lines are considered*
24
25

26 A score is calculated and an average is given for the values of the four parameters.
27

28 In relation to point 2, see the following table.
29
30

31 *Table no. 6: Relationship between scores assigned to the company and probability of default*
32 *normalized over 12 months (through the cycle) in the Italian Food & Beverage Industry*
33
34

35 [INSERT TABLE NO.6]
36
37
38

39 *Source: Capital Investment Research, 2018, from data supplied by leading Commercial Banks operating in Italy and made anonymous*
40
41

42 From table no. 6, in relation to default rates, on the hypothesis of a stationary economy, the average
43 expected lifespan expressed in years can be obtained as follows:
44

45 Average expected lifespan of the enterprise = 1/ Probability of default normalized over 12 months.
46

47 This may be clarified by an example. Supposing “Company X” has the following data:
48

49 Financial Debt/ EBITDA 4.2
50 Financial Charges/ EBITDA 0.6
51 EBIT/ TURNOVER of 4.5%
52 Credit reserve 2%
53

54 Applying the model in tables no. 5 and no. 6 produces the following values:

55 Financial Debt/ EBITDA of 4.2	7 points
56 Financial Charges/ EBITDA of 0.6	5 points
57 EBIT/ TURNOVER of 4.5%	7 points
58 CREDIT RESERVE of 2%	1 point
59 TOTAL POINTS	20 points
60 AVERAGE SCORE	5 points
PROBABILITY OF DEFAULT (from tab.6)	2.03% (normalized over 12 months in

1
2
3
4 AVERAGE EXPECTED LIFE (stationary economy) relation to a score of 5)
5 49 years (approx.)
6
7

8 *5.2. Qualitative module of the proposed evaluation model: the leadership style assessment scheme*

9 As we have said, the evaluation scheme proposed derives from an integration of contributions by
10 authors with different scientific backgrounds.
11

12 The management process - for consolidated doctrine - is divided into the following functions:
13 planning (system of strategic, tactical and operational decisions), control (regulation of activity to
14 maintain desired levels of effectiveness and efficiency), organization (creation of the organizational
15 structure and information system) and leadership (orientation and guidance of the company).
16
17

18 Leadership is a higher level function that shapes the other basic managerial functions (Zanda S.
19 2016). The leadership style adopted influences:
20

- 21 a) the processes of planning and control, because it establishes the philosophy inspiring the
22 distribution of decision-making power and related company controls;
23
- 24 b) the organizational structure and the information system, insofar as it determines the content and
25 relations between roles, the operative procedure and the system of communication;
26
- 27 c) the power of attraction and motivation of the leader expressed as the ability to inspire feelings
28 of community and cooperation.
29

30 The phenomena indicated under a), b), c) combined and operating as a system, influence company
31 success: economic and financial results, productivity level, organization climate, quality of goods
32 and services, company image, level of customer satisfaction, gratification and integration of the
33 expectations of the various stakeholders, etc. In essence, the quality of the decisions, actions and
34 controls of the organization depends on the overall model of management adopted, which
35 constitutes the mechanism that develops or depresses the intelligence, creativity, imagination,
36 innovation, and energy of the various participants and creates the structural and operating
37 conditions that affect the "fusion process" between the interests of the participants and those of
38 the company.
39
40

41 However, what is the most effective and efficient management style? This is one of the fundamental
42 problems that has involved and continues to involve scholars and managers.
43

44 There is a wide range of management styles with two well-defined models at the extremes:
45

- 46 1) traditional management model (model α);
- 47 2) participative management model (model β).
48

49 *The first model is "Taylorian"* and is the most common in practice. It is distinguished by the following
50 elements:
51

52 *$\alpha 1$ –Assumptions that inspire management philosophy regarding the behavior of employees at*
53 *work and their intellectual and professional abilities*
54

55 These assumptions can be summarized as follows: i) the average organization man does not like
56 work, he is lazy and has the innate attitude to pretend to work; ii) the average man is not sensitive
57 to the interests of the company and does not aspire to assume responsibility; iii) ingenuity,
58 creativity and imagination are not common among men. These assumptions are defined by
59 McGregor (1960, 1966) "*X Theory*". The managers who are inspired by these assumptions have
60 little confidence in the skills of employees and therefore consider it essential to plan and control

1
2
3 their conduct in detail. Their fundamental goal is to "make human nature docile" and to force it to
4 respond promptly to the commands given by management.
5

6 *$\alpha 2$ – Type of leadership adopted*
7

8 The motivational approach is fundamentally based on threats, fear, punishment and sometimes on
9 employee concessions. The motivation mainly takes into consideration the physiological and
10 economic needs of personnel; therefore the incentive system is essentially of an economic nature
11 and does not take into account the possibility of using "rewards intrinsic to work".
12

13 *$\alpha 3$ - The extent to which managers establish supportive behavior towards employees*
14

15 In the traditional system, managers do not show supportive behaviors; therefore they are not
16 perceived by employees as a source of help or as an element that contributes to their professional
17 growth and to preserve and consolidate their values and personal importance.
18

19 *$\alpha 4$ - Decision-making system adopted*
20

21 The planning of employees' conduct involves the centralization of decisions and the refusal to use
22 much of the wealth of knowledge, imagination, creativity and information existing in the company.
23 The psychological distance between superiors and employees is very marked. Interactive influence
24 is virtually absent.
25

26 *$\alpha 5$ – Use of authority and control.*
27

28 The centralization of decisions involves the issuing of commands and the carrying out of systematic
29 checks to obtain the obedience of employees. Managers believe that if employees are not able to
30 take creative and innovative decisions, if they are not willing to respond spontaneously to the
31 commands received, the company management is compelled to "use force" and develop a
32 management strategy based on the centralization of decisions, on authority and control (McGregor,
33 1966).
34

35 *$\alpha 6$ – Performance objectives and supportive management behavior*
36

37 There is a significant imbalance between authoritarian pressure aimed at achieving high
38 performance targets and supportive manifestations of managers; this is because the latter are
39 insignificant. This situation creates resentment, conflicts and lack of identification with the company
40 (Likert, 1967).
41

42 *$\alpha 7$ - Interpretation of the role of manager by leaders*
43

44 The "utility function" of the traditional manager consists in maximizing company income and share
45 value. The other stakeholders are satisfied with adequate strategies conditioned by the primary
46 need to increase profitability and the size of the company. With regard to personnel, the goal is "to
47 make employees do certain things" using an incentive system mainly of an economic nature.
48 Employee control and persuasion are aimed at adapting people's interests to the priority needs of
49 the company.
50

51
52 The assumptions on which the traditional model rests (and in particular, the assumptions of $\alpha 1$) are
53 probably incorrect and in any case not scientifically proven. Argyris (1958), referring to the
54 traditional model, speaks of "immature leadership patterns". Many scholars and researchers are
55 convinced that men do not have negative attitudes towards work by nature; but they tend to
56 develop them due to the organizational environment and the style of management with which they
57 are governed. According to McGregor (1960), the followers of the "X Theory" confuse cause with
58 effect: the passivity, resistance and indifference of employees are not necessary manifestations of
59
60

1
2
3 human nature, but the consequence of the incapacity of the traditional systems of organization and
4 control to create harmony and collaboration.
5

6 We will now analyze the second model (participatory model) at the opposite end of the range of
7 management styles. We evaluate the participatory model with the same parameters used
8 previously.
9

10 *β1 – Assumptions that inspire management philosophy regarding work behavior and the capacity*
11 *of employees*
12

13 This is a system of principles that are in some ways opposed to those outlined above. They are the
14 prerequisite for achieving high returns and high employee satisfaction at the same time. They are
15 defined by McGregor (1960) "Y Theory". Here is a summary: for the average organization man, work
16 is as natural as rest and play; the average man is sensitive to the interests of the company and tends
17 to accept responsibility if the situation is favorable; ingenuity, creativity and imagination are
18 widespread among individuals and, unfortunately, these attitudes are not much appreciated in
19 current organizations.
20
21

22 *β2 – Type of leadership adopted*
23

24 Managers have full confidence in the intellectual and physical abilities of their employees. The trust
25 between managers and their staff is reciprocal and their interaction is systematic and continuous.
26 Leaders are convinced that employees are capable of self-management and self-control and that it
27 is not necessary to resort to threats and punishments to direct their conduct towards operational
28 goals. Motivation does not depend primarily on economic rewards, but on gratification intrinsic to
29 work.
30
31

32 *β3 – The extent to which managers exhibit supportive behavior towards employees*
33

34 Managers demonstrate supportive behavior in all situations: they tend to create relationships
35 with subordinates so that each individual considers the interpersonal interaction suitable to
36 maintain and consolidate their values and importance (Likert 1967).
37

38 *β4 – Decision-making system*
39

40 Participation in decisions is the cornerstone of the model in question. Since specialized skills and
41 information are variously distributed in the organizational structure, a pluralistic and organically
42 integrated decision-making system tends to develop.
43

44 *β5 - Use of authority and control*
45

46 Because reliance is placed on decentralization of decision-making, on the professional skills of
47 employees and on their self-control, there is no need for analytical checks or manifestations of
48 authority. The latter is not used as a directing and coordinating tool; it is used only in exceptional
49 conditions.
50

51 *β6 – Objectives of performance and supportive behavior of management*
52

53 There is a satisfactory balance between the pressure exerted by managers to achieve high
54 performance targets (effectiveness and efficiency) and the supportiveness shown by them.
55 Management helps people to satisfy their motivations, is interested in their well-being and
56 professional development and career. Therefore, high performance targets do not generate
57 tensions, resentment and conflict.
58

59 *β7 - Interpretation of the role of manager by managers*
60

1
2
3 The role of the manager is not that of "rendering docile" human nature, but above all that of
4 applying and enhancing the creative skills and energies of employees in the workplace, at the same
5 time achieving integration between personal and organizational interests. The utility function that
6 guides the participative manager aims to create value for all the stakeholders, considering,
7 moreover, the expectations of the customers, on which the survival and development of the
8 organization depends. (Davis 1951, Martin 2010, Zanda S. 2017).
9
10

11 The α and β leadership styles are the extremes of a continuous range of possible management
12 styles. The intermediate models are affected by both the extremes. Naturally, the success of an
13 organization depends greatly on the ability of top management to apply behaviors inspired by the
14 β model, not excluding contingent interventions linked to specific environmental and business
15 situations.
16

17 The evaluation of the leadership style must take in consideration the seven organizational variables
18 indicated above. The evaluator assigns to each variable a score that varies between 1 and 10. He
19 will have the capacity to consider each variable as a continuous progression from one extreme to
20 the other. Each organizational variable is assigned the score that best describes the management
21 style that distinguishes the manager to be evaluated, according to information gathered and
22 analyses carried out. Subsequently the evaluator finds the average of the scores assigned to the
23 seven organizational variables. This average expresses the overall judgment regarding the quality of
24 the management style of the executive examined. Obviously, the judgment is expressed for the
25 various top management members; the average of individual scores summarizes the overall
26 judgment.
27
28
29

30 It should be remembered that the assessment on the leadership style adopted by top management
31 integrates the one expressed by the methodology illustrated in section 5.1.
32
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35 *5.3. The proposed evaluation model: the combined approach.*

36 The combined approach provides an integrated framework (quantitative and qualitative) to
37 evaluate the Quality of the Management System in the Italian Food & Beverage Industry and its
38 effectiveness in business performance measured in terms of default risk and its expected evolution.
39
40

41 The quantitative part of the model estimates the probability of default and the average expected
42 life of a company. The quantitative outcome is grouped in 10 risk classes, ranging from 1 (high risk)
43 to 10 (minimum risk). For the sake of simplicity we group the outcome in two classes:
44

45 Level of risk: Low Risk (score from 6 to 10) and High Risk (score from 5 to 1).
46

47 The qualitative part of the model analyzes the leadership style, taking in consideration key seven
48 variables. The output is a score, ranging from 1 (least effective style) to 10 (most effective style).
49

50 For the sake of simplicity, we group the output in two classes:
51

52 Leadership style: Highly Effective (score from 10 to 6) and Less Effective (score from 5 to 1).
53

54 According to our experience (and private market best practice) the leadership style has a material
55 impact of the survival probability of a company (and, on the contrary, on the default probability of
56 a company). In other words, the leadership style - other variables be equal - can provide significant
57 information to investors about the future evolution of the financial performance and related credit
58 risk.
59

60 Under the combined approach, four clusters of Italian Food&Beverage companies are identified:

Cluster no.1; Best Performers: Low Risk (quantitative score from 10 to 6) and Highly Effective Leadership Style (qualitative score from 10 to 6);

Cluster no.2; Fallen Angel Candidates: Low Risk (quantitative score from 10 to 6) and Less Effective Leadership Style (qualitative score from 5 to 1);

Cluster no.3; Worst Performers: High Risk (quantitative score from 5 to 1) and and Less Effective Leadership Style (qualitative score from 5 to 1);

Cluster no.4; Rising Star Candidates: High Risk (quantitative score from 5 to 1) and Highly Effective Leadership Style (qualitative score from 10 to 6).

Chart no. 1: Relationship between scores assigned to the company and probability of default normalized over 12 months (through the cycle) in the Italian Food & Beverage Industry

[INSERT CHART No.1]

Source: Springrowth SGR, Diversified Enterprises Credit Fund, Food&Beverage sub-Portfolio, 2020

The identification of the clusters is a powerful tool to clarify the impact of the leadership styles on the quality of the top management and on the future performance of companies in terms of variation of the default probability/survival probability. According to our “on the field expertise” in Food&Beverage investments in Italy (15 companies, 18 months of observation period, data available under request and NDA signature) in Cluster no.2 the probability of future under-performance is higher than the probability of future over-performance cluster; while in Cluster no.4 is the opposite. On the other hand, companies in Cluster no.1 show a high level of resilience; while companies in Cluster 3 have a frequency of debt restructuring/liquidation higher than companies in Cluster no. 4 (the quality of the top management matters).

Chart no. 2: Sub Portfolio - Italian Food & Beverage Industry

[INSERT CHART No.2]

Source: Springrowth SGR, Diversified Enterprises Credit Fund, Food&Beverage sub-Portfolio, 2020

6. Conclusions and future research

The principles that inspire the ISO 9001: 2015 Standard clearly indicate that the success of the Quality Management System is linked to the quality of top management. A reliable quality system certification requires an adequate assessment of the quality of the top management of the organization. However, given the materiality of top manager’s leadership style, the certification of the quality system *should* cover this relevant topic, too. In our view, the ISO 9001 requirements

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2
3 appear to be too general and not directly focused on the analysis of the leadership styles (please
4 see sections n.5 (*leadership*), n.8 (*operation*) and n.9 (*performance evaluation*) of the standard).

5
6 The aim of this work is to provide a methodological contribution to develop an evaluation model of
7 top management quality to be used for the certification of the quality system and to support a
8 reliable forecast on the business future performance.
9

10 The applied research is focused on the Italian Food & Beverage Industry and the proposed
11 evaluation model is based on the combination of two different and integrated approaches
12 (quantitative and qualitative) based on the Sequential Mixed Methods Design.
13

14 On one hand, the quantitative module estimates the probability of default and the average expected
15 life of a company starting from 3.175 Italian companies belonging to the Food & Beverage Industry
16 observed in the period 2005-2015. The quantitative methodology starts from the assumption that
17 the priority objective of the company is survival in conditions of economic equilibrium. Therefore,
18 the lower the probability of default (or the longer the company expected life), the better the quality
19 of the top management that governs the company.
20
21

22 On the other hand, the qualitative module analyzes the leadership style, taking in consideration the
23 following key seven organizational variables: (i) Assumptions that inspire management philosophy
24 regarding work behavior and the capacity of employees (ii) Type of leadership adopted (iii) The
25 extent to which managers exhibit supportive behavior towards employees (iv) Decision-making
26 system (v) Use of authority and control (vi) Objectives of performance and supportive behavior of
27 management (vii) Interpretation of the role of manager by managers.
28
29

30 Under the combined approach, the proposed evaluation model identifies four different clusters
31 (Best Performers, Worst Performers, Fallen Angel Candidates, Rising Star Candidates) in order to
32 assess the impact of the leadership styles (i) on the quality of the top management and (ii) on the
33 future performance of companies measured in term of variation of default risk/survival probability.
34

35 According to our experience (and private market best practice) the leadership style has a material
36 impact of the survival probability of a company (and, on the contrary, on the default probability of
37 a company). In other words, the leadership style - other variables be equal - can provide significant
38 information to investors about the future evolution of the financial performance and related credit
39 risk.
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42 While a positive relationship between a participative style of leadership and the financial
43 performance is widely accepted in the literature; there is no published research on the relationship
44 between managerial styles of leadership and default probability/survival probability. The aim of this
45 paper is to initiate a new field of research enjoying the fast and growing number of information
46 underlying the development of the private lending market (both banking channel and private debt
47 channel).
48
49

50 There are several workstreams to be performed in future research in order (i) to provide more
51 business evidence and (ii) to extent the analysis to further industries (other than Food&Beverage).
52 The first step is to collect more data and company information on managerial styles of leadership
53 and to start to track, to measure and monitor the evolution of the credit risk over time in each of
54 the four clusters identified in the combined model. We believe that a good level of cooperation and
55 information sharing between researchers and investment managers could add value to future
56 applied research.
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References

- Almalki S., (2016) Integrating Quantitative and Qualitative Data in Mixed Methods Research – Challenges and Benefits, *Journal of Education and Learning*, vol. 5 No. 3.
- Amabile T.M. and Khaire M., (2008) Creativity and the Role of the Leader, *Harvard Business Review*, vol.86, n.10.
- Armistead, C. (1999). Knowledge management and process performance. *Journal of Knowledge Management*, 3(2), 143-157
- Ballestra, L. V., Fontana, S., Scuotto, V., & Solimene, S. (2018). A multidisciplinary approach for assessing open innovation model impact on stock return dynamics. *Management Decision*
- Caputo, F., Cillo, V., Candelo, E. and Liu, Y. (2019), "Innovating through digital revolution: The role of soft skills and Big Data in increasing firm performance", *Management Decision*, Vol. 57 No. 8, pp. 2032-2051
- Caputo, F., Garcia-Perez, A., Cillo, V. and Giacosa, E. (2019), "A knowledge-based view of people and technology: directions for a value co-creation-based learning organisation", *Journal of Knowledge Management*, Vol. 23 No. 7, pp. 1314-1334. <https://doi.org/10.1108/JKM-10-2018-0645>
- Caramiello C., (1989) *Indici di bilancio: strumenti per l'analisi della gestione aziendale*, IPSOA, Milano.
- Carayannis E.G. and Campbell D.F.J., (2006) *Mode 3: Meaning and Implication from Knowledge Systems Perspectives*. In *Knowledge Creation, Diffusion and Use in Innovation Networks and Knowledge Clusters: A Comparative System Approach Across the United States, Europe and Asia*, (pp. 1-25), Praeger Publishers, Westport, Connecticut.
- Carayannis E.G., Del Giudice M. and Della Peruta M.R., (2014), *Managing the Intellectual Capital Within Government – University – Industry R. & D. Partnerships : A Framework For The Engineering Research Centers*, *Journal Of Intellectual Capital*, vol. 15, pp.611-630, ISSN : 1469-1930.
- Carayannis, E. G., Grigoroudis, E., Del Giudice, M., Della Peruta, M. R., & Sindakis, S. (2017). An exploration of contemporary organizational artifacts and routines in a sustainable excellence context. *Journal of Knowledge Management*, 21(1), 35-56
- Cianfrani C.A., West J.E., (2015) *ISO 9001:2015 explained*, ISBN 978-0-87389-901-7. Item Number: H 1474.
- Coluccia, D., Fontana, S., & Solimene, S. (2016). Disclosure of corporate social responsibility: a comparison between traditional and digital reporting. An empirical analysis on Italian listed companies. *International Journal of Managerial and Financial Accounting*, 8(3-4), 230-246
- Creswell J. W., Plano Clark V. L. (2007) *Designing and Conducting Mixed Methods Research*. London: Sage Publications Ltd
- Creswell J. W., Tashakkori A., (2007) *Different Perspectives on Mixed Methods Research*, *Journal of Mixed Methods Research*, Vol 1, no.4
- Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of knowledge management*, 9(3), 101-115
- Del Giudice M., (2002) *L'impresa pensante*, Giappichelli, Torino.

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Del Giudice M., Della Peruta M.R. and Carayannis E.G., (2011) *Knowledge and Family Business*, Springer, New York.

Del Giudice M., Della Peruta M.R. and Carayannis E.G., (2012) *Cross-Cultural Knowledge Management: Fostering Innovation and Collaboration Inside The Multicultural Enterprise*, Springer, New York.

Del Giudice, M., & Maggioni, V. (2014). Managerial practices and operative directions of knowledge management within inter-firm networks: a global view. *Journal of Knowledge Management*, 18(5), 841-846

Del Giudice, M., Della Peruta M.R. and Maggioni V., (2015) A model for the diffusion of knowledge sharing technologies inside private transport companies, in *Journal of Knowledge Management*, Vol. 19, Issue 3, pp. 611-625.

Del Giudice, M. and Della Peruta M. R., (2016) The impact of IT-based knowledge management systems on internal venturing and innovation: a structural equation modeling approach to corporate performance, in *Journal of Knowledge Management*, Vol. 20, Issue 3, pp. 484-498.

Deming W.E., (1986) *Out of the Crisis*, Institute of Technology. Center for Advanced Engineering Studies, Cambridge, Mass.

Dezi L., Ferraris, A., Papa A., Vrontis D. (2019), The Role of External Embeddedness and Knowledge Management as Antecedents of Ambidexterity and Performances in Italian SMEs, *IEEE Transactions on Engineering Management*, DOI:10.1109/TEM.2019.2916378;

Drucker F.P., (1964) *Concept of the Corporation*, The John Day Company Inc., New York.

Drucker F.P., (1954, Revised edition of 2007) *The Practice of Management*, Harper & Brothers Publishers, New York.

Emery F.E., (2007) *La teoria dei sistemi*, Angeli, Milano.

Ferraris, A., Santoro, G., Bresciani, S. and Carayannis, E. (2018), "HR practices for explorative and exploitative alliances in smart cities: Evidences from smart city managers' perspective", *Management Decision*, Vol. 56 No. 6, pp. 1183-1197

Ferrero G. and Dezzani F., (1979) *Manuale delle analisi di bilancio. Indici e flussi*, Giuffrè, Milano.

Fiedler F.E., (1967) *A Theory of Leadership Effectiveness*, McGraw-Hill Co. Inc., New York.

Fiedler F.E., (1971) Validation and Extension of the Contingency Model of Leadership Effectiveness: A Review of Empirical Findings, in *Psychological Bulletin*, pp.126ss.

Fonseca L.M., (2015) From Quality Gurus and TQM to ISO 9001: 2015: A Review of Several Quality Path, in *International Journal for Quality Research*, 9.1, pp.167-180.

Franceschelli, M. V., Santoro, G., & Candelo, E. (2018). Business model innovation for sustainability: a food start-up case study. *British Food Journal*, 120(10), 2483-2494

Giampaoli, D., Ciambotti, M., & Bontis, N. (2017). Knowledge management, problem solving and performance in top Italian firms. *Journal of Knowledge Management*, 21(2), 355-375

Gilman G., (1969) *The Manager and the System Concept*, in *Business Horizons*, August.

Gilman S., (1925) *Analyzing Financial Statements*, The Ronald Press, New York.

Goleman D., (1998) *What Makes a Leader?* *Harvard Business Review*, November-December.

- 1
2
3 Goleman D., (2000) Leadership That Gets Results, Harvard Business Review, 78, 2.
4
5 Gordy M.B., (2000) A Comparative Anatomy of Credit Risk Models, in Journal of Banking & Finance,
6 24, 1-2.
7
8 Guzman, G. A., & Wilson, J. (2005). The “soft” dimension of organizational knowledge transfer.
9 Journal of Knowledge Management, 9(2), 59-74
10
11 Heilbroner R.L. and Thurow L.C., (2008) Capire l’economia, Il Sole 24 Ore, Milano.
12
13 Hersey P. and Blanchard K., (1969) Management of Organizational Behavior: Utilizing Human
14 Resources, Englewood Cliffs, New York.
15
16 ISO 9004:2009, Managing for the Sustained Success of an Organization. A Quality Management
17 Approach.
18
19 ISO 9001:2015, Quality Management Systems. Fundamentals and Vocabulary (2015 b).
20
21 ISO 9001:2015, Quality Management Systems- Requirements, (2015 a).
22
23 Jaediche R.K. and Sprouse R.T., (1965) Accounting Flows: Income, Funds and Cash, Prentice Hall,
24 Englewood Cliffs, N.J.
25
26 Juran J.M., (1951) Quality Control Handbook, McGraw-Hill Book Co., New York.
27
28 Kirchesch K., (2004) Financial Risks. Bankruptcy Probabilities and the Investment Behavior of
29 Enterprises, Hamburg Institute of International Economics, Hamburg.
30
31 Lawrence P.R. and Lorsch J.W., (1969) Organization and Environment, R.D. Irwin, Homewood,
32 Illinois.
33
34 Likert R., (1961) New Patterns of Management, McGraw-Hill Book Co., New York.
35
36 Likert R., (1967) The Human Organization: Its Management and Value, McGraw Hill Book Co., New
37 York.
38
39 March J. G. and Simon H.A. (1958) Organizations, J. Wiley & Sons, New York.
40
41 Martin R., (2010) L’era del capitalismo fondato sul cliente, in Harvard Business Review Italia,
42 Gennaio-Febbraio.
43
44 Maslow A.H., (1954) Motivation and Personality, Harper & Row, New York.
45
46 McGregor D., (1960) The Human Side of Enterprise, McGraw-Hill Book Company, New York.
47
48 McGregor D., (1966) Leadership and Motivation, The MIT Press, Cambridge, Mass.
49
50 Moody’s Investor Service, Corporate Default and Recovery Rates 1920-2015, February 29, 2016.
51
52 Oakland J.S., (2014) Total Quality Management and Operational Excellence, Routledge, New York.
53
54 Papa, A., Dezi, L., Gregori, G. L., Mueller, J., & Miglietta, N. (2018). Improving innovation
55 performance through knowledge acquisition: the moderating role of employee retention and
56 human resource management practices. Journal of Knowledge Management
57
58 Paganelli O., (1986) Analisi di bilancio. Indici e flussi, UTET, Torino.
59
60 Rifkin J., (2001) The Age of Access. The New Culture of Hypercapitalism, Where All of Life is a Paid-
for Experience, Tarcher-Putnam, New York.

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Sanjay S. et al (2019) Environmental ethics, environmental performance, and competitive advantage: Role of environmental training Technological Forecasting and Social Change Volume 146, September 2019, Pages 203-211

Santoro, G., Vrontis, D., & Pastore, A. (2017). External knowledge sourcing and new product development: evidence from the Italian food and beverage industry. *British Food Journal*, 119(11), 2373-2387

Santoro, G., Bresciani, S., & Papa, A. (2018). Collaborative modes with Cultural and Creative Industries and innovation performance: The moderating role of heterogeneous sources of knowledge and absorptive capacity. *Technovation*, <https://doi.org/10.1016/j.technovation.2018.06.003>

Scuotto V, Del Giudice M, Bresciani S, Meissner D (2017). Knowledge Driven Preferences in Informal Inbound Open Innovation Modes: An Explorative view on Small to Medium Enterprises. *JOURNAL OF KNOWLEDGE MANAGEMENT*, vol. 21, p. 640-655, ISSN: 1367-3270, doi: DOI 10.1108/JKM-10-2016-0465

Shikawa K., (1985) *What Is Total Quality Control? The Japanese Way*, Prentice Hall, Englewood Cliffs, N.J.

Simon H.A., (1958) *Administrative Behavior*, The Macmillan Company, New York.

Simon H.A., (1960) *The New Science of Management Decisions*, Harper & Row, New York.

Singh S.K., M. Del Giudice, S. Y. Tarba and P. De Bernardi, "Top Management Team Shared Leadership, Market-Oriented Culture, Innovation Capability, and Firm Performance," in *IEEE Transactions on Engineering Management*.

Thorpe, R. and Beasley, T. (2004), "The characteristics of performance management research: Implications and challenges", *International Journal of Productivity and Performance Management*, Vol. 53 No. 4, pp. 334-344

Thurow L.C., (2000) *Building Wealth. The New Rules for Individuals, Companies and Nations in a Knowledge-based Economy*, Harper Collins, New York.

Vroom V.H. and Yetton P.W., (1973) *Leadership and Decision Making*, University of Pittsburg Press, Pittsburg.

Vrontis, D., Bresciani, S., & Giacosa, E. (2016). Tradition and innovation in Italian wine family businesses. *British Food Journal*, 118(8), 1883-1897

Vrontis, D., Thrassou, A., Santoro, G., & Papa, A. (2017). Ambidexterity, external knowledge and performance in knowledge-intensive firms. *The Journal of Technology Transfer*, 42(2), 374-388

White G., Sondhi A.C. and Fried H.D., (2014) *The Analysis and Use of Financial Statements*, J. Wiley & Sons Inc., New York.

White A., (2002) *Measuring Default Probability*, Moody's Academic Research and Advisory Committee, New York.

Wu, I. L., & Chen, J. L. (2014). Knowledge management driven firm performance: the roles of business process capabilities and organizational learning. *Journal of Knowledge Management*, 18(6), 1141-1164

1
2
3 Yukl G.A., (1971) Toward a Behavioral Theory of Leadership, in Organization Behavior and Human
4 Performance, pp .414 ss.
5

6 Yukl G.A., (1989) Leadership in Organizations, Prentice-Hall, Englewood Cliffs, N.J.
7

8 Zanda G.,Ed., (2012) Corporate Management in a Knowledge-Based Economy, Palgrave- Macmillan,
9 London.
10

11 Zanda G., Oricchio G. and Solimene S., (2010), La stima della durata della vita delle imprese alla luce
12 delle evidenze degli ultimi 90 anni, in Rivista Italiana di Ragioneria e di Economia Aziendale, Maggio-
13 Giugno.
14

15 Zanda S., (2016) *A Methodological Contribution to the Representation of the Function of*
16 *Leadership and Its Impact on Organizational Cooperation and Company Results*, in Corporate
17 Ownership & Control, vol. 13, ISS. 4.
18

19 Zanda S., (2017) *Building an Efficient Management and Leadership Practices. The Contemporary*
20 *Relevance of Chester I. Barnard's Thought in the Context of the Knowledge-Based Economy*,
21 Springer, London.
22
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Chart n.1

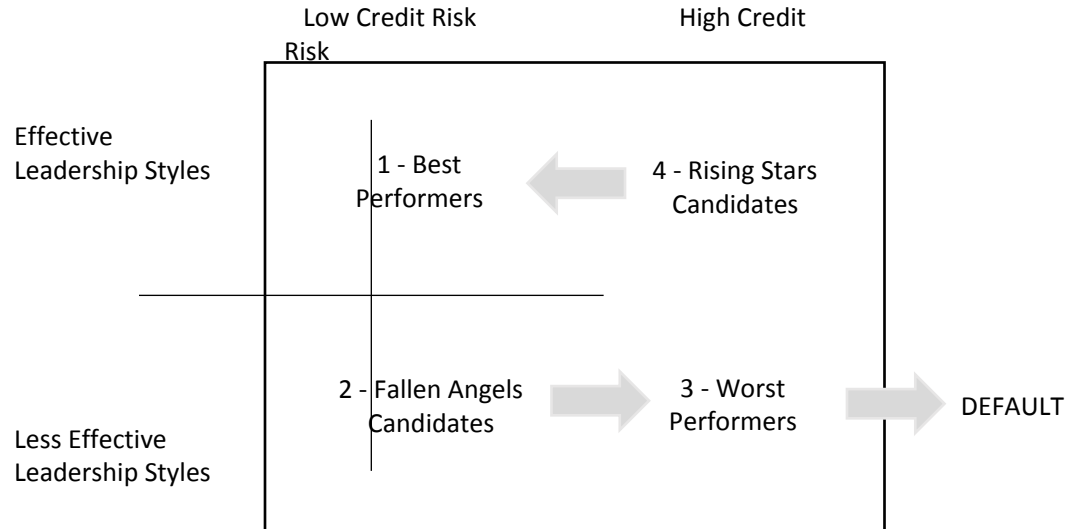
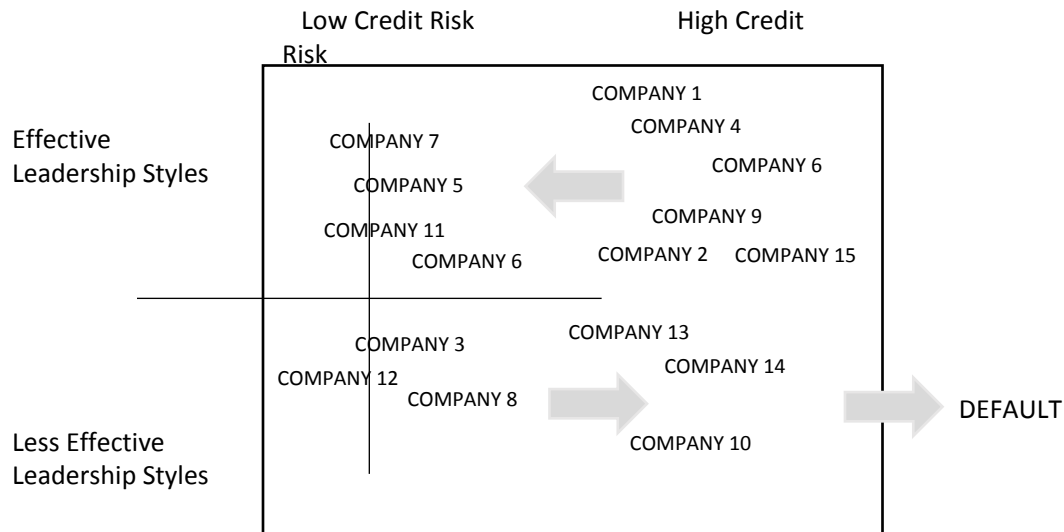


Chart n.2



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Table no.1: Rating Scales and Definition

Moody's	S&P	Fitch	Credit Rating Definition
Aaa	AAA	AAA	Prime, maximum safety. Highest quality of obligations, vast diversification and consolidated dimension, excellent market position, distinct managerial ability, very high debt coverage ability.
Aa	AA	AA	Very high grade/quality. An obligation rated 'AA' differs from the highest-rated obligations only to a small degree. The obligor's capacity to meet its financial commitment on the obligation is very strong
A	A	A	High credit quality. An obligation rated 'A' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher-rated categories. However, the obligor's capacity to meet its financial commitment on the obligation is still strong
Baa	BBB	BBB	Good credit quality. Expectations of default risk are currently low. The capacity for payment of the financial commitments is considered adequate but adverse business or economic conditions are more likely to impair this capacity
Ba	BB	BB	Speculative. Elevated vulnerability to default risk, particularly in the event of adverse changes in business or economic conditions over time; however, business or financial flexibility exists which supports the servicing of financial commitments
B	B	B	Highly speculative. Material default risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is vulnerable to deterioration in the business and environment
Caa	CCC	CCC	Substantial credit risk. Default is a real possibility. Obligation currently vulnerable to nonpayment and is dependent upon favorable business, financial and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial, or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation
D	D	D	Default

Table no. 2: Average survival probability (accumulated in 20-year cycles of observation); normalized average annual probability of default; average expected life of companies.

Rating class	Probability of survival for cycles of 20 years	Average probability of default standardized over twelve months (through the cycle)	Average expected life expressed in years
Aaa	98.6 %	0.07 %	-
Aa	95.4 %	0.24 %	-
A	93.0 %	0.36 %	277
Baa	88.0 %	0.64 %	156
Ba	71.5 %	1.66 %	60
B	56.0 %	2.86 %	35
Caa-C	38.0 %	4.72 %	21

British Food Journal

	All Industries Quarterly Default Rate	Food&Beverag e Quarterly Default Rate	of which:	Good Companies	and Compani s	Total
3/31/2005	0.41%	0.43%		3162	13	3175
6/30/2005	0.47%	0.47%		3147	15	3162
9/30/2005	0.39%	0.41%		3134	13	3147
12/31/2005	0.52%	0.58%		3116	18	3134
3/31/2006	0.44%	0.55%		3098	17	3116
6/30/2006	0.43%	0.42%		3085	13	3098
9/30/2006	0.48%	0.49%		3070	15	3085
12/31/2006	0.48%	0.44%		3057	14	3070
3/31/2007	0.41%	0.51%		3041	15	3057
6/30/2007	0.45%	0.53%		3025	16	3041
9/30/2007	0.36%	0.41%		3013	12	3025
12/31/2007	0.47%	0.57%		2996	17	3013
3/31/2008	0.42%	0.42%		2983	12	2996
6/30/2008	0.40%	0.50%		2968	15	2983
9/30/2008	0.38%	0.46%		2955	14	2968
12/31/2008	0.56%	0.56%		2938	17	2955
3/31/2009	0.53%	0.59%		2921	17	2938
6/30/2009	0.74%	0.59%		2904	17	2921
9/30/2009	0.63%	0.52%		2889	15	2904
12/31/2009	0.78%	0.73%		2867	21	2889
3/31/2010	0.69%	0.52%		2853	15	2867
6/30/2010	0.72%	0.65%		2834	19	2853
9/30/2010	0.65%	0.60%		2817	17	2834
12/31/2010	0.76%	0.67%		2798	19	2817
3/31/2011	0.62%	0.50%		2784	14	2798
6/30/2011	0.64%	0.46%		2771	13	2784
9/30/2011	0.61%	0.51%		2757	14	2771
12/31/2011	0.75%	0.72%		2737	20	2757
3/31/2012	0.65%	0.60%		2720	16	2737
6/30/2012	0.75%	0.65%		2703	18	2720
9/30/2012	0.69%	0.68%		2684	18	2703
12/31/2012	0.92%	0.85%		2662	23	2684
3/31/2013	0.76%	0.70%		2643	19	2662
6/30/2013	0.94%	0.85%		2621	22	2643
9/30/2013	0.79%	0.75%		2601	20	2621
12/31/2013	1.04%	1.02%		2574	26	2601
3/31/2014	0.86%	0.68%		2557	18	2574
6/30/2014	0.90%	0.85%		2535	22	2557
9/30/2014	0.83%	0.79%		2515	20	2535
12/31/2014	1.00%	0.95%		2491	24	2515
3/31/2015	0.75%	0.77%		2472	19	2491
6/30/2015	0.89%	0.90%		2450	22	2472

	FINANCIAL DEBT/EBITDA	FINANCIAL INTEREST/EBITDA
Mean	4.7	0.28
Sigma	1.6	0.67
Univariate Accuracy Ratio	36.4%	51.3%
In sample Model Accuracy Ratio (2005-2010)	68.3%	
Out of Time Model Accuracy Ratio (2010-2015)	61.7%	

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EBIT/TURNOVER	CREDIT RESERVE
9.8%	22.5%
7.2%	16.3%
35.7%	54.8%

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Table no. 5: Calculation of score to be assigned to evaluated company.

SCORE	FINANCIAL DEBT/EBITDA	SCORE	FINANCIAL CHARGES/EBITDA	SCORE	EBIT/TURNOVER	SCORE	CREDIT RESERVE
10	< 2.5	10	< 0.1	10	> 12 %	10	> 95 %
9	2.5-3.5	9	0.1-0.16	9	12 % - 7 %	9	95 % - 80 %
8	3.5-4	8	0.16-0.25	8	7 % - 5 %	8	80 % - 60 %
7	4-4.5	7	0.25-0.36	7	5 % - 4 %	7	60 % - 41 %
6	4.5-5.5	6	0.36-0.55	6	4 % - 3 %	6	41 % - 27 %
5	5.5-6.5	5	0.55-0.65	5	3 % - 2 %	5	27 % - 19 %
4	6.5-7	4	0.65-0.75	4	2 % - 1 %	4	19 % - 10 %
3	7-7.5	3	0.75-0.85	3	1 % - 0 %	3	10 % - 6 %
2	7.5-8.5	2	0.85-1.2	2	0 % - - 3%	2	6 % - 3 %
1	>8.5 o NEG	1	> 1.2 o NEG	1	< - 3 %	1	< 3 %

Source: Capital Investment Research, 2018, from data supplied by leading Commercial Banks operating in Italy and made anonymous

Financial Debt: financial debts; source financial statement of companies to be evaluated

EBITDA: Gross operating income; source financial statement of companies to be evaluated

EBIT: operative income; source financial statement of companies to be evaluated

Credit reserve: (Cash credit lines granted – Cash credit lines used / Cash credit lines granted); source Centrale dei Rischi; only revoked and fixed term cash credit lines are considered

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Table no. 6: Relationship between scores assigned to the company and probability of default normalized over 12 months (through the cycle) in the Italian Food & Beverage Industry

SCORE	NORMALIZED ANNUAL PROBABILITY OF DEFAULT
10	0.36%
9	0.62%
8	0.90%
7	1.2%
6	1.48%
5	2.03%
4	2.98%
3	4.57%
2	8.59%
1	32.69%

Source: Capital Investment Research, 2018, from data supplied by leading Commercial Banks operating in Italy and made anonymous

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