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Grand challenges: companies and universities working for a better society

Full Papers

University of Pisa - Sant'Anna School of Advanced Studies, Pisa

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a cura di

Sandro Castaldo, Elisa Giuliani, Marco Frey e Marta Ugolini

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Al Lettore,

questo volume accoglie gli extended abstract del Convegno Sinergie-SIMA 2020, dal titolo *Grand challenges: Companies and Universities working for a better society*, Università di Pisa, Scuola Superiore Sant'Anna, Pisa, 7-8 settembre 2020.

Le società contemporanee si trovano di fronte a un bivio: da un lato i governi sono sotto pressione per raggiungere obiettivi ambiziosi di crescita economica, dall'altro tale crescita alimenta complesse sfide ambientali e sociali, parte degli obiettivi di sviluppo sostenibile, o Agenda 2030, delle Nazioni Unite. Ciò spinge verso un ripensamento del capitalismo così come tradizionalmente inteso.

Lo scopo del Convegno è di discutere del ruolo delle imprese e dell'università per affrontare queste sfide. Per quanto riguarda le imprese, un focus particolare è rivolto agli impatti positivi che esse possono esercitare sulla società e sull'ambiente attraverso varie iniziative: dagli investimenti responsabili al coinvolgimento degli stakeholder per affrontare rilevanti problematiche sociali. Altrettanto articolato è il contributo che le università possono offrire attraverso le proprie attività di ricerca, formazione e terza missione.

Gli Extended Abstract racconti in questo volume affrontano la tematica con una varietà di argomenti, punti di vista, prospettive.
Vengono altresì proposti studi e ricerche sul più ampio e generale capo del management, cui spetta un ruolo da protagonista anche al di fuori delle imprese.

Sandro Castaldo, Elisa Giuliani, Marco Frey e Marta Ugolini

Cari Lettori e Convegnisti,

il *call for paper* del Convegno Sinergie-SIMA 2020 Conference dal titolo *Grand challenges: companies and universities working for a better society* ha previsto la possibilità di presentare *extended abstract* oppure *full paper*. In totale sono pervenuti in redazione 113 *extended abstract* e 35 *full paper*.

Per gli *extended abstract*, la valutazione dei contributi ricevuti è stata operata dai Chair e dal coordinamento scientifico in base alla coerenza con il tema del Convegno e/o con gli studi di management secondo l'articolazione dei Gruppi Tematici SIMA. Sono state altresì valutate la chiarezza e la rilevanza (anche potenziale) dei contenuti proposti.

Per i *full paper*, la procedura di valutazione dei contributi è stata condotta secondo il meccanismo della *peer review* da parte di due referee anonimi, docenti universitari ed esperti dell'argomento, scelti all'interno dei soci SIMA e della comunità di Sinergie.

In particolare, nella valutazione dei contributi i referee hanno seguito i seguenti criteri:

- chiarezza degli obiettivi di ricerca,
- correttezza dell'impostazione metodologica,
- coerenza dei contenuti proposti con il tema/track del convegno e/o con gli studi di management,
- contributo di originalità/innovatività,
- rilevanza in relazione al tema/track del convegno e/o agli studi di management,
- chiarezza espositiva,
- significatività della base bibliografica.

L'esito del referaggio ha portato a situazioni di accettazione integrale, accettazione con suggerimenti e non accettazione. In caso di giudizio discordante la decisione è stata affidata ai Chair. Ogni lavoro è stato poi rinviato agli Autori completo delle schede di referaggio per la attuazione delle modifiche suggerite dai referee.

A seguito del processo di valutazione sono stati accettati 23 *full paper* e 111 *extended abstract*, pubblicati in due distinti volumi.

Tutti gli *extended abstract* di questo volume sono stati presentati e discussi durante il Convegno e pubblicati *online* sul portale della rivista Sinergie (***www.sijm.it***). Quest'anno sono anche disponibili on line i video con le presentazioni registrate dagli Autori.

Nel ringraziare tutti gli Autori per la collaborazione ci auguriamo che questo volume contribuisca a fornire un avanzamento di conoscenze sul ruolo che le imprese e l'università possono svolgere per conciliare la crescita economica e la necessità di affrontare le complesse sfide globali ambientali e sociali.

I Chair e il Coordinamento Scientifico

Marco Frey, Elisa Giuliani, Marta Ugolini, Sandro Castaldo,
Arabella Mocciaro Li Destri, Angelo Bonfanti

INDICE

Family firms, women and innovation

MARIASOLE BANNÒ[*] GRAZIANO COLLER[•] GIORGIA M. D'ALLURA[♠]

Abstract

Objectives. *The paper investigates the impact of board gender diversity on innovation in Family Businesses (FBs). We assume that the presence of women, due to new generations with the presence of daughters or due to marriages involving third parties, could be wider than in non-FBs.*

Methodology. *We test our hypotheses on a sample of 751 Italian FBs through a count data model.*

Findings. *Our findings show how and when the invisible women became visible and their effect on innovation performance. Prejudice against women in FBs is detrimental to innovation. However, both the presence of family women in control positions and the presence of a critical mass helps in mitigating the effect of prejudice on innovation.*

Research limits. *The sample is limited to Italian firms only. The social dynamics and the role of women in the entrepreneurial arena are strongly influenced by the institutional system in which the firm operates.*

Practical implications. *Our findings will be relevant to family business owners and managers with regard to their innovation strategy. A greater understanding of the relationship between gender diversity on the board and innovation may contribute to increasing the number of women in these important roles.*

Originality of the study. *We move forward our understanding of the effects of female family involvement in the board of directors on innovation. We discuss about the invisibility of female family member. We enhance our growing knowledge on gender diversity in family businesses, by studying women's roles as CEO, in relationship with innovation.*

Key words: *gender; invisible women; family business; innovation*

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1. Introduction

The study of women as managers and/or owners is not new to the management literature (Terjesen *et al.*, 2009). Specifically, prior contributions focused on the relationship between women presence in the board and firm's behavior and/or results (Fagenson, 1993; Vinnicombe and Colwill, 1995). Some studies investigated the relationship between the presence of women in management roles and firm's strategic choices (Post and Byron, 2015; Sila *et al.*, 2016; Smith *et al.*, 2006). Others focused on the differences in firm's performance as the female presence in top roles increases.

From a theoretical point of view, these contributions are part of a more general stream of research investigating the relationship between diversity and the firm's performance (Carter *et al.*, 2003; Cox, 1994; Erhardt *et al.*, 2003; Torchia *et al.*, 2015). Diversity refers to the differences that exist between people in terms of age, ethnicity, nationality, gender, educational background or work career, and their effects on the firms' results are investigated. These studies originate from the so-called Upper Echelons Theory (Hambrick and Mason, 1984), according to which the cultural, psychological and cognitive characteristics underlying the observable demographic variables constitute important factors influencing the decisions taken by the top management team and consequently on the behaviors and results of the firms.

While in the specific domain of family business there are only few papers investigating the effects on innovation of women presence in leadership positions (Campopiano *et al.*, 2017), this issue has long been investigated in the management literature.

This literature is often quantitative, comparing the tendencies of women and men to contribute to innovation. Whittington (2011) suggests that "academic mothers" are less likely to patent because "family responsibilities" impede women's ability to innovate. As a consequence, the intersection of gender and innovation appears to be favourable for man. Other studies show that male researchers are more likely than female researchers to be involved in industry cooperation (Bozeman and Gaughan, 2007). Further, public support for innovation or R&D is mainly given to science and engineering, and there is a strong association between masculinity, science and engineering, and innovation and that these processes are intertwined (Dautzenberg, 2012; Marlow and McAdam, 2012). As a consequence, it is not surprising to find in the literature that the concept of innovation is highly gendered, with a strong male connotation (Marlow and McAdam, 2012).

If women are present in every firms, their presence in managerial roles is relevant in the case of family business (Campopiano *et al.*, 2017). Thus, family businesses scholars call for further investigation on those topics (Cesaroni and Sentuti, 2014; Gallucci, 2010; Gallucci *et al.*, 2015). The main goal of those contributions is to build a bridge between studies in the management literature and the specific case of family businesses. Our paper follows this path taking inspiration from both streams of literature. On the one hand, we consider management studies relating board gender diversity and its implications in terms of management and innovation and, on the other, we consider the family business studies that analyze the presence of women in the BoDs.

From a theoretical point of view, paper focuses on the role of women presence in the board and on its impact on FBs innovation. The study of the role of women in the context of family business starts in the 80s (Campopiano *et al.*, 2017). We contribute to recent family business literature in three ways. First, we add to the growing literature on family business heterogeneity (e.g., Dibrell and Memili, 2019) by addressing how innovation output of family businesses varies depending on the composition of the board of directors, specifically with regard to the presence of women directors. Second, we move forward our understanding of the effects of female family involvement in the board of directors on innovation. In particular we discuss about the invisibility of female family member. Third, we enhance our growing knowledge on gender diversity in family businesses (e.g., Campopiano *et al.*, 2017; Chadwick and Dawson, 2018), by studying women's roles as CEO, in relationship with innovation.

From an empirical point of view, our paper investigates the impact on innovation of the presence of women in a sample of 755 Italian FBs. We analyze in depth the women role in the board.

Our research also contributes to practice because our findings will be relevant to family business owners and managers with regard to their innovation strategy, specifically in connection to the composition of the board of directors and its gender diversity. A greater understanding of the relationship between gender diversity on the board and innovation may contribute to increasing the number of women in these important roles.

2. Theoretical framework

2.1 Female presence in family firms

In their recent review, Campopiano *et al.* (2017) underline that contributions analysing the role of women within family businesses are still limited.

Available research suggests that family businesses offer a relatively favourable environment for women to cover key roles (Bianco *et al.*, 2015; Chadwick and Dawson, 2018). For example, small and medium sized family businesses offer a more advantageous context for women to join the board of directors (Songini and Gnan, 2009). Family connections with the controlling shareholder are conducive to joining the board, especially in small firms with concentrated ownership (Bianco *et al.*, 2015). Indeed, in developed countries, family businesses generally have more women on the board than non-family businesses and this is often because female directors are part of the owning family (Bettinelli *et al.*, 2019).

Even if women are more present in family businesses, they usually occupy an informal role (Dumas, 1992). From the literature, it is not clear whether the family environment supports or obstacles the female presence in key roles. On the one hand, family businesses seem to represent the most suitable place to offer opportunities to women, on the other hand, they can be an obstacle, as traditional family roles are perceived as inconsistent with corporate hierarchies and, consequently, the spaces available for women are marginal or invisible (Montemerlo, 2016). The female presence could still be inhibited by the work-family conflict (Vera and Dean, 2005): women can have problems looking after the family if they work too many hours a day (Cadieux *et al.*, 2002). Therefore, the family tends to protect the primary role of caring for the woman's family at the expense of her presence in the firm. This also affects how daughters and sons are prepared for succession (Haberman and Danes, 2007). In this regard, usually daughters spend less time in the family business than the sons. Consequently, the daughters inevitably develop to a lesser extent the firm specific knowledge, and this will be a limit later, in the identification processes of the successor.

According to what emerges from the family business literature, as well as historical and current anecdotal evidence, it is clear that the preferred route in family succession is to identify the heir in the male child. In fact, even if there is an increase in women-led enterprises, there has always been a greater propensity not to consider daughters as possible successors (Dumas, 1998). Keating and Little (1997) identified the gender factor of the successor, explaining the rule according to which the daughters could not become the chosen heir to lead the company following the generational change, except in the absence of other possible heirs.

The reasons, why women are rarely chosen as successors, are manifold and linked to a set of stereotypes attributable to their supposed lower working capacity and to their reluctance to sacrifice the family, in which the female role is certainly central. In this regard, Dumas (1998), investigating the challenges and opportunities that women must face and seize respectively, and considering that the contribution of women in family businesses is recognized, but not evident, identifies the barriers to participation and hiring leadership in the social structure, in the family role expected of the woman, in the relationship with parents, siblings and unfamiliar members, as well as in problems

related to the assumption of power and authority. Furthermore, female leaders tend to favor the family over the company's performance (Gherardi and Perotta, 2016) and this could lead to a negative assessment of the presence of women in key roles by relatives and other stakeholders. It is often the case that women are considered by their family less legitimate than males to manage the family business, and thus they do not plan a real career within the firm, but participate when needed or during a crisis (Dumas, 1998). The need to ensure the dynastic continuity of the firm is one of these cases and can contribute to the start of female entrepreneurship (Cassia *et al.,* 2011).

2.2 Hypotheses development

To develop our hypotheses, we take insights from the gender role theory (Eagly 1987). Gender role theory predicts that men and women have a strictly predetermined behavior with regards to communication and to influence tactics. Specifically, women are expected to present typical attributes of feminine roles such as sympathy and kindness (Eagly 1987); men, on the contrary, are expected to be more assertive and aggressive. Women are expected to have more flexibility which leads to a greater ability to manage ambiguous situations (Rosener 1995). We adopt this theory, considering that gender roles are relevant for the board understanding because male or female as directors must use communication tactics that are effective in terms of influence. As such, we expect to see a positive relationship between the board gender diversity and innovation output.

Family businesses are unique institutions. They represent a context in which two superficially different social units (i.e., families and businesses) are substantially integrated (D'Allura, 2019). There is an "intimate connection between family and business" that is "natural and compatible" (Davis, 1968). This connection covers the succession across generations. One of the result of this connection is that family businesses generally have more women on the board than non-family businesses, because female directors are part of the owning family. The main consequence is that that they are often selected because of their family ties rather than for their competencies (Bettinelli *et al.*, 2019). However, even if normally involved directly in the daily operations of the family business, women do not receive recognition for their contribution, neither for a formal position in the company nor for a salary and, in short, they do not receive the same consideration as their male relatives within the enterprise due to the motivation they are selected (Hollander and Bukowitz, 1990). This phenomenon has been recognized in the literature as the invisibility of women (Cole, 1997). What we argue is that there is further kind of invisibility, in particular we argue that even if female family member are recognised in the Board, they cannot exercitate their role because they are a token for the family and because of the connection covers the succession across generations.

For all these reasons, we expect that:

HP1: The relationship between family women presence and level of innovation is negative

Considering social barriers family and non family female face in the boardrooms, previous contributions suggested that women minorities need to have other qualities to be influential: directors, specific prior board experience and network ties (Westphal and Milton, 2000), interlinks with other boards (Cook and Glass, 2015), individual power as CEO (Triana *et al.*, 2013). Others argue that they should reach a critical mass (Kanter, 1977; Konrad *et al.*, 2008), which the literature identifies as three members (e.g. Torchia *et al.,* 2011). What we argue there is expanded for family woman, in particular:

HP2: The relationship between family women presence and level of innovation became positive when women are CEO.

3 Methodology

3.1 Data and sample

Family businesses play a primary role within the global context both in terms of social impact and with respect to the importance assumed within the economic dynamics (Tapies and Ward, 2008). According to estimates by the Family Firm Institute, two out of three companies are family businesses. They produce an annual gross domestic product share of approximately 70% to 90% and, in most countries, create more than half of the jobs available (between 50% and 80%). The predominant role of family businesses is also confirmed in the European context and, in particular, in the Italian one (Cesaroni and Sentuti, 2010; Colli, 2002; Corbetta, 2011; Gallucci and Gentile; 2009; Giacomelli and Trento, 2005), where 82% of family businesses out of total businesses. In the Italian context, a further peculiarity is attributable to the fact that even large companies are for the most part familiar (Corbetta *et al.*, 2011). These characteristics of the industrial fabric justify and support the use of a sample of Italian origin to conduct empirical analyzes.
Our sample is made up of Italian family businesses. The sample for this study comprises 755 Italian firms. The dataset, updated to 2018, was randomly gathered by merging data from the following datasets: Espacenet, Aida (Bureau Van Dijk), Borsa Italiana and Reprint. We operationalize family business through the key dimensions of ownership. We control for the representativeness of the sample according to relevant dimensions. Further test were conducted by comparing the representativeness of family dimension and firm dimension.

We select Family Business as a binary variable equal to 1 if either a non-listed firm is majority owned by the family or no less than 20% of a listed firm is owned by the family, and zero otherwise (Anderson and Reeb, 2003).The variable describing the family nature of the firm were constructed by crossing data from the Aida database and from Borsa Italiana databases.

3.2 The variables and the Models

Given the count nature of the dependent variable, for the main effect we adopt Poisson models to estimate the influence of the independent variables on the dependent variables (Greene, 2018; Wooldridge, 2015; Kennedy, 2003).

The dependent variable is the number of patent (Innovation).

We measure the female presence as the number in BoD (Female Board). We measure the variable Family Women as a dummy variable indicating whether they are part of the family or not. We measure the variables women's power, as a dummy variable depending on the role in the BoD, the dummy take value 1 if the female is a CEO, zero otherwise (Female CEO).

According to previous research on the factors affecting firm's degree of innovation, we controlled for several firm-specific characteristics: firm size and age, firms' internationalization, financial constraints, profitability, productivity, geographical localization, listed and industry (e.g., De Rassenfosse, 2010; Chabchoub and Niosi, 2005; Arundel and Kabla, 1998; Mansfield, 1986; Horstmann *et al.*, 1985).

Firm size and firm age are proxies for accumulated knowledge and managerial experience (Brouwer and Kleinknecht, 1999). Thus, we measured Size as the logarithm of total sales and Age as the logarithm of the number of years since the firm foundation. We controlled for Profitability, measured as the return on equity, and Productivity as the value added per employee (Hanel and St-Pierre, 2002). We further controlled for Internationalisation which is measured by the logarithm of the number of total FDIs made by the parent company in foreign markets. Past literature suggests that by acting in international markets, firms can better capitalize the exclusive rents of innovation. Multinational firms offer products to a larger number of potential buyers, thereby enhancing profits from innovation efforts and spreading innovation costs. Internationalization lowers the risk of R&D by avoiding fluctuations and business cycles specific to a single market (Kafouros *et al.*, 2008). Furthermore, international investments enhance a firm's knowledge about the environment and the

competition in different countries. This knowledge drives the firm's efforts into the most promising innovative objectives (Filippetti *et al.*, 2009). We proxy international presence through the variable Internationalisation, here measured as the logarithm of the number of firm's foreign subsidiaries.

To take into account if the firm is exposed to financial restrictions a firm needs adequate capital to develop its innovative ideas, we control for Financial Constraints (ratio of current assets net of inventory to current liabilities). The binary variable Localisation takes the value one when the firm is located in the South of Italy, and zero otherwise; indeed, regional location of the headquarter in Southern Italy vs. other regions entails differing services and resource availability. The variables Listed is a dummy, in this case it is equal to 1 if the firm is listed, 0 otherwise. Finally, we include industry dummies as further controls not only because of the significant impact of the industry on innovation capacity (Scherer, 1983), but also because patenting is more extensively used as an intellectual-property protection tool in science-based industries. The analysis monitored the industry by using the Pavitt taxonomy (1984). Four binary variables identify whether the firm belongs to a traditional sector, a scale-intensive sector, a specialized supplier sector, a science-based sector or any other sector (the variables are Pavitt traditional, Pavitt scale intensive, Pavitt specialised supplier, Pavitt science based and Pavitt other, respectively).

To test our hypothesis, we develop five econometric models that relate the innovation output of the firm with the different kind of presence of women in the boardroom.

We then estimate other four conceptual models to further elaborate on the idea of female presence in family firms. First, we consider the simple presence of female family member in the board.

Then, we consider the presence of female family member in the board under three different scenario. The first scenario (Model 3) concerns the case where Female Family are in the board with other female. The second scenario (Model 4) concerns the case where Female Family are in the board as CEO. The last scenario (Model 5) concern the synthesis of the previous.

3.3 Descriptive analysis

The overall descriptive statistics reported in Table 1 show that the average Innovation is equal to 36 patents. The average size is equal to 3.26 logarithm of total sales and almost nine out of ten firms are localised in the North of Italy. The average profitability is more than 8% revealing a good sample of profitable family firms.

As concern the female variables, if we consider the whole sample, there is an average female presence in important decision-making roles of just over 11%, a percentage that rises to 31% if instead we only refer to the subgroup where actually at least one family woman takes part in the Board (Table 1). A first significant figure is found by considering the female presence in the whole sample that is more than 70%, while for the other they are significantly less and equal to about 59%. As for the other descriptive statistics, what appears evident is how companies with the presence of women in decision-making roles are larger and more structured companies. Consistently, since the listing on the Stock Exchange necessarily requires a certain corporate solidity from both an organizational-managerial and economic-financial point of view, 39% of companies with women are listed on the Stock Exchange, compared to just under 34% of those without female presence (with significance $p < 0.10$). The analysis of the reference sample shows that the percentage of family members holding the CEO position is very high but, at the same time, the percentage of female CEOs is very low for an average of just over 7%. However, distinguishing between family and non-family businesses, there is a percentage presence of women who hold the CEO position statistically significantly, for $p < 0.10$, higher in the former and equal to more than 7%. There is also a general prevalence of percentages of women in the BoD among family businesses equal to about 14% against about 6% of non-family businesses.

Correlations is acceptable among all variables.

Tab. 2: Empirical results

Statistic	Mean/ Percentage	St. Dev.	Min	Max
Innovation	36.764	312.622	0	7,710
Female Board	0.544	1.005	0	5
Female Family	31.1%	0.463	0	1
Female Power	11.2%	0.316	0	1
Size	3.265	1.917	-5.116	8.079
Age	3.615	0.538	2.079	5.231
Profitability	8.2%	0.174	-1.430	0.790
Internationalization	1.477	1.143	0	4.898
Localization	90.0%	0.300	0	1
Financial Constraints	0.412	0.227	-0.396	1.000
Productivity	7.822	8.042	0.080	98.740
Listed	5.5%	0.228	0	1

4. Empirical results

Table 2 reports the regression results from Model 1 to Model 5, and Figure 1 reports interaction graphs. The econometric results highlight that not all Female variables considered exert the same impact and that only some of the traditional variables included as determinants of innovation have the expected impact.

Results show that the female presence in the board has a negative impact on innovation (Female Board is negative and significant at p<.01 in Model 1) but when controlling for the presence of female family member and introducing the variable Female Family, the variable Female Board became positive and significant at p<.01 in Model 2. This revealing that the presence of family female has a negative impact on innovation (Female Family is negative and significant at p<.01 in Model 2). Female Family shows the same negative coefficient in Model from 2 to 5: we argue that results suggest the existence of the phenomenon of family tokenism from female member. The empirical relationship between the diversity of corporate directors and firm performance has received much more attention in the literature than female presence measured as we propose here. Tokenism, polarization and assimilation all derive from the low proportionate representation of minority group members. Tokenism is defined as "a tendency for minority members to be viewed as representatives of their culture group rather than as individuals, as well as a tendency for their performance, good or bad, to be magnified because of the extra attention that their distinctiveness creates" (Cox, 1994). This can explain the negative role of female family member on innovation.

As explained, literature argues that female should reach a critical mass in order to be effective (Kanter, 1977; Konrad *et al.*, 2008), the literature identifies the critical mass as three members (e.g. Torchia *et al.*, 2011). When looking at the interaction of Female Family and Female Board as a factor in Model 3, results demonstrate that the influence of female family member became positive only when at least three women are in the board, suggesting that the critical mass must be reached in order to make the contribution effective and heard (as.factor Female Board=1*Female Family and as.factor Female Board=2*Female Family are both negative and significant at p<.01; as.factor Female Board=3*Female Family, as.factor Female Board=4*Female Family, as.factor Female Board=5*Female Family are all positive and significant at p<.01 in Model 3). When considering the role as CEO, the impact of female family member became positive and significant (Female CEO is positive and significant at p<.01 in Model 4 and 5). These results confirm the idea that, given the social barriers female family face in the boardroom, women minorities need to have either critical mass or powerful positions to be influential.

Tab. 2: Empirical results

	Dependent variable:				
	Innovation				
	-1	-2	-3	-4	-5
Female Board	-0.124***	0.223***		0.254***	
	(0.007)	(0.012)		(0.013)	
as.factor Female Board=1			-0.598***		-0.721***
*Female Family			(0.020)		(0.024)
as.factor Female Board=2			-1.006***		-1.085***
*Female Family			(0.032)		(0.033)
as.factor Female Board=3			0.072**		-0.084**
*Female Family			(0.033)		(0.036)
as.factor Female Board=4			0.720***		0.766***
*Female Family			(0.045)		(0.044)
as.factor Female Board=5			0.198***		0.196***
*Female Family			(0.048)		(0.048)
Female Family		-0.928***		-1.065***	
		(0.026)		(0.030)	
Female CEO				0.232***	0.293***
				(0.025)	(0.027)
Size	1.207***	1.185***	1.197***	1.184***	1.197***
	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
Age	0.383***	0.341***	0.332***	0.334***	0.324***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Profitability	0.110**	-0.374***	-0.076	-0.301***	-0.004
	(0.051)	(0.051)	(0.056)	(0.052)	(0.056)
Internationalisation	0.023***	0.015*	0.014	0.019**	0.021**
	(0.008)	(0.008)	(0.009)	(0.008)	(0.009)
Localisation	0.345***	0.247***	0.276***	0.197***	0.207***
	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)
Financial Constraints	1.709***	1.886***	1.848***	1.897***	1.856***
	(0.035)	(0.036)	(0.037)	(0.036)	(0.037)
Productivity	-0.453***	-0.448***	-0.456***	-0.449***	-0.457***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Listed	0.538***	0.142***	-0.148***	0.065**	-0.214***
	(0.027)	(0.032)	(0.035)	(0.033)	(0.035)
Sector	YES	YES	YES	YES	YES
Constant	-1.818***	-1.423***	-1.545***	-1.340***	-1.481***
	(0.078)	(0.078)	(0.080)	(0.079)	(0.080)
Observations	755	755	755	755	755
Log Likelihood	-32,483.910	-31,811.770	-31,404.710	-31,768.090	-31,344.770
Akaike Inf. Crit.	65,005.82	63,663.54	62,855.43	63,578.17	62,737.53

Note: *p<0.1; **p<0.05; ***p<0.01

5. Conclusion, limits and future developments

In this paper we investigated the effect of board gender diversity on innovation with a focus on family businesses. From a theoretical point of view, we moved from the invisibility of female family member to build our hypotheses. From an empirical point of view, we tested our hypotheses on a sample of 755 Italian FBs. Our results support the idea that the relationship between family women on the Board and level of innovation is negative due to their invisible condition. Specifically, given the social barriers family female face in the boardrooms, they need to reach a critical mass and/or to hold powerful positions in order to be influential. In that case the relationship between family women on the Board and level of innovation becomes positive because they lose their invisible condition.

The invisibility of the woman is a well-known phenomenon in the literature: women are rarely considered as candidates for the management for the succession at the helm of the business. Still, in family firms, women presence in boards and in control positions (president or vice-president of the BoD) is higher than in non-family firms; however this is often an obligatory choice due to the lack of male successors or due to a crisis looming over the company (Curimbaba, 2002; Dumas, 1992, 1998; Haberman and Danes, 2007). Our findings confirm the idea that the prejudice against women

is present in family firms (as it is in non-family firms), and show that this prejudice is detrimental to innovation. However, both the presence of family women in control positions (i.e. as CEO) and the presence of a critical mass (i.e. three or more women in the BoD) helps in mitigating the effect of prejudice on innovation.

Our findings have also impact on practice. Owners and managers can observe how the gender diversity in the board, in general, and the female presence, specifically, positively impact firms innovation strategy. We hope that our results will inspire a new path for women inside family business, increasing the number of women in important roles. Further research is still needed in order to improve our understanding of the relationship between gender diversity on the board and innovation with the goal to support owners and managers practice.

Our paper presents some limitations. First the sample is limited to Italian firms only. The same study may be replicated in countries characterized by different institutional and socio-cultural contexts and could provide different results. The social dynamics and the role of women in the entrepreneurial arena are strongly influenced by the institutional system in which the firm operates. Specifically, a culture more inclined towards the female figure in leadership roles can influence the contribution made by women to those processes.

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Company's distress and legality under the magnifying glass of artificial intelligence: the contribution of decision trees to identify best practices

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Abstract

Objectives. *The aim of the study is to examine whether and how artificial intelligence (AI) may facilitate the joint comprehension of corporate distress and corporate legality. The main subjects of investigation are both represented by the valuation of company's distress and by the legality rating (LR), which is a measure of the company's degree of legality). LR's adoption allows firms to benefit from some advantages when accessing to credit. For this reason, LR is related to the company's creditworthiness, and by consequence, to the company's distress.*

Methodology. *The dataset is composed by companies in possession of legality rating. AI is used as methodological approach. Decision trees allow to automatically identify combination of variables from the dataset that explains the two target variables, zone of discrimination and cut off, according to a different perspective, that is not considered by Z' score.*

Findings. *AI allows to identify a new "basket" of variables, different from those employed by the Altman's Z' score, that determine the company's distress. The experiments test the "ability" of the algorithm to identify a combination of variables to predict the target. It is possible to analyze in which way these variables get along with each other in order to produce with accuracy the correct identification of the target variable.*

Research limits. *The methodology needs to be adapted determining plausible interval for the variables identified by the decision trees. The dimensionality of the dataset can benefit from resampling the variables for the proposed methodology which, at the state of the art, suffer from problems of skewness.*

Practical implications. *The AI methodology is able to process large amounts of records within a given dataset, so allowing to test the effectiveness of LR in the assessment of creditworthiness.*

Originality of the study. *The recognition and composition of the new variables can be interpreted as a tool to strengthen the comprehension of company's distress.*

Key words: *company's distress; legality rating; artificial intelligence; decision tree; Z score*

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1. Introduction

The aim of the study is to examine whether and how artificial intelligence (AI) may facilitate the joint comprehension of *distress* (Vulpiani, 2014) and *legality* within the business context.

At this purpose, the two main subjects of investigation, cited above, are represented on the one hand by the company's *degree of legality*, and on the other hand by the valuation of *company's distress*.

This inquiry employs the framework offered by the *legality rating* (*LR*), in order to measure the company's *degree of legality*. In particular, only the Italian companies in possession of *LR* compose the sample used in this investigation. For this reason, the contribution of the *LR* must be seen in the broader framework of the research introduced below.

The following of the paper shows that *LR*'s intrinsic peculiarities open up to some considerations on *distress*.

LR was introduced by the Italian legal system with the Legislative Decree n.1/2012. It measures the company's compliance, with standards of legality, along a scale of values - from "*" to "***" - in relation to the different levels of legality achieved by the company.

The current Italian regulatory framework provides that the companies, in possession of *LR*, can benefit from some advantages when accessing to credit both from public administrations and banks. Conversely, it follows that public administrations and banks evaluate the presence of *LR* when granting loans to firms, so allowing them to take advantage of favored conditions.

This perspective paves the way to the evaluation of the access to credit that, on one side, is strictly linked to the assessment of *creditworthiness*, and, on the other side, it is related to the company's *distress*, since the lower the likelihood of bankruptcy the higher the *creditworthiness*.

This study evaluates the financial performance of the Italian companies, in possession of *LR*, by examining their *distress*, according to a *bankruptcy prediction model*. Then, Altman's *Z' score* is employed as a *benchmark* to identify two *best practices*: the *zone of discrimination* and the *cut off*.

The «zone of discrimination» allows classifying the companies into three zones, in relation to the values of Z' score: *safe zone*, *grey zone*, and *distress zone*. The variable «cut off», equally basing on the values of *Z' score*, divides the companies into those belonging to the zone of *possible distress* or to the zone of *potential solvency*.

Thus, both variables derive from Altman's *Z' score*, where the former deals with certainty, since it identifies the companies with a sure and well-defined financial profile (namely, *solvent*, *insolvent*, and *to be determined*), while the latter is related to uncertainty. Notably, the *cut off* represents an explanation of uncertainty, as it allows a better understanding of the conduct of companies falling into the *grey zone*, defined by the *zone of discrimination*. In other words, the *cut off* offers a further meaning to the *actual* financial behavior, by establishing a demarcation line of the financial behavior, even if *potential*, and whenever the *zone of discrimination* is *grey*.

Then it is proposed the use of *decision trees*, a well-established artificial intelligence methodology (Quinlan, 1993; Mitchell, 1997; Witten, 2011).

With the employment of *decision trees*, it is possible to automatically identify combination of variables from the dataset (from 2 to 7, out of 101 variables) that explains the two target variables, *zone of discrimination* and *cut off*, according to a different perspective, that is not considered by *Z' score*, and that seems plausible from a technical point of view. In fact, all new variables are able to catch up different sides of the company's financial profile and so they are translatable into a model to understand the company's financial health.

Moreover, the methodology proposed allows the representation of *decision processes* according to *paths* on the *tree's* branches or through a set of easily browsable *rules* (Anderson *et al.*, 2015; Masías *et al.*, 2015).

In a nutshell, the AI methodology allows to identify a new «basket» of variables, different from those employed by the Altman's Z' *score*, that determine the distress' zones of discrimination.

Moreover, it is possible to analyze in which way these variables get along with each other in order to produce with a given *accuracy* the same result, that is the correct identification of the target

variables. So, the recognition and composition of these new variables can be interpreted as a tool to strengthen the comprehension of *company's distress.*

The paper is organized as in the following. Section 2 - *Background* - reports on the *LR*, the *valuation of company's distress*, Altman's Z score, that represent our benchmark for the further analysis, and some preliminary considerations on the sample dataset employed afterwards. Section 3 - *Methodology and data* contains a detailed description of the artificial intelligence methodology employed. Section 4 - *Experiments* reports on the two experimental settings, describing, respectively, how decision tree identifies *zone of discrimination* and *cut off* targets. The final Section discuss the results and depict the conclusion.

2. Background

The valuation of company's distress

Despite the absence of a universal definition of *distress*, analysts usually differentiate the *financial distress* from the *operational distress* (Vulpiani, 2014). As known, whereas the former occurs when the values of equity and debt show the potential or likelihood of default, the latter is related to sporadic events (*e.g.*, economic downturn, employee turnover, and so forth) or to the direct consequence of financial distress.

Bankruptcy, in fact, is recognized as the last *threshold of distress* (Pratt S. P., 2010; Damodaran A., 2002). Financial distress is usually considered the last step before bankruptcy as it happens when it is impossible to generate revenues or income and meet or pay the financial obligations.

In order to assess the degree of severity of *business distress*, bankruptcy prediction models run as useful tools.

The bankruptcy prediction models are divided into three categories:

- accounting-ratio-based models;
- market-based models;
- hybrid models.

The *accounting-ratio-based* models work with information and data collected from the financial statements; the *market-based* models use the *debt/equity ratio* (D/E), which are specific for each company, in order to measure the distance to default on the basis of the asset volatility; finally, the *hybrid* models combine different aspects of the two previous models.

Among the *accounting-ratio-based* models fall both the Altman Z-score and the Ohlson O-score. Altman's *Z-score*, and its subsequent variants, belongs to the *accounting-ratio-based* set of models. In the following a detailed description of Altman's *Z score* is provided since it represents the benchmark of the experimental setting of the artificial intelligence methodology proposed in this work.

The first formulation of Altman's *Z-score* dates back to 1968 (Altman, 1968) and it is expressed by the following overall *index* (*Z*), that is a linear combination of five variables:

$$Z = 1{,}2\ X_1 + 1{,}4\ X_2 + 3{,}3\ X_3 + 0{,}6\ X_4 + 0{,}999\ X_5$$

Where:
X_1= Working Capital/ Total Assets;
X_2= Retained earnings/ Total Assets;
X_3= Earnings Before Interest and Taxes (EBIT)/ Total Assets;
X_4= Market Value of Equity/ Book Value of Total Liabilities;
X_5= Sales/ Total Assets

A brief explanation of the variables is provided (Altman E., 2000).

The variable X_1, the working capital/total assets ratio, is a measure of the net liquid assets of

the in relation to the total capitalization. Working capital is defined as the difference between current assets and current liabilities.

The retained earnings/total assets ratio (variable X_2), reports the total amount of reinvested earnings and/or losses of a firm over its entire life. In addition, this ratio measures the leverage of a firm: the higher the ratio the lower the use of debt, as the financing occurs through retention of profits.

A measure of the true productivity of the firm's assets is offered by the EBIT/total assets ratio (variable X_3). This evaluation is independent of any tax or leverage factors. It is useful to remember that insolvency occurs when the fair valuation of the firm's assets is lower than the total liabilities.

The market to book ratio (variable X_4) assesses the market value of equity, referred to all shares of stock, preferred and common, on the total liabilities, both current and long term. It measures the reduction of value of the firm's assets before the insolvency state (when liabilities exceed the assets).

Lastly, the variable X_5 is the capital-turnover ratio. It shows the ability of the firm's assets in generating sales and it is strictly linked to the management's capacity in dealing with competitive conditions.

In this early model, the zones of discrimination are determined by the following *Z-score* values:

Tab. 3: Zones of discrimination for Z-score

Zone	**Z score**
Distress	< 1,80
Grey	1,80 < Z' score < 2,99
Safe	> 2,99

Source: Altman 1968

The values of the *Z score* must be compared with its critical point, the *cut-off point* (2,675), which divides the zone of *possible distress* from the zone of *potential solvency*. When the values of *Z score* are above the *cut-off* point, firms are considered as potentially *healthy*; while, in case of values of *Z score* below the *cut-off point*, the companies go through a possible *distress*.

This first Altman model, however, was suitable only for publicly traded firms, and so it was not applicable to not listed companies. In order to address this issue, a new *Z-score* (Z') was set up in 1983 (Altman 1983). The main novelty of this second model pertains to the variable X_4, as originally it was based on *stock price* data: in fact, in order to catch up the features of companies with shares not traded on the stock market, the market value of equity is replaced by the book value of equity. The substitution of the book value of net worth for the market value allows to derive a discriminant function for privately held firms.

As consequence of this pivotal change, all the coefficients and their limit-scores changed, so arriving at the following formula of *Z' score*:

$$Z' = 0{,}717\ X_1 + 0{,}847\ X_2 + 3{,}107\ X_3 + 0{,}420\ X_4 + 0{,}998\ X_5$$

Where:
X_1= Working Capital/ Total Assets;
X_2= Retained earnings / Total Assets;
X_3= Earnings Before Interest and Taxes (EBIT)/ Total Assets;
X_4= Book Value of Equity/ Total Liabilities;
X_5= Sales/ Total Assets

The aforementioned changes are reflected in the identification of new zones of discrimination:

Tab. 4: Zones of discrimination for Z' score

Zone	**Z' score**
Distress	< 1,23
Grey	1,23 < Z' score < 2,90
Safe	> 2,90

Source: Altman 1983

It should be noted that for the *Z' score*, the *cut-off point* remains unchanged (2,675) if compared to the previous model.

As consequence, the uncertainty zone, the so-called *grey zone*, can be better interpreted by dividing it into the zone of *possible distress* (1,23<Z' score<2,675) and the *zone of potential solvency* (2,675<Z' score<2,90).

Tab. 5: Z'-score: interpretation of the "grey" zone

Zone		**Z' score**
Distress		< 1,23
Grey	Possible distress	1,23 < Z' score < 2,675
	Potential solvency	2,675 < Z' score < 2,90
Safe		> 2,90

Source: authors' elaboration

However, even this second model suffered from a lack: the unsuccessful application to non-manufacturing firms. For this reason, a further revision occurred: the asset turnover (X_5) is removed in order to minimize the industry effect.

As a result, Altman's model for non-production enterprises is the following (Altman, Hartzell, Peck, 1995, p. 3):

$$Z'' = 6.56\ X_1 + 3.26\ X_2 + 6.72\ X_3 + 1.05\ X_4$$

Where:
X_1= Working Capital/ Total Assets
X_2= Retained earnings / Total Assets
X_3= Earnings Before Interest and Taxes (EBIT)/ Total Assets
X_4= Book Value of Equity/ Total Liabilities

In this third model, the zones of discrimination are so determined:

Tab. 6: Zones of discrimination for Z''-score

Zone	**Z'' score**
Distress	< 1,1
Grey	1,1 < Z' score < 2,60
Safe	> 2,60

Source: Altman *et al.* 1995

A summary of the different Z-score models by Altman is shown in the following table.

Tab. 7: Altman Z-score models

				Cut-off scores		
Model	**Applicable to**	**Formula**	**Variables**	**Safe zone**	**Grey zone**	**Distress zone**
Altman, 1968	Publicly traded firms	$Z = 1{,}2\ X_1 + 1{,}4\ X_2 + 3{,}3\ X_3 + 0{,}6\ X_4 + 0{,}999\ X_5$	*X_1= Working Capital/ Total Assets* *X_2= Retained earnings/ Total Assets* *X_3= EBIT/ Total Assets* *X_4= Market Value of Equity/ Book Value of Total Liabilities* *X_5= Sales/ Total Assets*	$Z > 2.99$	$1.80 < Z < 2.99$	$Z < 1.80$
Altman, 1983	Not listed firms	$Z' = 0{,}717\ X_1 + 0{,}847\ X_2 + 3{,}107\ X_3 + 0{,}420\ X_4 + 0{,}998\ X_5$	*X_1= Working Capital/ Total Assets* *X_2= Retained earnings/ Total Assets* *X_3= EBIT/ Total Assets* *X_4= Book Value of Equity/ Total Liabilities* *X_5= Sales/ Total Assets*	$Z' > 2.90$	$1.23 < Z' < 2.90$	$Z' < 1.23$
Altman *et al.*, 1995	Non-manufacturing firms	$Z'' = 6.56\ X_1 + 3.26\ X_2 + 6.72\ X_3 + 1.05\ X_4$	*X_1= Working Capital/ Total Assets* *X_2= Retained earnings / Total Assets* *X_3= EBIT/ Total Assets* *X_4= Book Value of Equity/ Total Liabilities*	$Z'' > 2.60$	$1.1 < Z'' < 2.60$	$Z'' < 1.1$

Source: authors' elaboration

In this inquiry, *Z' score* is used as corporate bankruptcy prediction model, as it well adapts to private companies, which, in fact, compose the sample under investigation.

The other *accounting-ratio-based* bankruptcy prediction model is the Ohlson O-score. It dates back to 1980 (Ohlson, 1980) and, relying on an econometric approach, it is the result of a nine-factor combination. Ratios are aimed to catch up four significant factors: size, financial structure, performance and liquidity. They are coefficient-weighted and directly obtained from companies' financial statements.

The O-score is given by the following model:

$$\text{O-score} = -1.32 - 0.407\ o_1 + 6.03\ o_2 - 1.43\ o_3 + 0.08\ o_4 - 2.37\ o_5 - 1.83\ o_6 - 0.285\ o_7 - 1.72\ o_8 - 0.52\ o_9$$

Where:

o_1= Total Assets, inflation adjusted;
o_2= Total Liabilities/Total Assets;
o_3= Net Working Capital/Total Assets;
o_4= Current Liabilities/Current Assets;
o_5= Net Income/Total Assets;
o_6= EBITDA/Total Liabilities;
o_7= 1 if net income was negative for the last two years, 0 otherwise;
o_8= 1 if equity book value is negative, 0 otherwise;
$o_9 = \frac{Net\ Income_t - Net\ Income_{t-1}}{|Net\ Income_t| + |Net\ Income_{t-1}|}$

The formula to convert the O-score into a probability of default is:

$$Probability\ of\ Default = \frac{e^{O-score}}{1 + e^{O-score}}$$

Legality rating: general features

The legality rating (LR) is a measure of the degree of legality valid only within the Italian legal system.

It is a voluntary rating, granted on application by a party. The competent authority for its release is the Italian Competition Authority (AGCM).

Only companies that cumulatively meet the following requirements can request the rating:

- operational headquarters in Italy;
- a minimum turnover of two million euros in the last financial year closed in the year prior to the request for rating, referring to the single company or group to which it belongs and resulting from a financial statement approved and published in accordance with the law;
- at the date of the LR request, the registration in the business register for at least two years.
- compliance with the other substantive requirements by the Regulation.

The base score is "*", one star, and to obtain it, the company must comply with all the substantive legislative requirements. These basic requirements refer both to the legal persons requesting the rating and to the natural persons belonging to them, and in the case of a collective enterprises, these requirements must be held also by the natural persons holding majority shareholding, even if relative.

Basic requirements include the absence of: personal and patrimonial prevention measures; personal and patrimonial precautionary measures; penal sentences of conviction; plea bargaining for tax offenses pursuant to Legislative Decree 74/2000, for offenses pursuant to Legislative Decree 231/2001, for certain crimes against the Public Administration, against property and for offenses relating to social security; criminal proceedings for mafia crimes; convictions in relation to provisions of the Authority and the European Commission for serious antitrust violations, which have become unassailable or confirmed by a final judgment in the two years preceding the rating request; measures for unfair commercial practices confirmed with a final judgment in the two years preceding the rating request; declaratory findings in relation to: payment of taxes and fees and violations regarding the remuneration, social security and insurance obligations confirmed with a final judgment in the two years preceding the rating request; compliance with the provisions of law relating to the protection of health and safety in the workplace, which have become unassailable or confirmed by a final judgment in the two years preceding the rating request.

The base score may be increased by a "+" for each additional requirement that the company meets. The additional requirements are:

a) the adoption of protocols or legal agreements aimed at preventing and contrasting the infiltration of organized crime into the legal economy, signed by the Ministry of the Interior or by the Prefectures with business and professional associations;
b) the use of payment tracking systems also for sums of amounts lower than those established by law;
c) the adoption of a function or organizational structure, also in outsourcing, which carries out the control of compliance of company activities with regulatory provisions applicable to the company or of an organizational model pursuant to legislative decree 8 June 2001, n. 231;
d) the adoption of processes aimed at guaranteeing forms of Corporate Social Responsibility also through adherence to programs promoted by national or international organizations and the acquisition of sustainability indexes;
e) the registration in a list of suppliers not subject to mafia infiltration attempts (white list);
f) the adoption of self-regulatory ethical codes adopted by trade associations or provision of

mediation clauses in contracts with its customers, when not mandatory by law, for the resolution of disputes or adoption of protocols between associations of consumers and business associations for the implementation of joint conciliations;

g) the adoption of organizational models for the prevention and contrast of corruption.

The achievement of three "+" involves the attribution of an additional star, up to a maximum score of "***" (i.e., three stars).

Tab. 1: Legality Rating - Requirements

Purpose	**Requirements**
Request of LR	Cumulatively: • operational headquarters in Italy • turnover ≥ € 2 million • registration in the business register for at least two years
"*" Achievement	Compliance with the other substantive requirements
"+" Increasement	Compliance with an additional requirement
"*" Increasement	Compliance with three additional requirements

Source: authors' elaboration

The possible combinations of LR in relation to their requirements are summarized in the following table.

Tab. 2: Legality Rating scores

Rating	**Requirements**
*	Basic requirements
*+	Basic requirements and 1 additional requirement
*++	Basic requirements and 2 additional requirements
**	Basic requirements and 3 additional requirements
**+	Basic requirements and 4 additional requirements
**++	Basic requirements and 5 additional requirements
***	Basic requirements and 6 additional requirements

Source: authors' elaboration

LR lasts two years from issue, is renewable on request and is free of charge.

Company's distress and legality rating

LR's adoption allows firms to benefit from some advantages when accessing to credit. In fact, both the public administrations and banks, when granting loans, consider the company's *LR*.

As regards the methods by public administrations for considering the *LR* when granting loans, the possession of *LR* is translated into at least one of the following rewarding systems:

a) preference in the ranking;
b) attribution of additional points;
c) share reserve of the financial resources allocated.

As regards the access to bank credit, the potential benefits recognized by banks in presence of *LR* are:

a) reduction of the investigation time;
b) better economic conditions when requesting or renegotiating the loan;
c) reduction of investigation costs.

In relation to the access to bank credit, the Italian legal system establishes that Italian financial institutions should consider LR among the parameters to assess the company's creditworthiness.

In fact, Italian banks should define and formalize internal procedures to regulate the use of LR. Financial institutions take LR into account to determine the loans' conditions of disbursement when relevant with respect to the firms' economic and financial performance.

In light of these considerations, LR is related to company's creditworthiness, and by consequence, to the company's distress. In fact, the higher the creditworthiness the lower the likelihood of bankruptcy.

3. Methodology and data

Since LR is a measure of the degree of legality valid only within the Italian legal system, the *dataset* employed is exclusively composed Italian companies. In particular, qualitative and quantitative information of 6.005 Italian companies have been extracted from Bureau van Dijk AIDA. All the companies under investigation are in possession of *legality rating*.

The sample includes the companies whose legality rating was conferred for the first time or renewed by the Italian Competition Authority (AGCM), updated at 12/10/2018. The list of companies is publicly available on the AGCM website.

As said above, in order to better grasp the peculiarities of the Italian business context, this research uses the Altman's *Z' Score* as corporate *bankruptcy prediction model*. This choice originates from the main intrinsic features of *Z' score*, illustrated in the previous section: it is suitable for not listed companies. This characteristic allows to fit the features of the companies within the sample.

The data to calculate the *Z' score* refer to the 2016 financial year.

The companies have been classified into four geographical areas (*North East*, *North West*, *Centre*, *South and Insular*), according to the NUTS 1 (Nomenclature of Territorial Units for Statistics at the first level - subdivision for Groups of Regions), based on the Region of the operational headquarters. In absence of this information, the Region of the legal headquarters has been chosen.

The *size-class* considers three parameters and defines four categories of companies: *micro*, *small*, *medium* and *big*[1].

Tab. 7: Size-classes

Size-class	**Parameters (at least two out of three)**		
	Total Assets	**Sales Revenues**	**Employees**
Micro	≤ € 175.000	≤ € 350.000	≤ 5
Small	≤ € 4.400.000	≤ € 8.800.000	≤ 50
Medium	≤ € 20.000.000	≤ € 40.000.000	≤ 250
Big	> € 20.000.000	> € 40.000.000	> 250

Source: authors' elaboration

In this study, in order to evaluate the company's distress, the Altman Z' score has been chosen. In fact, as illustrated in the section "*The valuation of company's distress*", this model is suitable for not listed firms, and due to this feature, it fits the companies within the sample.

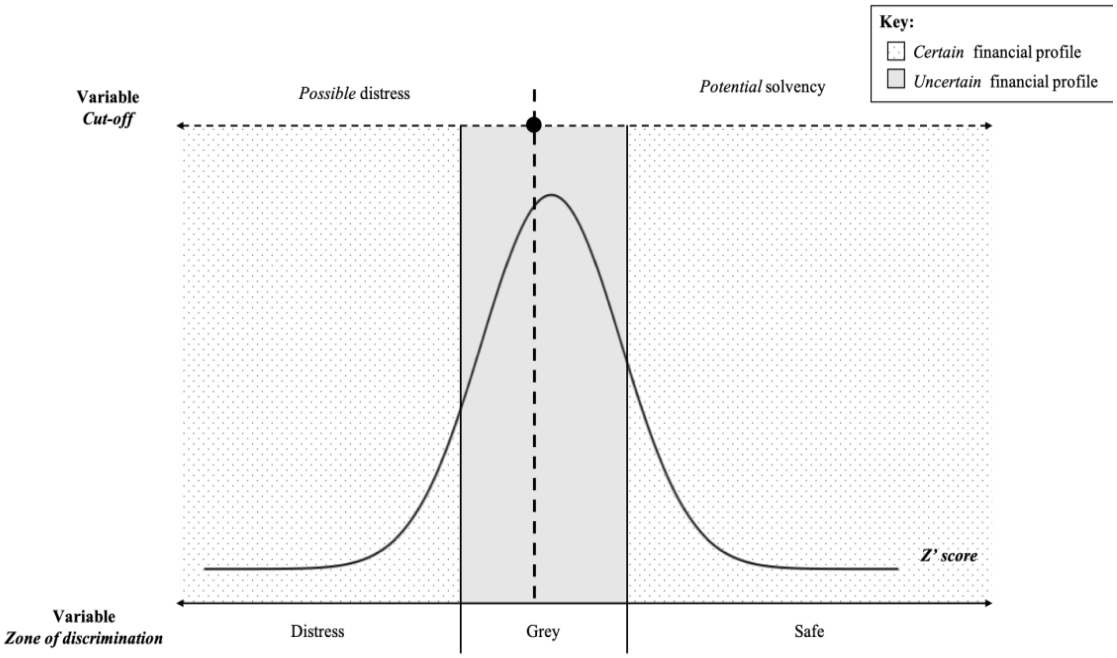
The *cut off* corresponds to a *Z' score* equal to 2,675. Compared to this value, companies with a higher *Z' score* fall into the *potential solvency*, while companies with a lower *Z'* fall into the *possible distress*. However, it is undisputed that when *Z' score* is lower than 1,23 companies are surely in the *distress zone* and when *Z' score* is higher than 2,90 companies are surely in the *safe*

[1] This classification is borrowed from the Italian Legislative Decree n. 139/2015 that distinguishes the limited companies (*società di capitali*) based on quantitative parameters.

zone. Consequently, the *cut-off* analysis allows to better understand the performance of companies with a *Z' score* from 1,23 and 2,90, that fall into the *grey zone*. In other terms, the *cut-off* could be interpreted as a measure of explanation of uncertainty.

In the following figure, in relation to the *Z' score* values, the joint application of the two variables under investigation (*zone of discrimination* and *cut-off*) is illustrated. For the sake of simplicity, and without referring to the sample of companies under investigation, the values of *Z' score* are represented by a Gaussian distribution.

Fig. 5: Variables zone of discrimination and cut-off



Source: authors' elaboration

After having illustrated the main features of the sample and the criteria referring to the profiling of the *zone of discrimination* and the *cut-off*, it appears suitable to highlight the key concepts related to the AI methodology used in the research.

Decision tree is a classification scheme, widely employed both to represent and run *decision processes* (Anderson et al., 2015), that generates a *tree* and a set of *rules* from a given dataset (Witten and Frank, 2011). It represents a useful graphical tool as it allows for intuitive understanding about the problem and can aid decision-making since it is interpretable through *if-then rules* by any professional, including trainees, even if she is not trained in computer applications. People could refer to rules generated by the *decision tree* in order to take decisions since such rules are based on a short-ordered list of *features* (also known as *attributes*).

Experiments introduced below, employ an implementation of *C4.5 decision tree* algorithm, developed by Quinlan (1993). *C4.5* classifies instances, i.e., companies' records, by sorting them down from the *root* to some *leaf nodes*, providing the classification of the *instances* according to the values of a given *target attribute* (e.g. *cut-off* that can assumes two values: *possible distress* and *potential solvency*). Nodes of the *decision trees* specify tests of some features describing the instances, such as *Redditivita_del_totale_attivo_ROA_%_2016* at the root node of the decision tree in Fig. 6. Branches descending from nodes correspond to one of the possible values the attribute may assume; for instance, in the case of the *tree depicted in Figure*, the *root attribute* may assume two sets of possible values, those ≤21,54% and those > 21,54%. The same process is repeated for the sub-tree rooted at the new node. Looking at Fig. 1, after testing *Redditività* at the root node, C4.5 jumps on the right and left branches, based on the two sets of value the root feature may assume, and, if it is the case, it tests other variables (e.g., *Totale_Debiti_%_2016* on the left branch)

otherwise it stops. The process is repeated until a *leaf node* is reached, where the class label is present, such as in the *tree* represented in Fig. 7 where it is corresponds to *possible distress* and *potential solvency*.

The *feature selection*, i.e., which *feature/attribute* is to be tested at each node of the tree, plays a chief role for *decision tree* construction. In the experiments introduced below, it has been employed *Information Gain* (Mitchell, 1997). *InfoGain* is strictly related to *Entropy* (Mitchell, 1997), an index of the purity of a dataset, since it just represents the expected reduction in entropy that results from the partition of the examples according to this attribute.

Experiments performed have been tested using different evaluation metrics (Fawcett, 2006). As first evaluation metric, *accuracy* has been employed. It measures how often *decision tree* makes the correct prediction, calculating the ratio between the number of *correct predictions* and the total number of predictions. *Accuracy* does not distinguish *false positive* and *false negative* cases. For such a kind of evaluation the *confusion matrix* was employed, showing a detailed breakdown of correct and incorrect classifications for each class; such type of information would otherwise be lost just looking at the *overall accuracy*.

Precision score estimates how many cases are actually needed so that the *decision tree* assigns an extraction target, while *recall* allows for determining how many cases are found to be true by the *decision tree*, out of all the cases that are true.

4. Empirical section

Preliminary considerations on the sample

This paragraph reports on some preliminary considerations on the *features* of the sample dataset employed.

An analysis from descriptive statistics has allowed to explore some macro aspects, such as *legality rating*, *zone of discrimination* and *cut off* with respect to four geographic areas.

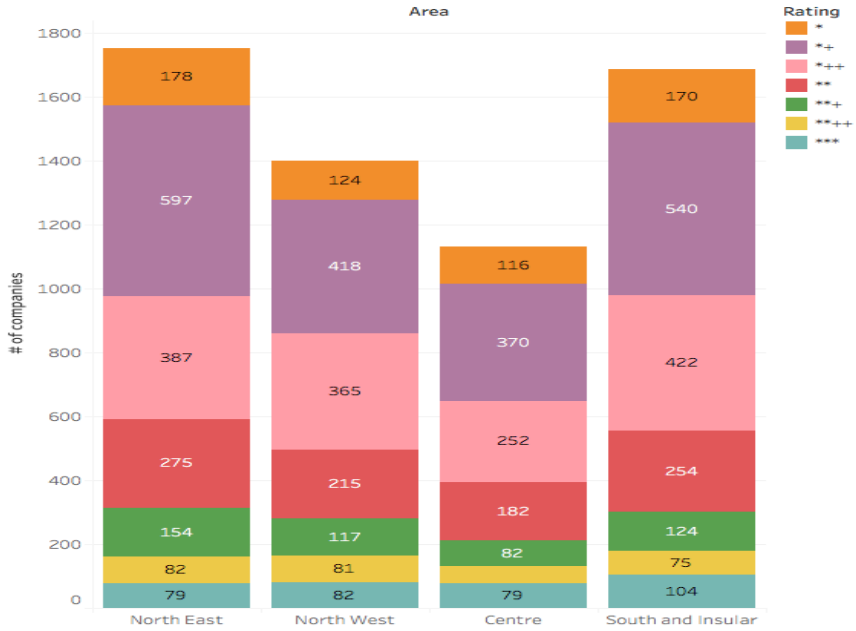
Companies are classified for *geographic area*, and in comparison to this variable, other variables are assessed. First and foremost, the sample's geography shows an uneven composition: the number of firms belonging to the *Centre* and to the *North East*, is respectively 24% lower than the average and 16% higher than the average.

In relation to the *LR*, cross-Region trends arise: the most recurring *LR* is "*+", present in almost one third of the sample, while the higher the *LR* ("**++" or "***") the lower the diffusion within the sample (about 5%).

Moreover, in all geographic areas, the *LR* featured by "*" (and its variants - "*+" and "*++") amounts to the two thirds of the whole sample.

The relative frequency of each *LR*-class, assessed by geographic area, does not differ significantly from the average value. It derives that the four geographic areas show the same *LR's* order of distribution.

Fig. 1: Legality rating vs geographic area



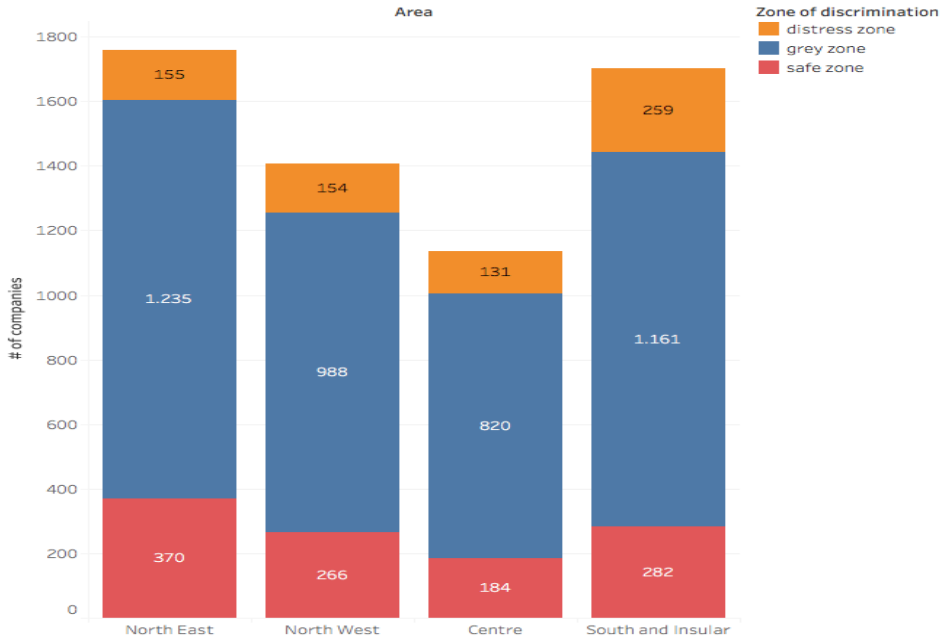
Source: authors' elaboration

Secondly, a common cross-geographical trend emerges also in relation to the *zones of discrimination* (as derived from Z' score). It means that in all four areas, there are the same percentages for each zone of discrimination: *safe zone* - around 20%; *grey zone* - around 70%; *distress zone* - around 10%. It is relevant to note that a consistent portion of the sample is composed by companies featured by an uncertain financial profile.

Moreover, the *distress zone* mainly pertains to the South (37%), while the *safe zone* is significantly present in the North East.

In the following chart, these considerations are expressed in relation to absolute frequencies.

Fig. 2: Zone of discrimination vs geographic area



Source: authors' elaboration

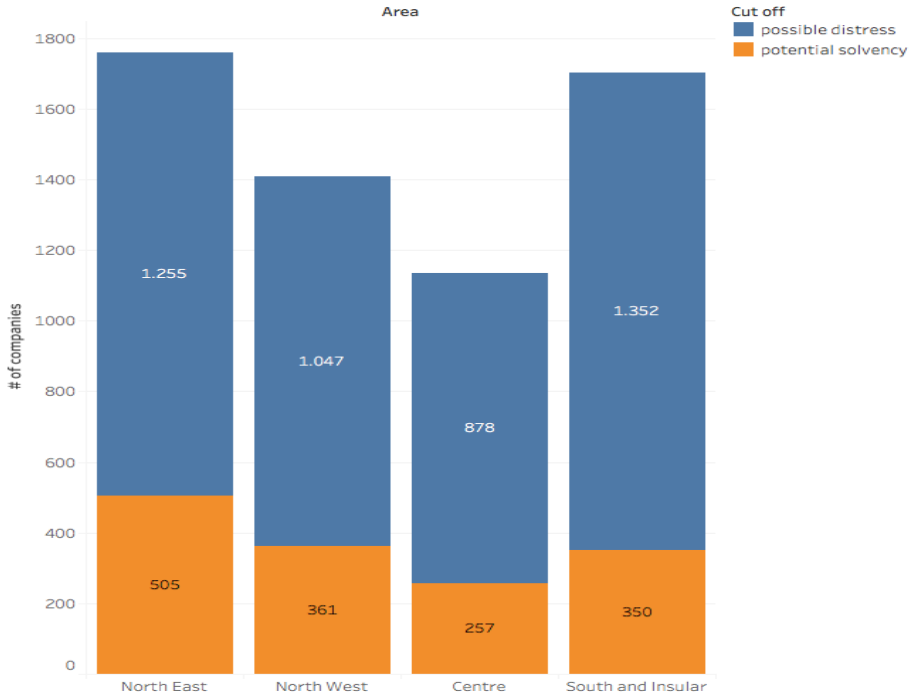
An additional analysis leads to the comparison between *cut-off* and geographic area.

It is useful to remind that the *cut-off* point (Z' score equal to 2,675) allows dividing the companies featured by a *possible distress* from the companies featured by a *potential solvency*.

Regional differences emerge: while in the North East the *potential solvency* is less than one third of the *possible distress*, in the South, the *possible distress* is four times the *potential solvency*.

Furthermore, an overall analysis of the sample shows that the *possible distress* is prevailing in the South (about 30%), whereas the *potential solvency* mainly depicts the North East (34%).

Fig. 3: Cut off vs geographic area



Source: authors' elaboration

Lastly, the assessment of companies' *size-class* shows the clear predominance of small companies as such typology includes approximately two thirds of the sample. Moreover, *small* and *medium* firms together compose about 90% of the sample.

Size-classes are distributed in the same order across geographic areas, namely *small*, followed by *medium*, then *big*, and lastly *micro*. Despite maintaining the same order, however, the geographical areas show a different companies' concentration in relation to the *size-classes*: *big* companies are gathered in the North West (16% of the regional total); *medium* companies are gathered in the North East (32% of the regional total); *small* and *micro* companies are gathered in the South (respectively, 65% and 2% of the regional total).

The same territorial differences are also maintained in the analysis of the deviations from the average values for each *size-class*. Compared to the total of big companies, North West and South register respectively +5% and -5% than the average for this size-class; in relation to the total of medium companies, North East and South show respectively +2% and -2% than the average for this size-class. Conversely, regarding the total of small companies, North West and South mark respectively -6% and +7% than the average for this *size-class*; lastly, for the total of micro companies, Centre and South display divergent dynamics (respectively -1% and +1% than the average for this size-class).

Fig. 4: Size-class vs geographic area

Source: authors' elaboration

The inquiry is composed by two experiments aimed at analyzing two different target variables, respectively the «zone of discrimination» (experiment 1) and «cut off» (experiment 2).

In this Section, for each experiment, the experimental setting, the *if-then* rules, the metrics, and the *decision trees* are illustrated.

The rules shown in both the experiments are those generated in the training phase and, therefore, the counts refer to this step. It may be appropriate to generate everything in the test phase so as to align with the measurement metrics.

Experiment 1

The first experiment assesses the «zone of discrimination» as target variable, whose values, in relation to Z' score, may be: *safe zone*, *grey zone*, and *distress zone.*

The goal of the experiment is to test the "ability" of the algorithm to identify a combination of variables to predict the target without considering the variables "cut off" and "z score" in the dataset.

The experimental setting for the first experiment is described in the following table.

Tab. 8: Experimental setting (experiment 1)

Number of initial records	6005
Number of records after the elimination of "NA" values	5726
Target variable	Zone of discrimination
Values of target variable	DISTRESS ZONE GREY ZONE SAFE ZONE
Features of experimental setting	The variables "cut off" and "z score" are eliminated in order to test the "ability" of the algorithm to identify a combination of variables to predict the target.
Data partition for training and testing	Training set: 4580 Test set: 1146 Total: 5726
Feature selection method	Gain ratio
Pruning method	Minimal Description Length

Source: authors' elaboration

This experiment identifies eight *if-then* rules (R), and of consequence the *best practices*, that generate the respective *decision tree*.

Before illustrating each rule and its outcome, in the following table an explanation of the financial meaning of the variables involved in the first experiment is proposed.

It should be specified that the symbol "$" in the name of the variable has to be considered as part of the syntax of the programming language at the basis of the algorithm. It is referred neither to the dollar in economic terms nor to the monetary value of the variable. The financial meaning of each variable is explained in the second column.

Tab. 9: Financial meaning of the rules (experiment 1)

Variable	**Financial meaning**
$Totale_Debiti_%_2016$	Total Debt % (Total Debt/Total liabilities and equity)
$Redditivita_del_totale_attivo_ROA_%_2016$	ROA (*Return On Assets*)
$RISULTATO_OPERATIVO_migl_EUR_2016$	EBIT
$Immobilizzazioni_%_2016$	Non-current assets % (Non-current assets/Total Assets)
$Ricavi_vendite_e_prestazioni_migl_EUR_2016$	Sales

Source: authors' elaboration

R1 is featured by two variables, "*$Totale_Debiti_%_2016$*" and "*$Redditivita_del_totale_attivo_ROA_%_2016$*". The outcome of the first rule is the prediction of the *safe zone*.

R2 is featured by four variables that predict the *distress zone*. The variables are: "*$RISULTATO_OPERATIVO_migl_EUR_2016$*", "*$Immobilizzazioni_%_2016$*", *"$Totale_Debiti_%_2016$*", and "*$Redditivita_del_totale_attivo_ROA_%_2016$*", that is ROA.

R3 predicts the *safe zone* thanks to five variables: "*$TOTALE_ATTIVO_migl_EUR_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$RISULTATO_OPERATIVO_migl_EUR_2016$*", "*$Immobilizzazioni_%_2016$*", "*$Totale_Debiti_%_2016$*", "$*Redditivita_del_totale_attivo_ROA_%_2016$*".

Five variables ("*$Ricavi_vendite_e_prestazioni_migl_EUR_2016$*", "*$TOTALE_ATTIVO_migl_EUR_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$RISULTATO_OPERATIVO_migl_EUR_2016$*", "*$Immobilizzazioni_%_2016$*", "*$Totale_Debiti_%_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*") feature R4, which predicts the *distress zone*.

R5 has six variables ("*$Ricavi_vendite_e_prestazioni_migl_EUR_2016$*", "*$TOTALE_ATTIVO_migl_EUR_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$RISULTATO_OPERATIVO_migl_EUR_2016$*", "*$Immobilizzazioni_%_2016$*", "*$Totale_Debiti_%_2016$*", and "*$Redditivita_del_totale_attivo_ROA_%_2016$*") that predict the *grey zone*.

R6 is featured by four variables "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$RISULTATO_OPERATIVO_migl_EUR_2016$*", "*$Immobilizzazioni_%_2016$*", "*$Totale_Debiti_%_2016$*" that predict the *safe zone*.

R7 has three variables, namely "*$Immobilizzazioni_%_2016$*", "*$Totale_Debiti_%_2016$*", and "*$Redditivita_del_totale_attivo_ROA_%_2016$*", that predict the *distress zone.*

Lastly, R8 identifies one rule, "*$Redditivita_del_totale_attivo_ROA_%_2016$*", which predicts the *safe zone*.

In order to better explain the results expressed above, a brief summary of the *if-then* rules, their outcomes, the record count and the number of correct is presented in the following table.

Tab. 10: If-then rules (experiment 1)

	if-then rules (best practices)	Outcome	Record count	Number of correct
R1	**IF** $Totale_Debiti_%_2016$ <= 18.204271574863533 AND $Redditivita_del_totale_attivo_ROA_%_2016$ <= 22.86	SAFE ZONE	112	95
R2	**IF** $RISULTATO_OPERATIVO_migl_EUR_2016$ <= -374.7615 **AND** $Immobilizzazioni_%_2016$ <= 76.30784360563888 **AND** $Totale_Debiti_%_2016$ > 18.204271574863533 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 22.86	DISTRESS ZONE	106	71
R3	**IF** $TOTALE_ATTIVO_migl_EUR_2016$ <= 1138.336 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 15.934999999999999 **AND** $RISULTATO_OPERATIVO_migl_EUR_2016$ > -374.7615 **AND** $Immobilizzazioni_%_2016$ <= 76.30784360563888 **AND** $Totale_Debiti_%_2016$ > 18.204271574863533 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 22.86	SAFE ZONE	101	65
R4	**IF** $Ricavi_vendite_e_prestazioni_migl_EUR_2016$ <= 1633.301 **AND** $TOTALE_ATTIVO_migl_EUR_2016$ > 1138.336 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 15.934999999999999 **AND** $RISULTATO_OPERATIVO_migl_EUR_2016$ > -374.7615 **AND** $Immobilizzazioni_%_2016$ <= 76.30784360563888 **AND** $Totale_Debiti_%_2016$ > 18.204271574863533 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 22.86	DISTRESS ZONE	101	55
R5	**IF** $Ricavi_vendite_e_prestazioni_migl_EUR_2016$ > 1633.301 **AND** $TOTALE_ATTIVO_migl_EUR_2016$ > 1138.336 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 15.934999999999999 **AND** $RISULTATO_OPERATIVO_migl_EUR_2016$ > -374.7615 **AND** $Immobilizzazioni_%_2016$ <= 76.30784360563888 **AND** $Totale_Debiti_%_2016$ > 18.204271574863533 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 22.86	GREY ZONE	3731	2997
R6	**IF** $Redditivita_del_totale_attivo_ROA_%_2016$ > 15.934999999999999 **AND** $RISULTATO_OPERATIVO_migl_EUR_2016$ > -374.7615 **AND** $Immobilizzazioni_%_2016$ <= 76.30784360563888 **AND** $Totale_Debiti_%_2016$ > 18.204271574863533 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 22.86	SAFE ZONE	202	139
R7	**IF** $Immobilizzazioni_%_2016$ > 76.30784360563888 **AND** $Totale_Debiti_%_2016$ > 18.204271574863533 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 22.86	DISTRESS ZONE	109	82
R8	IF $Redditivita_del_totale_attivo_ROA_%_2016$ > 22.86 **AND** TRUE	SAFE ZONE	118	113
Total			**4580**	**3617**

Source: authors' elaboration

In order to give a complete illustration of the first experiment, its metrics are outlined in two tables.

Tab. 11: Metrics - Part 1 (experiment 1)

Zone of discrimination	GREY ZONE	SAFE ZONE	DISTRESS ZONE
GREY ZONE	736	35	33
SAFE ZONE	115	95	1
DISTRESS ZONE	85	2	44

Source: authors' elaboration

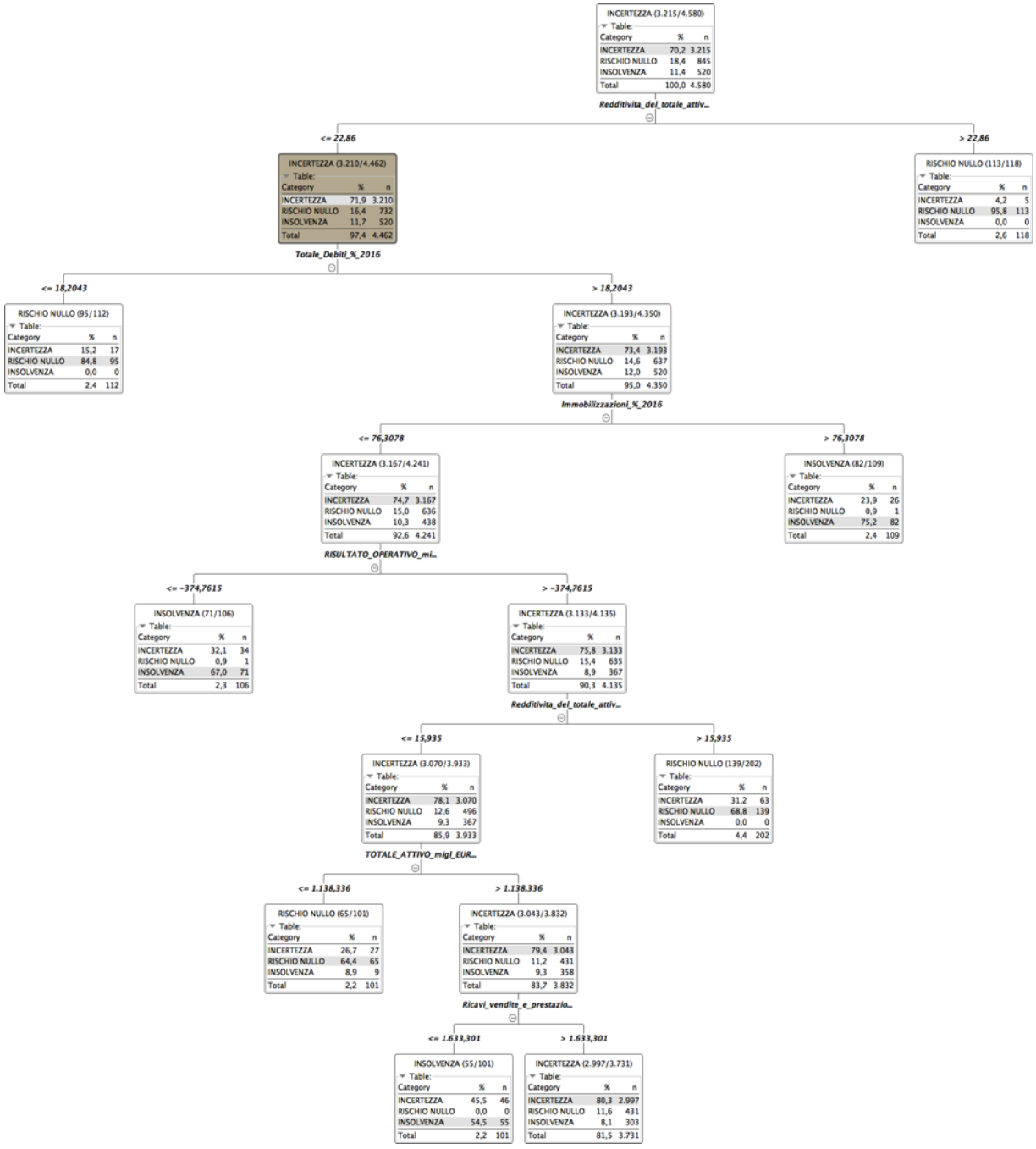
Tab. 12: Metrics - Part 2 (experiment 1)

Correct classified	875
Wrong classified	271
Accuracy	76,353%
Error	23,65%
Cohen's Kappa	0,406

Source: authors' elaboration

The result of the first experiment is represented in the *decision tree* below.

Fig. 6: Decision tree (experiment 1)



Source: authors' elaboration

Experiment 2

The second experiment assesses the «cut off» as target variable, whose values, in relation to Z' score, may be: *potential solvency*, or *possible distress.*

The goal of the experiment is to test the "ability" of the algorithm to identify a combination of variables to predict the target without considering the variables "zone of discrimination" and "z score" in the dataset.

The experimental setting for the second experiment is described in the following table.

Tab. 13: Experimental setting (experiment 2)

Number of initial records	6005
Number of records after the elimination of "NA" values	5726
Target variable	Cut off
Values of target variable	POTENTIAL SOLVENCY POSSIBLE DISTRESS
Features of experimental setting	The variables "Z score" and "Zone of discrimination" are eliminated in order to test the "ability" of the algorithm to identify a combination of variables to predict the target.
Data partition for training and testing	Training set: 4580 Test set: 1146 Total: 5726
Feature selection method	Gain ratio
Pruning method	Minimal Description Length

Source: authors' elaboration

This experiment identifies nine *if-then* rules (R), and of consequence the *best practices*, that generate the respective *decision tree*.

An explanation of the financial meaning of the variables involved in the second experiment is proposed in the following table. In relation to the use of the symbol "$" in the name of the variable, the same considerations of the previous experiment are applied.

Tab. 14: Financial meaning of the rules (experiment 1)

Variable	**Financial meaning**
$Totale_Debiti_%_2016$	Total Debt % (Total Debt/Total liabilities and equity)
$Redditivita_del_totale_attivo_ROA_%_2016$	ROA (*Return On Assets*)
$TOTALE_ATTIVO_migl_EUR_2016$	Total Assets
$Total_debiti_oltre_l_esercizio_migl_EUR_2016$	Total debt due beyond the financial year
$Incidenza_costo_del_lavoro_%_2016$	Personnel costs % (Personnel costs/Sales)

Source: authors' elaboration

R1 is featured by two variables, "*$Totale_Debiti_%_2016$*" and "*$Redditivita_del_totale_attivo_ROA_%_2016$*". The outcome of the first rule is the prediction of the *potential solvency*.

R2 has three variables, namely "*$TOTALE_ATTIVO_migl_EUR_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$Totale_Debiti_%_2016$*", that predict the *potential solvency*.

R3 predicts the *potential solvency* thanks to three variables: "*$Totale_Debiti_%_2016$*", "*$TOTALE_ATTIVO_migl_EUR_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*".

Five variables feature R4: "*$Total_debiti_oltre_l_esercizio_migl_EUR_2016$*", "*$Incidenza_costo_del_lavoro_%_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$Totale_Debiti_%_2016$*", "*$TOTALE_ATTIVO_migl_EUR_2016$*". The outcome of the fourth rule is the prediction of the *potential solvency*.

R5 has five variables that predict the *possible distress*. The variables involved are: "*$Total_debiti_oltre_l_esercizio_migl_EUR_2016$*", "*$Incidenza_costo_del_lavoro_%_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$Totale_Debiti_%_2016$*", and "*$TOTALE_ATTIVO_migl_EUR_2016$*".

R6 predicts the *possible distress*. In order to produce this outcome, four variables are involved: "*$Incidenza_costo_del_lavoro_%_2016$*", "*$Redditivita_del_totale_attivo_ROA_%_2016$*", "*$Totale_Debiti_%_2016$*", "*$TOTALE_ATTIVO_migl_EUR_2016$*".

R7 is featured by three variables "*$Redditivita_del_totale_attivo_ROA_%_2016$*",

"*$Totale_Debiti_%_2016$*", and "*$TOTALE_ATTIVO_migl_EUR_2016$*". The outcome is the prediction of the *potential solvency*.

R8 has two variables, "*$Redditivita_del_totale_attivo_ROA_%_2016$*" and "*$Totale_Debiti_%_2016$*", that predict the *potential solvency*.

Lastly, R9 is featured by one variable, "*$Redditivita_del_totale_attivo_ROA_%_2016$*", which predicts the *potential solvency*.

In the following table, in relation to the second experiment is presented a brief summary of the *if-then* rules, their outcomes, their record count and their number of correct.

Tab. 15: If-then rules (experiment 2)

	if-then rules (best practices)	Outcome	Record count	Number of correct
R1	**IF** $Totale_Debiti_%_2016$ <= 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POTENTIAL SOLVENCY	125	116
R2	IF $TOTALE_ATTIVO_migl_EUR_2016$ <= 1241.238 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 16.055 **AND** $Totale_Debiti_%_2016$ > 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POTENTIAL SOLVENCY	149	99
R3	**IF** $Totale_Debiti_%_2016$ <= 25.066864783615408 **AND** $TOTALE_ATTIVO_migl_EUR_2016$ > 1241.238 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 16.055 **AND** $Totale_Debiti_%_2016$ > 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POTENTIAL SOLVENCY	101	63
R4	**IF** $Total_debiti_oltre_l_esercizio_migl_EUR_2016$ <= 318.2925 **AND** $Incidenza_costo_del_lavoro_%_2016$ <= 4.276964813170087 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 13.614999999999998 **AND** $Totale_Debiti_%_2016$ > 25.066864783615408 AND $TOTALE_ATTIVO_migl_EUR_2016$ > 1241.238 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 16.055 **AND** $Totale_Debiti_%_2016$ > 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POTENTIAL SOLVENCY	137	79
R5	**IF** $Total_debiti_oltre_l_esercizio_migl_EUR_2016$ > 318.2925 **AND** $Incidenza_costo_del_lavoro_%_2016$ <= 4.276964813170087 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 13.614999999999998 **AND** $Totale_Debiti_%_2016$ > 25.066864783615408 **AND** $TOTALE_ATTIVO_migl_EUR_2016$ > 1241.238 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 16.055 **AND** $Totale_Debiti_%_2016$ > 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POSSIBLE DISTRESS	157	119
R6	**IF** $Incidenza_costo_del_lavoro_%_2016$ > 4.276964813170087 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 13.614999999999998 **AND** $Totale_Debiti_%_2016$ > 25.066864783615408 **AND** $TOTALE_ATTIVO_migl_EUR_2016$ > 1241.238 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 16.055 **AND** $Totale_Debiti_%_2016$ > 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POSSIBLE DISTRESS	3497	3085
R7	**IF** $Redditivita_del_totale_attivo_ROA_%_2016$ > 13.614999999999998 **AND** $Totale_Debiti_%_2016$ > 25.066864783615408 **AND** $TOTALE_ATTIVO_migl_EUR_2016$ > 1241.238 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 16.055 **AND** $Totale_Debiti_%_2016$ > 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POTENTIAL SOLVENCY	112	66
R8	**IF** $Redditivita_del_totale_attivo_ROA_%_2016$ > 16.055 **AND** $Totale_Debiti_%_2016$ > 18.196832168335906 **AND** $Redditivita_del_totale_attivo_ROA_%_2016$ <= 21.54	POTENTIAL SOLVENCY	177	134
R9	**IF** $Redditivita_del_totale_attivo_ROA_%_2016$ > 21.54	POTENTIAL SOLVENCY	125	120
Total			4580	3881

Source: authors' elaboration

In order to give a complete illustration of the first experiment, its metrics are outlined in two tables.

Tab. 16: Metrics - Part 1 (experiment 2)

Cut off	POSSIBLE DISTRESS	POTENTIAL SOLVENCY
POSSIBLE DISTRESS	807	57
POTENTIAL SOLVENCY	113	169

Source: authors' elaboration

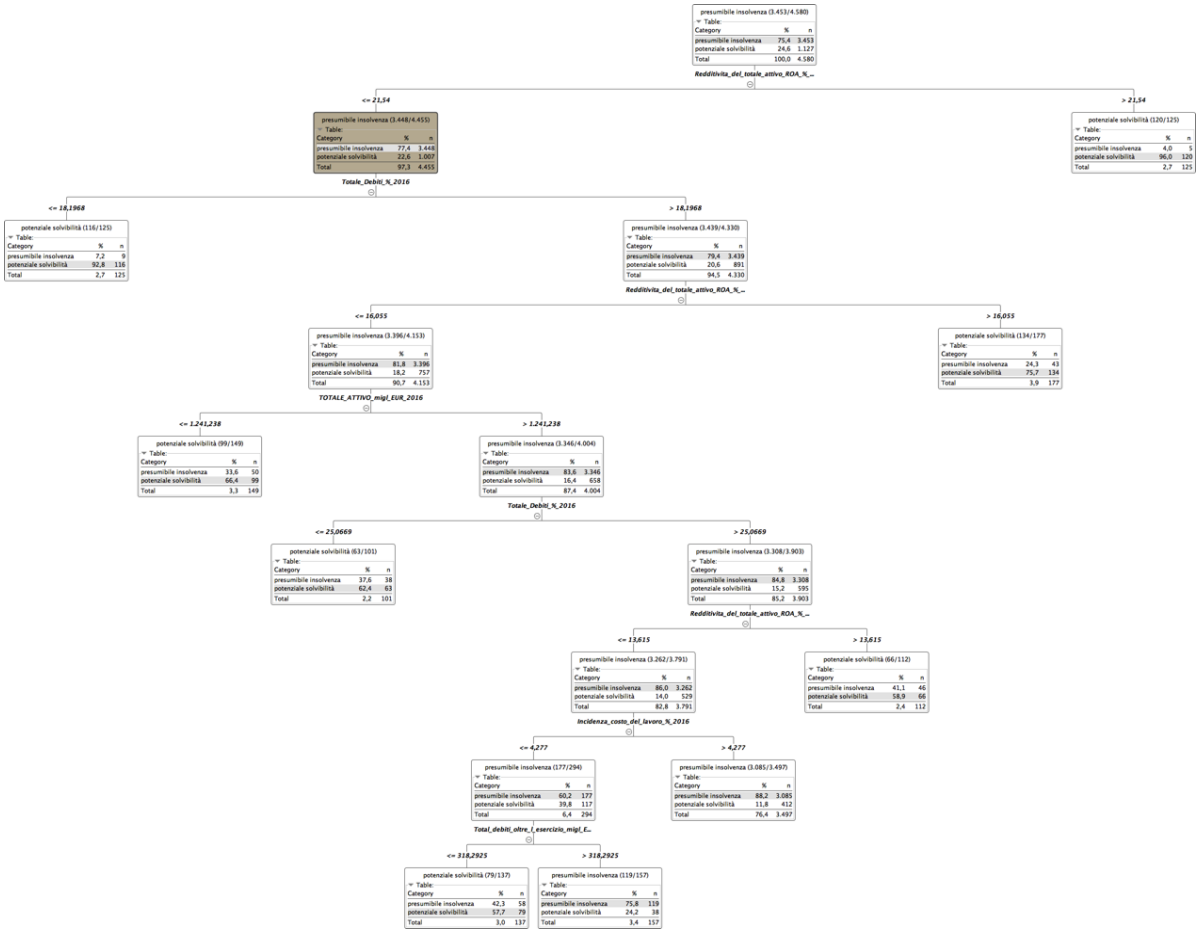
Tab. 17: Metrics - Part 2 (experiment 2)

Correct classified	976
Wrong classified	170
Accuracy	85,166%
Error	14,83%
Cohen's Kappa	0,572

Source: authors' elaboration

The result of the second experiment is summarized in the *decision tree* below.

Fig. 7: Decision tree (experiment 2)



Source: authors' elaboration

5. Conclusion

The experiments performed show the existence of an algorithm able to identify a combination of variables to predict the target without considering other two variables, respectively "cut off" and "z score" (experiment 1) and "zone of discrimination" and "z score" (experiment 2), in the dataset.

Two different settings of *if-then rules* feature the experiments: the first one identifies eight rules able to predict the values of the *zone of discrimination*, while the second one determines nine rules whose outcome is related to the values of the *cut off*.

Despite the different target typical of each experiment and the different combination of variables involved, the key role of the variable "*$Redditivita_del_totale_attivo_ROA_%_2016$*", that is ROA (*Return On Assets*), emerges in both cases. In fact, in both experiments ROA is at the root node of the decision tree.

It should be noted that ROA corresponds with the variable X_3 ((EBIT)/ Total Assets) of the Altman's Z' score, to which is connected the highest weighting coefficient within the linear combination. This means that both the AI algorithms and the Altman's Z' score-model confer a pivotal role to the same variable.

ROA (or EBIT/ Total Assets) represents a profitability ratio that suggests how a company can conduct the business activity, regardless of the form of financing. In other words, this ratio depicts the ability of a company to create value through internal assets: the higher the ROA, the greater the ability to enhance the resources. It derives that ROA gives stakeholders an idea on management's efficiency at using assets to generate earnings.

Both experiments share another variable, which differently from the previous one, is not mentioned in the Altman's Z' score-model. This variable is "*$Totale_Debiti_%_2016$*", that is total debt %, equal to total debt on total liabilities and equity.

This ratio is related to the company's financial structure and it expresses the weight of the total debt on the invested capital. According to another perspective, this ratio is complementary to the financial-independence index, equal to equity on invested capital. This comparison allows to examine the relationship between risk capital (equity) and debt capital, considering the relationships existing between the remuneration of the former and the cost of the latter. Therefore, equal invested capital, the higher the total debt the lower the equity, and so, in the financing decision, the higher use of third-party capital rather than own capital.

From this brief explanation of the financial meaning of this variable emerges that despite its absence within Altman's Z' score-model, it works as a good predictor of the features associated with the company's financial structure. For this reason, it is plausible that it is a measure to represent both the target variables ("zone of discrimination" and "cut off").

However, both experiments are marked by the presence of other variables missing in Altman's Z' score-model.

In particular, the first experiment also includes the following variables: "*$Ricavi_vendite_e_prestazioni_migl_EUR_2016$*", that is sales, "*$RISULTATO_OPERATIVO_migl_EUR_2016$*", that is EBIT, and "*$Immobilizzazioni_%_2016$*", that represents the non-current assets ratio.

Sales and EBIT are both items of the income statement and so pertain to the analysis of the company's economic situation. They express two different sides of profitability: while sales refer to the value of a company's sales of goods and services, where the revenue or income process begins, on the other hand, EBIT is a company's net income before income tax expense and interest expenses have been deducted. Although EBIT is also present in the ROA formula, in this case it is considered its absolute value. It represents a good indicator to analyze the performance of a company's core operations without considering the impact on profit of the costs of the capital structure and tax expenses.

Non-current assets ratio is given by the weight of non-current assets (fixed, intangible, and financial) on total assets, and it indicates the long-term uses involved in business operations to generate income.

This ratio pertains to the assessment of the financial position and is complementary to the current assent ratio. This means that, equal total assets, the higher the fixed assets the lower the current assets, and so the higher the amount of assets that not expected to be consumed or converted into cash in the short period.

The second experiment considers three variables not included within Altman's Z' score-model: "*$TOTALE_ATTIVO_migl_EUR_2016$*" (total assets), "*$Total_debiti_oltre_l_esercizio_migl_EUR_2016$*" (Total debt due beyond the financial year), and "*$Incidenza_costo_del_lavoro_%_2016$*" (personnel costs ratio).

These variables pertain to two different sides of evaluation: the first two are related to the financial assessment, while the second to the economic analysis.

Total assets represent the total amount of invested capital, and so give a measure of the resources with economic value that are able to generate cash flow, reduce expenses or improve

sales. Total assets are given by the sum of non-current assets (fixed, intangible, and financial) and current assets, which are the short-term resources expected to be converted into cash within one year.

Total debt due beyond the financial year represents the non-current liabilities, and so the liabilities to be paid in the medium-long period.

The personnel costs ratio is given by the personnel costs (salary and wage expenses) on sales. Personnel costs are included within the operating costs, a negative component that contribute to determine the operating result. It derives that, equal the sales, the higher the personnel costs the lower the operating result and, of consequence, the net income.

In light of this scenario, the contribution of the study is the identification of two algorithms able to determine two settings of *if-then* rules that produce the same outcomes obtainable through the application of the Altman's Z' score model, without using it.

It derives that thanks to the combination of a new set of variables, it is possible to understand, with a given accuracy, the company's financial health, and conversely, the *company's distress*, regardless of Altman's Z' score.

The current development of the research reveals that the methodology still needs to be adapted determining plausible interval for the variables identified by the decision trees. In fact, the dimensionality of the dataset can benefit from resampling the variables for the proposed methodology which, at the state of the art, suffer from problems of skewness.

However, the identified algorithms are a powerful tool that strengthen the comprehension of companies' financial profile. Since they work with large amounts of data, they are even more significant.

This assumes a remarkable value in relation to the peculiarities of the sample under investigation, as all the companies are in possession of LR.

In consideration of the link between LR and company's *distress*, the AI methodology is able to process large amounts of records within a given dataset, so allowing to test the effectiveness of LR in the assessment of *creditworthiness*.

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Heuristics in family business entrepreneurial decision making: a framework for transgenerational imprinting

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Abstract

Objectives. *Family business scholars are converging to the concept of transgenerational entrepreneurship which implies that family should have entrepreneurs in every generation and entrepreneurial family should be structured around simple rules imprinted by previous generations.*

Methodology. *Studying twenty-five cases of next generations heuristics were defined and categorized using different approaches. Heuristics were also evaluated by the adaptability to evolved competitive environments, inferring the likelihood of surviving of the original entrepreneurial competitive advantage.*

Findings. *A classification of entrepreneurial behaviors has been proposed to understand how the transmission and the evolution of the set of heuristics take place.*

Research limits. *It should be noted that the heuristics studied in this paper derive from Italian cases only.*

Practical implications. *Understanding how heuristics are created by previous generations and how they are absorbed and adapted by next generations can definitely contribute to define the cause-effect of the successful continuity of family businesses over generations.*

Originality of the study. *A structured field research on how the transgenerational transmission of entrepreneurial learnings occurs has not yet been proposed. This paper demonstrates that the entrepreneurial learning between generations happens through heuristics, which are internalized and applied by the next generations.*

Key words: *family business; entrepreneurial family; transgenerational entrepreneurship; heuristics; competitive advantage; continuity*

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1. Introduction

Family business succession among generations has been deeply analysed by family capitalism scholars, however it is not still clear how the Next Generation (NextGen) learn from the precedent one (Barach and Ganitsky, 1995; Cabrera-Suarez *et al.*, 2001; Cadieux, 2007; Woodfield and Husted, 2017).

Regarding the knowledge transfer from generation to generation of a family business, Jaskiewics *et al.*, (2015) introduced the concept of transgenerational entrepreneurship: "We introduce entrepreneurial legacy, which we define as the family's rhetorical reconstruction of past entrepreneurial achievements or resilience, and theorize that it motivates incumbent and next-generation owners to engage in strategic activities that foster transgenerational entrepreneurship". The transgenerational entrepreneurship is nurtured by three activities: strategic education, entrepreneurial bridging, and strategic succession (Jaskiewicz *et al.*, 2015).

Strategic education, the first activity, is based on opportunity recognition (Nicolau *et al.*, 2009; Baron and Ensley, 2006) and in other education and work experiences which are family focused; therefore, in the process something is learnt that is not management competences, which could be learnt in standard management courses, and that is not practical capabilities, which can be learnt with experience in other companies.

Entrepreneurial bridging, the second activity, happens through the collaboration of the two generations of family members which take place over the years with the focus on entrepreneurship and not succession. In the learning phase the NextGen pushes for company and organization renewal, i.e. adaptation to the new competitive environment. Therefore, during the entrepreneurial bridging, the NextGen learn how to become entrepreneur and define a renewed vision of the company which is compliant with the present competitive environment. However, how this learning process happens has still not been analysed by scholars.

During this process of transgenerational handover, the entrepreneurial essence of the family is transmitted usually as tacit knowledge, which is difficult to transfer because it is situation (domain in heuristics theory) specific (Jones 2001; Bhalla, 2009; Nayak and Maclean, 2009) and is gained through experience (Grant, 1996; Cabrera-Suárez *et al.*, 2001; Steier, 2001; Memili, Eddleston, *et al.*, 2010). What is transferred has a key role in value creation: if only generic, unspecialized, replaceable knowledge and resources were transmitted the future of the family firm would be fated (Coff 1999; Chrisman *et al.*, 2005; Zellweger *et al.*, 2010; Memili *et al.*, 2010; Basco and Pérez Rodríguez, 2011; De Massis *et al.*, 2016).

Present literature recognized the importance of the time spent together, the entrepreneurial bridging etc. but what happens between the two generations during that time, i.e. from the birth of the NextGen and the leave of the Previous Generation (PrevGen), and how the intergenerational learning happens has not been studied yet. Therefore, our research question is How Entrepreneurial Essence is transmitted from generation to generation.

2. Theoretical background

2.1 The concept of heuristics

A set of heuristics is a class of "rules of thumbs" that embeds knowledge about a specific domain and that guides problem-solving and decision-making in it (Ippoliti, 2015).

The formal literature on heuristics shows that:

1. The heuristics approach is an alternative to the standard way of dealing with rationality, based on expected utility theory (EUT).
2. In particular, the Fast and Frugal tradition (F&F - see e.g. Goldstein and Gigerenzer 1996) argues that heuristics can be a more effective way than EUT of solving problems in a specific domain, namely the domain in which the heuristics were formed, or better the one that have

certain features that match the features of the heuristics. It is in this sense that a heuristic is ecologically rational, but can be transferred across domains if they are similar.

3. As a consequence, the effectiveness of a specific heuristics strictly depends on the characteristics of the domain. A paramount example is the compensatory or non-compensatory nature of a specific domain's information structure.
4. Heuristics are precious especially when time-scale for decision is shorting, and in general when we have a scarcity of resources. The spill-over effect of time on decision-making is often better handled by means of heuristics: in that case, a heuristic offers a straight competitive advantage over the standard approach (see Kelman 2011 for a cogent discussion of this point).

A stock example of a heuristics is Take-the-Best (TTB, Gigerenzer and Goldstein, 1996). TTB states that, starting with the most important attribute, a decision maker will see if this attribute discriminates between given alternatives. If so, he will choose the alternative that is favored by the attribute. If it is not the case, he will move on to the next most important attribute. Such a heuristic is ecologically rational for domain where a) cue validities vary highly, b) with moderate or high redundancy, and c) scarce information (see e.g. Hogarth and Karelaia, 2005, 2006; Martignon and Hoffrage, 1999, 2002). The previous description can be defined as representative of the environment in which entrepreneurs find themselves.

In addition, Martignon and Hoffrage (1999) proved in a formal fashion that a linear model cannot outperform TTB when the implicit importance weight of a variable is greater than the sum of the weights of all less important variables. So here we have a straight result about the comparative effectiveness of F&F heuristics and optimising rationality. The TTB heuristics are intervening tools, since it can be employed to provide fast advice on which issues a candidate should stress in its campaign. In order to determine the most important attribute (variable), or a rank of them, polling data can be employed.

2.2 Heuristics in management

Management scholars showed an increasing interest in heuristics and, in the last twenty years, published articles on the topic in research focus management journals have risen from less than 50 to more than 200 (Loock and Hinnen, 2015). They show that many managerial decision-takings are put forward by the employment of heuristics. Most of these decisions are shaped by a heuristic that are qualitative and verbal in nature (Manimala 1992, and Coleman *et al.*, 2010). Stock examples of such heuristics are verbal protocols such as: "start small, grow big organically"; "minimize initial investments"; "repeat successes to take full advantage of them"; "sharing is the way to loyalty and prosperity. Give everyone his due"; "focus on keeping it simple and understand what are the fundamental things you have got to get right".

Of course, these verbal rules offer only "a large unstructured body of very specific heuristics without stating when and why they perform well" (Artinger *et al.*, 2015). This lack raises a problem of systematization and theoretical cogency: without specifying its ecological rationality, a heuristic is hard to be put in use properly. Accordingly, several attempts to structure this corpus have been advanced by using different criteria (Bingham and Eisenhardt 2011, Gigerenzer and Gaissmaier 2011). Moreover, a remarkable finding of the study of managerial heuristics is that they can bridge the individual-organizational divide (Artigner *et al.*, 2014), since their application is driven by its ecological rationality, that is the match of a heuristic with a given domain.

The reason of this interest is the efficiency with which entrepreneurial and management behaviors are explained by the structured theory corpus of the heuristics.

The managerial decision-making process based on heuristics has been academically demonstrated superior in some cases. Wübben and Wangenheim (2008) measured the accuracy of a one-reason decision-making process (e.g., "classify a customer who did not purchase from the company for more than nine months as inactive"), against an optimization model (the Pareto/NBD model that integrates more information) and found the same or better performance for the heuristic. The hiatus heuristic, which relies only on one good reason, is much simpler than an optimization

technique. In the case analysed, dropping customers from the active list was decided simply based on whether they had passed the threshold of nine months of inactivity; all other available information about the customers was ignored.

Gigerenzer, the father of heuristics, affirms: "One main point in the business world is that entrepreneurs can generate profit in the markets, à la Knight, precisely because they intelligently deal with immeasurable, irreducible uncertainty. We argue that the study of heuristics provides a descriptive and normative framework to model how entrepreneurs and others deal-and should deal-with uncertainty" (Manimala, 1992; Mousavi and Gigerenzer, 2014). It can be inferred that entrepreneurs when decide under uncertainty, i.e. quite often, do not rely on estimating probabilities but on search rules, aspiration levels, lexicographic rules, and other heuristic principles (Busenitz and Barney, 1997; Gigerenzer *et al.*,2011).

2.3 The heuristics as Entrepreneurial Essence

Heuristics characterize the Entrepreneurial Essence of the family and are the domain-specific link between the resources a firm and the decision-making processes needed to harness those resources to create value (Miller, 2003; Bingham *et al.,* 2007; Freiling *et al.,* 2008; Chua *et al.,* 2015; Roundy *et al.,* 2017). The Entrepreneurial Essence is composed of three elements: rare qualities, entrepreneurial processes and assets that are imprinted by the founder or a group of founders into the company and must be evolved by the following Entrepreneurial Family leaders. The evolution happens through a continuous innovation leveraging traditional processes.

The Entrepreneurial Essence shapes how the family is going to evolve and responds through times to the environmental changes and competitive pressure. The Entrepreneurial Essence is tacitly and implicitly passed to the NextGen (Grant, 1996; Cabrera-Suárez *et al.,* 2001; Steier, 2001, Florian, *et al.,* 2015), whose role is to evolve the Entrepreneurial Essence for the survival of the company.

The Entrepreneurial Essence is the outcome of the interaction between creativity and initiative of a particular generation and the opportunities and constraints of the founding context (Johnson, 2007), it is imprinted in the firm (Stinchcombe, 1965; Eisenhardt *et al.,* 2010) and results from adaptation to a historically determined environment (Jones 2001; Bhalla, 2009; Nayak and Mairi, 2009). Being the Entrepreneurial Essence the outcome of the cognitive processes of the founder is strongly linked with its decision making process and imprinted in the specific time and space in which the company is created. The key role of the Next Generation is to evolve the Entrepreneurial Essence to maintain a dynamic balance in the interrelation between the company and the competitive environment through time and space.

The Entrepreneurial Essence sets the strategic posture of the company for the decades to come. The role of the Entrepreneurial Essence is merely influenced by the external context in which the company operates but focuses on internal variables such as cognitive processes of decision making and ways in which the NextGen can mix rare qualities, processes and assets to evolve the Entrepreneurial Essence.

The imprinting hypothesis (Stinchcombe, 1965), is that characteristics of an entity shaped during a sensitive moment of its existence can persist for decades, in spite of subsequent environmental changes (Marquis, 2003; Johnson, 2007). Sensitive moments have been identified by different academic contributions in discontinuities in product and factor markets (Dieleman, 2010; Dixon *et al.*, 2007; Kriauciunas and Kale, 2006), new market entries (Benner and Tripsas, 2012; Dowell and Swaminathan, 2006; Klepper and Simons, 2000), periods of poor performance (Baker and Collins, 2010; Narayanan *et al.,* 2009), and/or major shifts in senior executive ranks (Datta *et al.,* 2003; Harrison *et al.,* 1988; White *et al.,* 1997). These imprinting moments happen when learning occurs and are embedded in the processes of the company, thus becoming entrepreneurial processes.

Entrepreneurial learning in the founding phase remains imprinted in the company and in the family (e.g., Boeker, 1987, 1989a; Kimberly, 1979; Van Driel and Dolfsma, 2009; Eddleston, 2008;

Baron *et al.,* 1999; Mathias *et al.,* 2015; Schein, 1983; Simsek *et al.,* 2015) defining for years to come the strategic decision making process and the competitive advantage (Harris and Ogbonna, 1999; Binghamet *et al.,* 2007; McMahon *et al.,* 2013; Vuori and Vuori, 2014; Irava and Moores, 2010). The imprinting research field considers founders or previous generation (PrevGen), as a source of imprinting for organizations (Beckman and Burton, 2008; Boeker, 1987; Gruber *et al.*, 2008; Leung *et al.,* 2013) given their unique vision and background (Kimberly, 1979; Ainamo, 2005; Beckman, 2006) and their personal traits (Jensen and Luthans, 2006; Gruber, 2010; Fauchart and Gruber, 2011; Bryant, 2012).

Evidence shows that imprinting is pervasive in the firm, permeating organizational structures (Johnson, 2007), strategies (Boeker, 1989a), visions (Harris and Ogbonna, 1999), and policies (Burton and Beckman, 2007; Simsek, 2015) and can take different form: processes of recombination (Powell and Sandholtz, 2012), development of structures (Bryant, 2012), transfer and application of resources and capabilities (Colombo and Piva, 2012), and past significant personal experience (Zheng, 2012).

It can, therefore, be inferred that the PrevGen's imprinting is pervasive for the company and for the family and effects can be seen in many aspects and areas of the company: what remains to be analysed is the root cause of this widespread and pervasive influence.

The imprinting phase leverages the entrepreneurial essence, a set of heuristics created in the specific founding environment (domain) but in the transition from PrevGen to NextGen.

NextGen keeps it for granted, and uses it as a guiding principle to approach and solve problems. This process is coherent with the imprinting theory principles which proved that organizations may survive far into the future with their founding structures largely intact (Johnson, 2007; Marquis and Tilcsik, 2013; Simsek *et al.,* 2015; Simsek, 2015) because the latter continues to be efficient, or because of inertial forces such as tradition, vested interests, ideology, or because of a lack of competition (Stinchcombe 1965; Romanelli 1989; Baron, Hannan, and Burton 1999; Marquis 2003; Baron, Burton, andx Hannan 1996; Burton 2001).

2.4 Imprinting tends to "*block*" *the future of the company*

Imprinting creates an entrepreneurial essence which tends to stick both in the family company and in the family members, possibly taking to an "escalation of commitment", (Beckhard and Dyer, 1983; Harris and Ogbonna, 1999) i.e. the tendency of decision makers to continue courses of action (e.g. strategies) even when evidence suggests that such courses of action may be failing. Such strategic inertia characterizes many organizations which remain loyal to their original entrepreneurial essence and do not respond to environmental changes and pressures which results in failing to adapt their strategy and renew their competitive advantage (Boeker, 1989; Jarzabkowski, Paula, and Sarah Kaplan, 2015; Barros *et al.,* 2016).

The commitment to the entrepreneurial essence is not bad in itself, it depends on the flexibility of the vision and on how this can avoid the inertia of adapting to the competitive environment changes. Harris and Ogbonna (1999) have defined a "legacy", a founder vision which is flexible and adaptable to subsequent environmental conditions and an "hangover" a not adaptable vision which being fixed and specific cannot be adapted to the changing competitive environment.

Only the NextGen can evolve the PrevGen entrepreneurial essence adapting it to the incoming changed competitive environment. Being the Entrepreneurial Essence of the family characterized by a set of heuristics, how they are adapted would determine the continuity of success in the NextGens.

2.5 Heuristics are domain-specific, therefore domain specific is the Entrepreneurial Essence

The ecological rationality of the heuristics forming the entrepreneurial essence reflects its degree of adaptation to the structure of the competitive environment. A heuristic is not simply a shortcut that avoids extra effort at the expense of reduced accuracy. It is a strategy that effectively matches the structure of the competitive environment, and, in that specific environment, it is

ecologically rational, i.e. efficient. The effectiveness of this ecological match has nothing to do with mimicking the structure of the competitive environment in terms of its complexity, as it can be done with quantitative modelling. Heuristic strategies ignore some of the complexity of the environment in order to reduce both the estimation error and effort.

Heuristics are created in a specific domain, i.e. competitive environment, and this is where they are efficient in finding and solving entrepreneurial problems (Bingham *et al.*, 2007; Bingham and Eisenhardt, 2011; Eisenhardt *et al.*, 2010) and this is coherent with the imprinting theory (Johnson, 2007; Felin, Teppo, *et al.*, 2012). Afterwards, given the structural inertia (Hannan and Freeman 1984) created by the imprinting, the NextGen will build upon these heuristics until the domain will pose new problems, challenges, and will display one or more limits of the heuristics content or temporal wise (Nelson and Winter, 2009). These limits are better detected when heuristics have some characteristics, e.g. they are simple and clear (Brown and Eisenhardt, 1997; Davis *et al.*, 2009; Vuori and Vuori, 2014 Pieper *et al.*, 2015).

2.6 Evolving the Entrepreneurial Essence means adapting the set of entrepreneurial heuristics to a new domain

Heuristics which form the Entrepreneurial Essence can be used unconsciously and intuitively to take entrepreneurial decisions; therefore, if intuitions are based on heuristics (Knight, 1921; Gigerenzer, 2007, Mousavi and Gigerenzer, 2014) identifying the latter provides insight into the intuitive decisions. This is why NextGens are a key resource: they can change the routines, learning the heuristics, decoding the entrepreneurial intuition and adapting it to the new environment, forcing, at the end, the change in the organization; i.e. they can force the change being the "new entrepreneur". The decoding phase is necessary to read the PrevGen entrepreneurial essence in the light of a changed environment, PrevGen heuristics are often implicit and need to be formalized before they can be adapted (Florian, *et al.*, 2015). This adaptation effort will take to a more codified set of heuristics (Heimeriks *et al.*, 2014).

Evolving the imprinting is far from easy, being the entrepreneurial essence and its set of heuristics imprinted by the PrevGen and being difficult to tell which part of the successfully set must be changed to continue the company success story (Lei and Pitts, 1999, Lumpkin and Lichtenstein, 2005). Imprints can, indeed, be transformed (Simsek, 2015) either suddenly in radical moment (Tushman and Anderson, 1986; Gersick, 1994; Hannan *et al.*, 2006) or throughout an orchestrated change of the company organization (Wollin, 1999; Zyglidopoulos, 1999).

However, as demonstrated by the literature on cognitive processes, heuristics applied to decision making processes are subject to bias generation (Kahneman and Tversky, 1973). As stated by Tversky and Kahneman (1973) modern decision theory regards subjective probability as the quantified opinion of an idealized person. Specifically, the subjective probability of a given event is defined by the set of bets about this event that such a person is willing to accept. An internally consistent, or coherent, subjective probability measure can be derived for an individual if his choices among bets satisfy certain principles, that is, the axioms of the theory. The derived probability is subjective in the sense that different individuals are allowed to have different probabilities for the same event.

Biases are then fallacies in the rational behavior due to psychological factors and individual differences (Ceschi et al., 2019). Many scholars have studied the relation between human perception and behavior and how the first modifies the latter. Heuristics are generated or evolved through reinforcement learning, with the unit of learning being heuristics rather than behavior as (Rieskamp and Otto, 2006) hence the subjective probability of an event to happen is, following biases theories, an element of distorsion in rational decision making.

2.7 Some Entrepreneurial Essences are easier to change, other less: it depends on how they are built

The adaptation process that the NextGen has to undertake must start from the existent: being on the giants' shoulders they can't start from scratch.

It has been demonstrated that the PrevGen entrepreneurial essence can be more or less flexible (Harris and Ogbonna, 1999) but which is the root cause of the level of flexibility has not been scrutinized. It is not a matter of how much strong is the imprinting: the imprinting is by definition deeply embedded in the company processes and organization. Imprinting is both diachronic and synchronic process, and its flexibility involves these two parameters, i.e. time and space.

As concerns the space parameter the notion of ecology of a heuristic tool helps shading light on what flexibility really mean. The effectiveness of a specific heuristics strictly depends on the characteristics of the domain, in this sense it is spatial and synchronic. In general, heuristics shows to be superior to algorithmic approach or utility theory when the domain shows the following three conditions: greater predictive uncertainty, relatively small sample size, and less stable environment (Artinger *et al.*, 2015 for a summary). Under these conditions, even with a high data availability, a simple heuristic performs better. A consequence of this finding is that we have to appraise the ecological rationality of a strategy whenever we wish to put it in use. This requires to spot the characteristics of the target domain and to define the logical and temporal steps of a strategy carefully.

As concerns the time parameter a heuristic is intrinsically a positional object (i.e. located in time) and it is implicitly transmitted from PrevGen to NextGen. As such it must be adapted by NextGen through the evolution of the domain of birth or to a new domain, e.g. a new industry. The level of adaptability of the heuristics is measured by its temporal generalizability, i.e. how much its application lasts through time. As Duncan (1972) shows, the dynamic dimension of a domain (how far the factors that potentially affect a decision remain constant over time or are in a continuous process of change) is the main cause of uncertainty. And uncertainty is just what a heuristic is capable of handling better than the standard approaches.

3. Methodology

When selecting a method, we considered our research question (how Entrepreneurial Essence is transmitted from generation to generation), existing work (i.e., an area of knowledge transmission and prior transgenerational entrepreneurial research is incomplete and unstructured), and the intended theoretical contributions (i.e., theory development rather than theory testing). Consequently, we adopted a research method based on theory building from multiple cases (De Massis and Kotlar, 2014; Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Yin, 2003). Thus, it was possible to structure an explicative theory about the transmission of entrepreneurial capabilities from generation to generation, a subject which has not been deeply explored from consistent patterns of data using replication logic, in which a series of case studies functions as a set of experiments that each serve to con-firm or disconfirm an emergent theory (Eisenhardt, 1989; Numagami, 1998; Yin, 2003).

3.1 How we selected the cases

The entrepreneurial families for this study were identified through the Italian Association for Family Business (AIDAF) members' database, universities' network and networking with other family business researchers in Italy. Given the research question the principal interviewees were not founders and they belong to a next generation, from the second to the sixth, and are the present leaders of the family with a relevant active role in the family business, e.g. Chairmen, CEOs or top managers, e.g. marketing, commercial, operations, finance VP etc. Having had the access to family

leaders in top positions it is assured that the real entrepreneurial essence and wisdom has been analysed, being them the most knowledgeable on the firm's history, having roles as entrepreneurs, executives, owners, and contemporary, given the top role in the family business, they provide a clear understanding of key management and organizational processes.

In keeping with purposive sampling, we selected cases that differed in generations and size to enhance contemporary insights either from the way in which heuristics passed through generations and from how heuristics evolve with the management complexity of the family business management structure. Starting from the huge database of potential cases provided by the extent networks we could access, we selected on size, age, generation and industry with the purpose of having the broader set possible to understand how entrepreneurial wisdom, knowledge and education are transferred among generation applying the logic toolbox on heuristics. Table 1 provides a description of interviewees in each company, industry in which company operates; the generation; and the approximate size of the company.

Tab. 1: cases analysed

Name	Founded	Founder	NextGen	Role	Number of family members involved in the company	Industry	Revenues M€	Profit M€	Employees
Bartoli	1894	Giuseppe Bartoli	Giorgio Bartoli	CEO	-	Cardboards	14	0,6	54
Bonfiglioli	1956	Clementino Bonfiglioli	Sonia Bonfiglioli	Chairman	2	Power transmissions for industrial applications	760	35	3700
Canclini	1925	Giuseppe Canclini	Simone Canclini	CEO	1	Shirting fabrics	45	1	250
Carraro	1960	Antonio Carraro	Marcello Carraro	CEO	2	Agricultural machinery, tractors	76	0,8	310
Ceretto	1930	Riccardo Ceretto	Roberta Ceretto	Board member - VP Marketing	4	Piemontese wines	32	na	180
SolGroup	1927	Aldo Fumagalli - Giovanni Annoni	Aldo Fumagalli Romario	Chairman and CEO	1	Industrial and mediacal gas	674,2	32,4	3001
Erg	1938	Edoardo Garrone	Edoardo Garrone	Chairman	3	Energy	944	96	666
Inaz	1948	Valerio Gilli	Linda Gilli	Chairman	2	Software	38,9	na	500
Giovanardi	1919	Arnaldo Giovanardi	Massimo Giovanardi	Chairman	2	Support for stores	15,2	0,36	60
Giuffré Editore	1931	Antonio Giuffrè	Antonio Giuffrè	General Director	1	Publishing	53	na	152
Lavazza	1895	Famiglia Lavazza	Giuseppe and Marco Lavazza	Vice Chairmans	6	Coffee	1,4	na	3000
Ferrari	1902	Giulio Ferrari	Matteo Lunelli	Chairman and CEO	6+	Wine and beverage	57	na	220
Marcegaglia	1959	Steno Marcegaglia	Antonio Marcegaglia	Chairman and CEO	1	Iron and steel	4,1B	218	6500
Sabelt	1972	Piero and Giorgio Marsiaj	Massimiliano Marsiaj	Vice Chairman	1	Belts and seats for sports cars	35	1,2	150
Toscotec	1948	Giovanni Battista Mennucci	Alessandro Mennucci	CEO	3	Engineering	110	8	180
Gruppo Grendi	1828	Marco Antonio Grendi	Costanza Musso	CEO	3	Logistics	38	3,7	100
Epta	2003	Luigi Nocivelli	Marco Nocivelli	Chairman and CEO	4	Food & Beverage	767	29	>4,000
Raccortubi Group	1949	Piergiorgio Pentericci	Luca Pentericci	Chairman	-	Oil & gas applications	56,5	na	220
Inoxfucine	1963	Pietro Pugassi	Lorenzo Pugassi	Chairman and CEO	4	Forged steels	35,4	4,5	57
Fratelli Rossetti	1953	Renzo Rossetti	Diego Rossetti	Chairman	2	Footwear and leather goods	49,6	0,9	293
The Eco-Ethical Company	1963	Mauro Saviola	Alessandro Saviola	Chairman	3	Wood and chemical materials	552	na	1,377
Aura Holding	2003	Fulvio Traglio	Maurizio Traglio	Chairman and CEO	1	Luxury goods, real estate, transports, finance, venture capital, automotive, renawables, restaurants	52,48	0,25	64
Gruppo Cividale	1968	Aldo Bernardino and Adalberto Valduga	Chiara Valduga	Chairman	1	Steel and cast iron	322	13	1316
Zambon	1906	Gaetano Zambon	Elena Zambon	Chairman	4	Pharmaceutical, chemical and house assistance	670	na	2811
Zoppas Industries	1963	Luigi Zoppas	Federico Zoppas	CEO	2	electric resistances, heating systems, white applaiances	450	na	700

na = not available

Source: Elaborazione propria

3.2 Data Collection

Every family leader was requested to write a letter to the previous generation leader describing how he was leading the entrepreneurial family and its business in the future. No specific subjects to be covered or guidelines were given, with the only advise to focus on relevant entrepreneurial issues being related to the family, the company, the industry etc. In parallel researchers reviewed websites, public press reports and industry analyses to understand the business, its industry and its competitive dynamics. Many industry and management experts were interviewed in order to be able to spot relevant points contained in the letters regarding the competitive environment, the industry practices, the entrepreneurial approach etc. The letters' writers were frank, concrete and specific in describing to their previous generation's leaders the current company, family and industry situation.

Our additional research and analysis were useful to check the facts described and to testify it.

The letters were written between March 2015 and July 2016. The research group working on the project involved a highly regard strategic advisor and the letters have been published in Italy in September 2016, one of the present article author participated in the publication, writing a chapter of analysis.

3.3 Data analyses

In total, this study produced over 300 pages composed by family business leaders and 1.000 pages of additional analyses based on public speeches and articles' quotes.

Case data has been analyzed using within-case and cross-case methods (Eisenhardt, 1989; Eisenhardt and Graebner, 2007). A qualitative data and a cross case analysis approach was applied; therefore, it was possible to delineate the combination of factors that have contributed to the outcomes of the case, construct an explanation as to why one case is different or the same as others, make sense of puzzling or unique findings, or further articulate the concepts, hypotheses, or theories discovered or constructed from the original case and to determine if there were consistent patterns of relationships across all cases (Eisenhardt, 1989). Following qualitative case research methodology, no a priori hypotheses were defined. Following the approach suggested by Miles and Huberman (1994) and relying on general frameworks of key players in the among generation entrepreneurial essence transmission, a set of tables and graphs were developed to facilitate cases' comparisons. Dimensions and categorizations were created to analyse the case inputs either stand alone, randomly paired and paired based on similarity (e.g.: generation, industry, size etc).

Findings were discussed applying the Eisendhardt approach (1989), e.g. devil's advocacy, to test different explanations. An outsider drawn into a research project provides more objective review of the inductive process. Cases were compared, frameworked, categorized and logically systematized through an iterative tabulation of evidence until a theoretical saturation was achieved, such an emerging theory provides a consistent and robust explanation on how Entrepreneurial Essence is transmitted from generation to generation.

Highly explicating quotes defining single heuristics are provided and analysed in the Findings section. Theoretical contributions emerged from the relationships between the categories and the inductive theoretical model proposed. A logical structure and connections to several theoretical domains emerged and were formed consistently producing a theoretical template which represent a satisfactory explanation (Langley, 1999) and is presented in the following section.

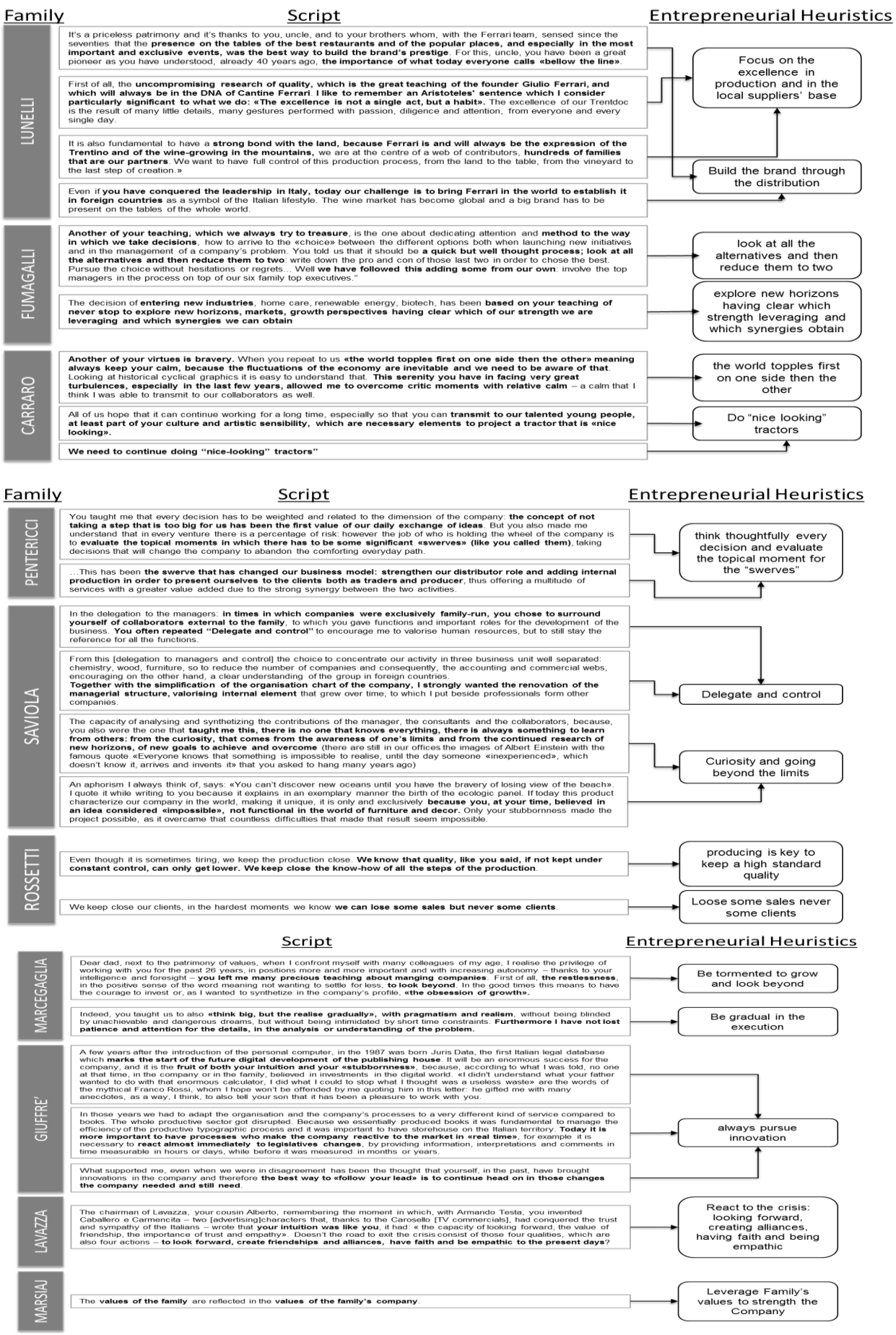
4. Findings

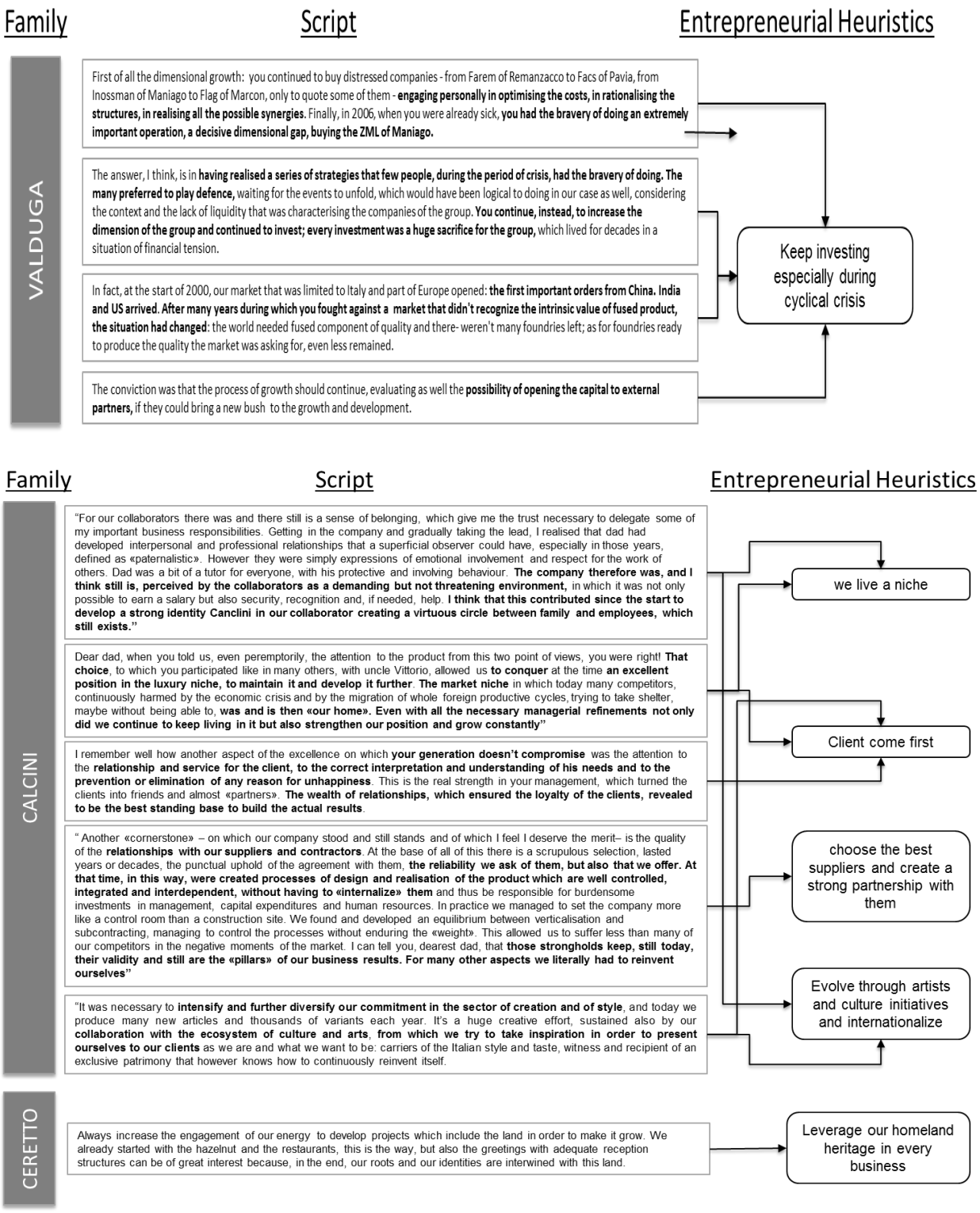
Overall our analysis illustrates that NextGen learn from the PrevGen a set of heuristics and apply them in their entrepreneurial activity. The learning phase viewed through the heuristics' theory helps explaining the entrepreneurial education and the entrepreneurial bridging (Jaskiewicz *et al.*, 2014). The sequential phases of learning and applying illustrate the process of the NextGen in rise and stand on the shoulders of giants, i.e. the PrevGen.

Hypothesis - The entrepreneurial learning between generations happens through heuristics. Hypothesizing that entrepreneurial learning between generation happens through heuristics implies that the PrevGen learn something significant which give a base for a competitive advantage to the family business. This learning can be embedded in the company processes and system and can be evolved from time to time reacting to the competitive environment.

From the twenty-five cases analyzed five emergent evidences arose. In the table 2 the sources of the research material are reported.

Tab. 2: Scripts and Entrepreneurial Heuristics inferred



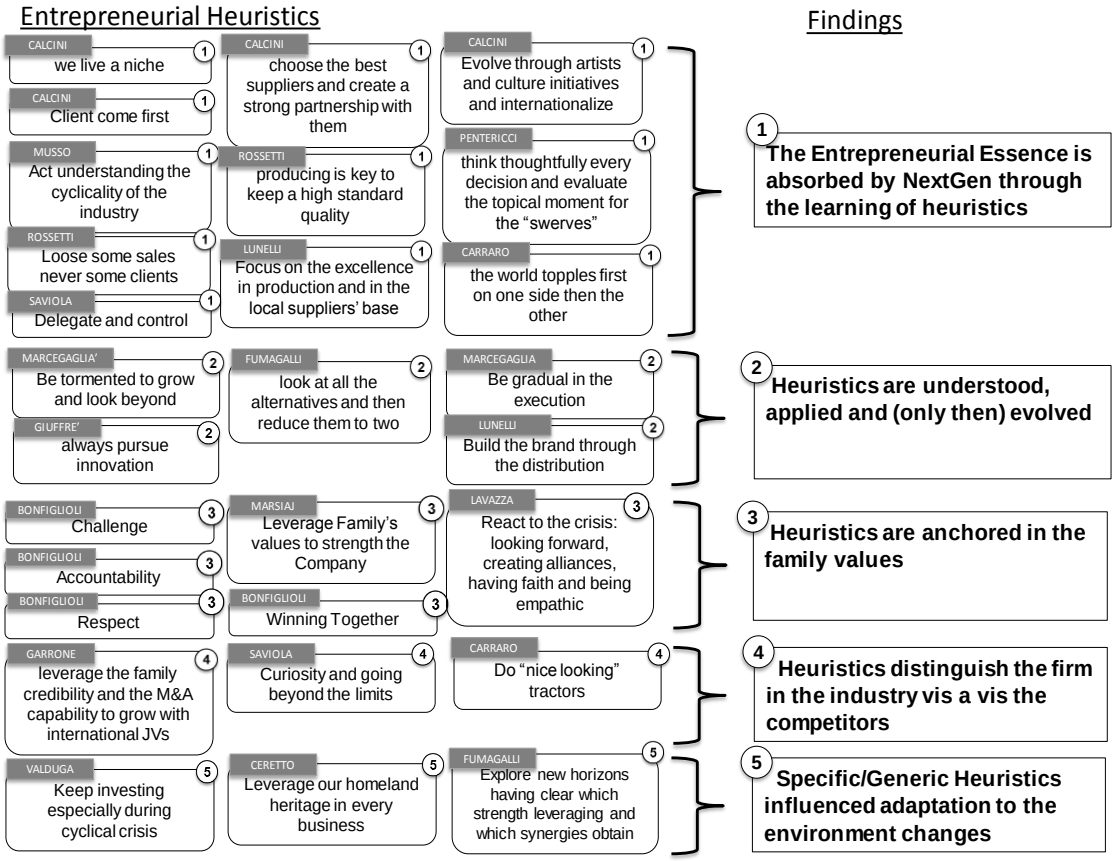


Source: Elaborazione propria

We defined the rules as Entrepreneurial Heuristics (EHs) (Manimala, 1992) meaning that they are entrepreneurial learnings generated in a specific domain. They are verbal rules of thumb that shape the entrepreneurial strategies. Some of them can be traced back to the basic F&F heuristics, while some of them a more specific and simply add more content to the basic heuristics.

From the Entrepreneurial Heuristics (EHs) inferred by the analysis we find five general patterns, reported in the Figure 1 and following described.

Fig. 1: Findings



Source: own processing

4.1 The Entrepreneurial Essence is absorbed by NextGen through the learning of heuristics

The Entrepreneurial Essence (Miller, 2003; Bingham *et al.*, 2007; Freiling *et al.*, 2008; Chua *et al.*, 2015; Roundy *et al.*, 2017) is absorbed by NextGen through the learning of heuristics. The following cases synthetize statements affirmed by the NextGen of learnings coming from the PrevGen and can clearly be understood how these learnings, in the form of heuristics, are absorbed and actioned by the NextGen.

The Calcini NextGen affirm the luxury shirt niche is "home" for the company, where the PrevGen decide to establish the firm and today, the NextGen can face competitors who are trying to enter the niche because there is a difference between being native or immigrants in the niche market. Calcini highlights the two sub heuristics learned: "Client comes first" and "choose the best suppliers and create a strong partnership with them"; leveraging these two decisions making rules the company remains a high end producer.

The same learning process through heuristics from the PrevGen can be seen in the Lunelli case where the Next Gen define the key element of the success that must be preserved: distributing in the best Italian restaurants started in the 70s, the decision to focus on the excellence in production and the decision to create a strong local suppliers' base.

The Marcegaglia heuristics have been learnt working and observing the PrevGen: the "obsession" to grow, the willingness to look beyond linked with the gradualness of the execution. Even in an industry so strongly changed as the steel production the PrevGen heuristics are leading the international growth of the family business.

The shipping industry is another case of strong changes where the PrevGen heuristics remain valid and have been learnt by the NextGen. In the Musso family case the heuristics are based on the ability and willingness to plan for the long term in a cyclical industry.

The PrevGen heuristic of the Pentericci family is described by the NextGen as follows: "every decision must be thoughtfully reasoned considering also the firm dimension and historical situation and then, after the thoughts, if necessary, a U-Turn must be undertaken". This heuristic has led the NextGen to partner with a Private Equity firm to continue growing.

In every case analysed heuristics can be found confirming the learning process. For the Rossetti NextGen: "producing is key to keep a high standard quality"; Saviola NextGen based the business reorganization focusing on simplification on the PrevGen heuristics: "delegate and control"; Carraro NextGen faced the crisis basing its decision making on the heuristic: "the world overturns on one side and then on the other one".

4.2 Heuristics are understood, applied and (only then) evolved.

To face the evolution of the family business the NextGen has first to understand, internalize, apply PrevGen heuristics and then to evolve them. Without the first phase of learning and application there will be no evolution of the entrepreneurial essence and the future of the family firm will be at stake.

Starting from the niche position, the Calcini NextGen evolved the heritage and the Italian style creating a continuous exchange with the art and creative environment giving new strength to the capability of creating unique products grounded in the Italian flavour. Without having interiorize the niche position as the home of the business this will not happened. The Lunelli NextGen evolve the PrevGen heuristics taking international their wines, they create exquisite restaurants experience in airports' duty free to replicate at international level the Italian finest restaurants focus of the PrevGen. The Lunelli NextGen reaffirm the link with the Trento area to present it as differentiating to the global customers.

The Fumagalli NextGen evolved the PrevGen decision making method: "Il varo di una nuova iniziativa deve essere un processo veloce ma meditato; guardare a tutte le alternative in gioco per poi ridurle a due; su queste ultime evidenziare per iscritto i pro e i contro per scegliere la migliore. Perseguire la scelta senza tentennamenti e rimpianti…. Well we have followed this adding some from our own: involve the top managers in the process on top of our six family top executives.". This evolution was necessary given the increased presence of top managers in the family business after the IPO.

The Giuffrè NextGen evolved the "always pursue innovation" heuristic which took the family company to be the Italian leader in professional legal publishing. The PrevGen created the first professional database for lawyers and the NextGen moved from books to services giving instant digital updated of laws, verdicts and verdicts' comments.

4.3 Heuristics are anchored in the family values.

The third finding shows how the family business continuity can't be assured if heuristics are not strongly linked to family values.

Bonfiglioli, Lavazza and Marsiaj NextGen openly affirmed that PrevGen values have become company values. In the Bonfiglioli case these values are Challenge, Respect, Accountability, Winning Together and the NextGen can clearly remember examples of application of these values in the PrevGen. Respect was, for example, demonstrated in not starting the green field construction of the Indian plant before having the approval of the local religious authority, the Challenge in presenting a very difficult market situation to banks, the accountability in removing an engineering not performing etc.

In the Lavazza case the values of the PrevGen became the four drivers to face the economic crisis: forward looking, secure alliances and partnerships, having confidence in the future and being empathic and defend the Earth we live.

Marsiaj NextGen affirm: "The family values are reflected in the family firm values".

Carraro family values of being sensible to culture and arts are leveraged to produced, as defined

by the PrevGen, "beautiful tractors". Aiming to produce a capital good, as a tractor, which is beautiful is quite counterintuitive and it is also a key differentiation strength of the family business.

4.4 Heuristics distinguish the firm in the industry vis-à-vis the competitors.

The fourth finding emerged from the cases is leveraging heuristics, learnt, applied and evolved, to differentiate the family business vis-à-vis the competitors.

The "beautiful tractors" of the Carraro family are an insightful case of heuristics which distinguished the family firm from the competition: beautifulness is not a strength in the industrial capital good competitive arena.

The Garrones leveraged the family credibility and the M&A capability to grow with international JVs. The PrevGen focused on joint ventures with American, Russian, French, Spanish corporations, while the NextGen embrace a bold diversification in the renewable wind-energy after having finalized with the Russian Lukoil a brilliant sale of the oil business. The bold and successful diversification, which make ERG, the family business, the first European wind-energy producer, was possible given the entrepreneurial heuristic of developing the oil and energy business with high profile partnership with international industry leaders. This is clearly stated in the records the Nextgen have of the PrevGen entrepreneurial development: "…And we focus on the joint venture with the foreign giants, American, French, Spanish and on the shopping, with acquisition of the ELF Italian web, then the Chevron's one." and in the conjoint decision process used to take the transformational decision to create a partnership with the put option necessary to sell the entire oil business to the Russian: "Me, Alessandro and our cousin Giovanni are talking with the big chief of the Russians, Vagit Alekperov, they don't want a joint venture, they want everything. We need to decide this with you. We owe you this. And we decide together that we don't give them all but that the agreement needs to be secured…".

The Garrone family is the only European family in the oil business who successfully left the refining and marketing to boldly move to the renewable energy production industry thank to the heuristic of having systematically and historically high-profile relationship and partnership with global leaders in the industry. When the Russian players came in the market with the willingness of investing in oil refining, for the it Garrone was embedded in the heuristic decision making to approach them and find a way to partner with; they did the same with the French oil giant Total in the oil marketing field.

In the Saviola family case the heuristics which distinguished the firm from the competitors is: "there is no one that knows everything, there is always something to learn from others: from the curiosity, that comes from the awareness of one's limits and from the continued research of new horizons, of new goals to achieve and overcome". The curiosity and the willingness to learn creates the ecological energy panel, which in the words of the NextGen: "today this product characterize our company in the world, making it unique".

Specific/Generic Heuristics influenced the NextGen adaptation to the environment changes. In the set of Entrepreneurial Heuristics (HE) of the Fumagalli family two general heuristics can be found which meet the Gigerenzer standards. The first one is: "The launch of a new initiative must be a fast but well thought out process; look at all the alternatives in play and then cut them down to two; for the latter, write down the pros and cons to choose the best. Pursue the chosen solution without vacillations or regrets" This HE meets the satisficing condition (Simon, 1955; Todd & Miller, 1999): search through alternatives, and choose the first one (two in this case) that exceeds your aspiration level. The second one: "Don't become too big in a single market without first laying the foundations for growth in new markets. Otherwise you will find you are too weak". This HE meets the 1/N equality heuristic (DeMiguel *et al.*, 2006): allocate resources equally to each of N alternatives; this heuristic work for domain with high unpredictability, small learning sample, large N; as in the competitive environment in which entrepreneurs, both PrevGen and NextGen, take strategic decisions and they outperform optimal ass*et al.*location models. In the Fumagalli HE's set there are heuristics domain specific as: "Prefer the BRICS for new development opportunities". In

this case, it is much more complex for the NextGen to apply the EH in other industry, times and geographical areas, therefore this sort of EHs are less flexible and can take to an entrepreneurial hangover (Harris and Ogbonna, 1999).

Generic Heuristics are better because of their intrinsic adaptability to the evolving competitive environment. Even generic heuristics are created in a specific domain but they come up not being strictly domain dependent, giving to the NextGen better change to adapt them. Generic EHs can maintain their validity in years and can be adapted by NextGen. The Bonfiglioli EH: "Prefer the acquisition of new skills (and company) greenfield to enter in a new manufacturing sector", e.g., is applicable in different industry, times and geographies. The Nocivelli EH: "Delegate to have more time as resource" is even applicable in different management activities.

The Valdunga EH: "Buy troubled companies where it is possible to optimize costs, rationalize structures and achieve potential synergies" can forge a growing strategy keeping the flexibility of where, when and in which industry invest in. Commonalities of this heuristic can be found, e.g., in the beer industry where the transformative force of the Lemann entrepreneurial family has completely changed through consolidation the competitive landscape (Nolan and Zhang, 2003; Howard *et al.,* 2014; Ashenfelter *et al.,* 2015)

Specific heuristics not being adaptable to changes can put at stake the survival of the family firm given their imprinting in the company processes and in the NextGen entrepreneurial approach. Being the transgenerational transfer of the Entrepreneurial Essence tacitly and implicitly (Grant, 1996; Cabrera-Suárez *et al.,* 2001; Steier, 2001), the NextGen could not be able to adapt and evolve a specific heuristic.

Generic Entrepreneurial Heuristics, being flexible and open, give to the NextGen the huge responsibility of interpreting them given the evolution of the competitive environment, i.e. the EH domain. The process of interpretation has two building blocks: analogies and inductions and permits to expand the effect of the heuristics from solving specific domain strategic problems to finding new problems in an evolving domain.

Analogy is a process of problem solving executed by applying to a new domain a set of logic structures valid in a different but similar domain. Some of the Generic Entrepreneurial Heuristics found in the research can provide analogy process optionality to the NextGen. The Zoppas family EH: "Through acquisition accelerate both the process on applications and on technologies", or the Giovanardi family EH: "Transfer know-how and technical knowledge in new sectors that show signs of growth", e.g., can bring the NextGen to consider acquisitions in new industries or new geographical areas taking new entrepreneurial growth in the family business. Something similar can be true for the Lavazza EH: "Consider the entire European market as an internal one": when a new product will be launched, e.g., the NextGen will create the product for the European market and not for Italy only; or similarly, when considering a strategic plan, the entire Europe will be the playing field of the company.

Induction, on the other hand, is a process of problem solving executed by adding new observations which can transform the existent decision making logic framework, therefore induction can change the understanding of the domain in which Entrepreneurial Heuristics were created.

The Zoppas family EH: "Focus on application, rather than technologies" and the Saviola family EH "Change the rules where necessary to go beyond obsolete activities, even if they have been around for decades", e.g., force the NextGen to continuously scan the internal and external environment finding new inputs to review and evolve the operations. In order to be successful in this process the NextGen has to feed inductively with new inputs the original set of heuristics. Something similar can be find in the Marcegaglia EH: "Choose alliances that facilitate the access to primary steel with a qualify participation in steelworks, minimizing risks", where the NextGen has to scan the external environment (i.e. induce from the domain a lot of information) to find potential partners which can enhance the company leading position.

Applying the aforementioned EHs in the strategic decision making processes will force the NextGen to apply analogy and induction logic reasoning from the original domain to a new one,

forcing an adaptation of the PrevGen original set of heuristics; therefore, the NextGen will find new problems to be creatively solved through an evolution of the original Entrepreneurial Essence. These subcategory of the generic Entrepreneurial Heuristics enables the NextGen in finding new problems to be entrepreneurially solved.

5. Conclusions and implications

This paper leverages the theoretical structure of the heuristics, which is accepted and is spreading between management scholars, to understand how the entrepreneurial essence is created and transmitted by PrevGen to NextGen.

Heuristics' theory seems well positioned to give a new observation point on how decisions are taken in complex environment with a fast and frugal approach, these characteristics are proper of the entrepreneurial mind-set. Understanding how entrepreneurs imprint the company with the Entrepreneurial Essence and how the NextGen learns is key to define how and what must be transferred to the future entrepreneurs. Leveraging the heuristics framework appears to be a good option in defining how the NextGen must be educated in order to maximize the learning of the Entrepreneurial Essence and how this Entrepreneurial Essence can be evolved by the NextGen. This is a contribution in studying the entrepreneurial education of the NextGen and, more generally, how the learning occurs when the two generations spend time working together.

Heuristic's theory provides also a framework to understand hoe the NextGen evolve the Entrepreneurial Essence giving a contribution on how to evolve the family business given the next leading generation and the changing competitive environment in which the family business operates.

Considering the changes of the environment in which the business operates and considering the dominion specific concept of heuristics, it has been inferred that generic and flexible heuristics are better positioned to sustain the business continuity by guaranteeing a more reactive adaptation.

This consideration means that PrevGen should focus in transmitting to the NextGen generic heuristics which can be adapted to the changes of the competitive environment.

The diffusion of the heuristics theory between family business scholars will create a lot of future research opportunities. How heuristics are formalized and transmitted could be analysed to better understand how the PrevGen give birth to the success of the firm. Moreover, understating how heuristics are adapted by the NextGen to the evolved competitive landscape can give important insights in understanding the competitive behaviour of family business. Finally, heuristics can be the base to analyse the culture and the simple rules which guide the entrepreneurial family in decision making at the shareholder level.

The heuristics theory corpus fits better than the quantitative analytical one to the entrepreneurs' decision making and competitive behaviour, therefore developing and studying the reality with these lenses will definitely get closer the scholars and the practitioners views increasing the potential impact of scholars researches' results.

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La sfida della sostenibilità per il management delle stazioni sciistiche: il modello dei club fields neozelandesi tra esperienzalità e sense of place

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Abstract

Obiettivi. *Il lavoro si propone di individuare un modello manageriale che renda coerente la gestione delle stazioni sciistiche minori con le sfide poste dal paradigma della sostenibilità e dal cambiamento climatico. Si intende dimostrare l'esistenza di possibili modelli di gestione che, oltre ad essere economicamente, socialmente e ambientalmente sostenibili, siano coerenti con la ricerca dell'autenticità e dell'esperienzialità da parte dei turisti. Inoltre, i risultati della ricerca possono suggerire implicazioni utili anche per le stazioni di maggiore dimensione, poste di fronte alle forti sollecitazioni competitive e climatiche.*

Metodologia. *Il lavoro si basa su una ricerca sul campo condotta in una stazione sciistica della Nuova Zelanda ed ha previsto l'utilizzo di interviste personali in profondità a operatori e manager della stazione, oltre ad una rilevazione su una popolazione di sciatori.*

Risultati. *Emerge la possibilità di applicare il modello dei Club Fields quale risposta innovativa alle tendenze dello sci anche nell'arco alpino. Viene identificato un tipo di stazione che potrebbe risultare adatto alle esigenze di precise categorie di fruitori, affiancandosi alle forme sino ad ora praticate.*

Limiti della ricerca. *La ricerca si basa sull'analisi di un solo caso di studio. Esso tuttavia è una importante stazione neozelandese che ben rappresenta le caratteristiche essenziali del modello che si intende proporre.*

Implicazioni pratiche. *La ricerca fornisce indicazioni strategiche e operative utili sia per i manager di destinazione, sia per i manager di stazione, che devono invece confrontarsi con l'innalzamento dei break-even point nella gestione economica degli impianti di risalita e della gestione dell'innevamento delle piste.*

Originalità del lavoro. *In letteratura il modello organizzativo dei Club Fields non ha ancora avuto particolari attenzioni in Europa e non è mai stato proposto quale modello di riferimento/confronto per la gestione delle stazioni sciistiche alpine. Propone inoltre un'analisi in chiave di micro-segmentazione.*

Parole chiave: *Club Fields; management delle stazioni sciistiche; management della sostenibilità; sense of place*

Objectives. *This study wants to find a management model for a synergy among the ski areas, the sustainability and the climate change. The research not only demonstrates a management models that are economic, social and environmental sustainable but also a congruence with authenticity and tourists experiences. The research findings suggest also for big ski resort useful implications to deal with competition and climate change.*

Methodology. *This work is a field research in a ski area in New Zealand conducted by face to face interviews to the managers, the employees and the skiers.*

Findings. *The result is the possibility to implement the Club Fields model like an innovative answer to the actually ski style in the Alps. The study found a specific type of ski area which could be suitable to a particular kind of skiers who are different from the typical European.*

Research limits. *The research uses only one case study but it is an important ski area in New Zealand that explains very well the most important characteristics of this ski model.*

Practical implications. *The study gives the strategic and managerial instruction useful for the destination managers and ski managers who need to think about the increasing of break-even point of ski lift economic situation and snowed pists.*

Originality of the study. *There is no literature about Club Fields model and there are not something like this in Europe. Moreover this study introduces an micro-segmentation analysis.*

Key words: *Club Fields, ski area management, sustainability management, sense of place*

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1. Introduzione

Le stazioni sciistiche sono assimilabili, seppure all'interno di un *range* di variabilità basato sulla struttura proprietaria, a vere e proprie organizzazioni aziendali, per cui è possibile applicare loro alcune teorie relative alla gestione strategica e alla ricerca del vantaggio competitivo (Flagestad e Hope, 2001). Tali stazioni, destinazioni turistiche che, seppure con diverso grado di specializzazione, sono vocate agli sport invernali, stanno affrontando mercati stagnanti e nuove sfide legate alla crescente sensibilità verso gli impatti che la pratica dello sci di massa scarica sia sull'ambiente naturale, sia sugli equilibri sociali delle comunità residenti. Questo si verifica soprattutto nell'arco alpino a causa dell'elevata antropizzazione delle valli di montagna, generando una notevole differenza rispetto alle stazioni (a partire dalle celebri *ski station* presenti nel continente americano) dove l'isolamento e la sostanziale assenza di insediamenti abitati evita conflitti nell'uso delle risorse e nella valutazione delle ricadute (comprese quelle extra-economiche) degli investimenti effettuati. In un contesto nel quale molte stazioni sciistiche alpine si trovano sotto pressione da un punto di vista non solo economico, ma anche sociale e ambientale, risulta utilmente applicabile il concetto di *resilienza* utilizzato nell'ambito dell'approccio allo sviluppo sostenibile, che spinge a ragionare in un'ottica di lungo periodo che miri all'obiettivo della sostenibilità.

Il presente contributo si inserisce all'interno del dibattito scientifico riguardo alle scelte strategico-manageriali che le stazioni sciistiche possono intraprendere coniugando le dimensioni di competitività e sostenibilità (Crouch e Ritchie, 2000). Lo studio contribuisce a colmare il gap di ricerca relativo alle località sciistiche minori, collocandosi nel filone di studi dedicato alle cd. *boutique destinations* e allo stretto rapporto che in esse deve essere creato con la filosofia della sostenibilità (Booth e Cullen, 2001; Franch *et al.*, 2005; Clydesdale, 2007; Callaghan e Colton, 2008; Škori, 2010; Casagrande Bacchiocchi *et al.*, 2019). Molte di queste aree, infatti, essendo deboli sul versante economico-finanziario, soffrono in modo particolare l'assenza della neve e rischiano di entrare in un pericoloso *loop* di declino a causa del cambiamento climatico. Tale declino, se da un lato riduce le possibilità di pratica dello sport invernale, soprattutto a basso costo e di prossimità, dall'altro lato, espone alcune località al rischio dell'abbandono, a causa del venire meno di una preziosa forma di sostentamento economico per la vita in montagna.

Le aree sciistiche minori, se sono le prime a subire l'impatto del cambiamento climatico, possono tuttavia offrire spunti innovativi per ripensare la cosiddetta *winter leisure* con un atteggiamento più sostenibile. *L'obiettivo principale della ricerca* è capire le forme di valore della *winter leisure* e come questa si possa sviluppare in una piccola area sciistica gestita da strutture imprenditoriali più deboli sotto il profilo della capitalizzazione, ma per questo più flessibili e con punti di pareggio finanziario più facilmente raggiungibili. Nello specifico è stata analizzata l'attività sciistica e il suo impatto in termini di sostenibilità ispirandosi al modello *community* (Murphy, 1985; Flagestad e Hope, 2001; Murphy e Murphy, 2004; Beritelli *et al*., 2007; Beritelli *et al*., 2016). Il focus è sul valore dell'esperienza dello sci e delle altre attività ricreative collegate in termini non strettamente economici, ma analizzando quanto può essere trasferito alla stazione secondo il concetto che in letteratura è stato definito *sense of place*. La ricerca considera il caso dei *club fields* neozelandesi in quanto emblematici esempi di stazioni sciistiche minori che hanno saputo fare leva sull'autenticità ed esperienzialità quali fattori competitivi e distintivi dell'offerta.

La ricerca è stata condotta in Nuova Zelanda nella stagione invernale 2019 ed ha considerato il caso dell'area sciistica di Broken River. L'indagine sul campo si è articolata in due fasi. La prima, di natura qualitativa, si basa su otto interviste ad interlocutori privilegiati che attraverso la content analysis e thematic analysis ha permesso di identificare i temi chiave (senso di comunità e appartenenza; partecipazione; tradizioni; consapevolezza ambientale) su cui si basa il modello dell'area sciistica indagata. La seconda fase si basa sulla raccolta di 286 questionari somministrati agli sciatori dell'area indagata al fine di cogliere i fattori di attrattiva e le dimensioni emozionali ricercate.

I risultati mettono in luce la tenuta del modello neozelandese e offrono spunti interessanti e originali che le stazioni sciistiche minori potrebbero adottare per contrastare le criticità connesse al

global warming adottando strategie radicalmente diverse rispetto all'offerta dei grandi caroselli sciistici.

Il lavoro si articola in quattro principali sezioni. Dopo aver illustrato le principali sfide che le stazioni sciistiche sono chiamate ad affrontare, indotte in particolare da fenomeni di *overtourism* e *climate change* (cfr par. 2.1), il paper approfondisce il tema del *sense of place* e dell'*esperienzialità* quali elementi strategici rispetto ai quali le stazioni sciistiche minori potrebbero fare leva per accrescere il valore simbolico ed immateriale della propria offerta e differenziarla da quella delle stazioni sciistiche di più grandi dimensioni. Il paragrafo 3 è dedicato alla metodologia della ricerca. Dopo aver delineato l'articolazione della ricerca sul campo (par. 3.1) questa sezione illustra gli elementi distintivi dell'area oggetto di analisi e del modello dei club fields (par. 3.2) e le specificità del caso di studio (par. 3.3). Le fasi della ricerca qualitativa e quantitativa e i rispettivi strumenti di indagine sono descritti nel paragrafo 3.4. I risultati della ricerca sono presentati nel paragrafo 4 e discussi nel paragrafo 5. La sezione conclusiva mette in luce elementi originali dello studio e elementi chiave per una possibile implementazione del modello neozelandese alle stazioni sciistiche minori dell'area alpina.

2. Contesto teorico di riferimento

2.1 Risposte strategiche delle stazioni sciistiche di fronte alle sfide della sostenibilità e del cambiamento climatico

Lo sci è un'attività sportiva che ha avuto il suo sviluppo di massa in Europa nel decennio 1965 - 1975 (England *et al.*, 1980), portando con sé non solo l'aumento esponenziale del turismo invernale, ma anche il consumo di beni e servizi legati alla pratica dello sport. Anche in Italia, mentre nelle zone di pianura e nelle valli alpine si sviluppavano interi distretti per la produzione di attrezzature, abbigliamento e accessori (il più importante dei quali è certamente il cd. Distretto dello Sport della provincia di Treviso, in Veneto), nelle località di montagna sono stati realizzati consistenti investimenti per costruire impianti di risalita, strutture ricettive e altri servizi di supporto per accogliere le masse di sciatori che durante la stagione invernale hanno iniziato a praticare la nuova attività. Si sono così sviluppate le *stazioni sciistiche*, attività imprenditoriali situate in aree montane, che fondano il proprio modello di business sulla pratica dello sci e sui servizi connessi, specializzandosi, in alcuni casi, sulla sola offerta invernale. Tali stazioni, in base alla struttura proprietaria, si distinguono nei due archetipi *corporate* e *community*, le prime sotto il controllo centralizzato di società di capitali, le seconde a proprietà diffusa con ampio coinvolgimento delle popolazioni, degli *stakeholder* e dell'imprenditorialità locale (Flagestad e Hope, 2001).

A differenza di altri comparti produttivi, il modello di business del settore sciistico non deve considerare solo il processo di allineamento tecnologico della produzione alla domanda, ma deve anche tenere presenti vincoli geografici ed ecologici, l'andamento climatico e meteorologico, che determinano condizioni essenziali quali la temperatura e la presenza di neve al suolo, che consentono la pratica di un'attività che si svolge per definizione *outdoor* (Clydesdale, 2007). Il successo competitivo di una stazione deriva infatti da un complesso equilibrio fra strategie di management, applicazioni della tecnologia e gestione delle specifiche condizioni ambientali nelle quali i servizi vengono erogati (Pröbstl-Haider *et al.*, 2019).

Da questo punto di vista, una delle principali sfide per le stazioni sciistiche è rappresentato dal cambiamento climatico. Numerosi studi hanno dimostrato che la stagione sciistica diventa ogni anno sempre più vulnerabile, rischiando di mettere in crisi l'intera industria dello sci (Unbehaun *et al.*, 2008; Scott *et al.*, 2008; Rutty *et al.*, 2015 e 2017): di anno in anno il *freezing level* si alza di quota, la copertura nevosa naturale si riduce, le stagioni sciistiche si accorciano. Nonostante siano state anche individuate possibili strategie di risposta al cambiamento climatico (Bicknell e McManus, 2006), ivi comprese le nuove tecnologie della neve, la questione rimane critica, soprattutto per il manifestarsi di un continuo (ed apparentemente irreversibile) aumento delle

temperature. In questa situazione, l'Intergovernmental Panel on Climate Change (IPCC) ha introdotto come risposta al cambiamento climatico gli importanti concetti di *mitigazione* e di *adattamento* (McCarthy, 2001, pp.85-95), che dovrebbero entrare a far parte integrante delle strategie di medio/lungo periodo delle stazioni sciistiche e delle regioni dove esse sono situate.

Un secondo fattore critico che pesa su alcune aree sciistiche è il fenomeno dell'*overtourism*, ossia un aumento esponenziale delle presenze turistiche in periodi concentrati che determina una situazione di congestione per i turisti, i residenti e l'ecosistema, che deve subire il peso di un turismo non controllato ed eccedente la capacità di carico del territorio (Goodwin, 2017; Peeters *et al.*, 2018; Dodds e Butler, 2019). I rischi di *overtourism* riguardano anche le aree sciistiche di maggiore successo, laddove si supera spesso la soglia di sostenibilità ecologica e si generano impatti negativi sull'area (Weiss *et al.*, 1998). Tale situazione comporta non solo costi in termini ambientali (congestione del traffico, generazione incontrollata di rifiuti, consumo di risorse naturali particolarmente fragili), ma anche diversi disagi di natura sociale, poiché i residenti devono sopportare condizioni frustranti di aumento dei turisti in alcuni periodi dell'anno (ad esempio durante le festività natalizie) e il conseguente cambiamento del tessuto sociale (perdita di tradizioni e delle consuetudini locali). Gli stessi turisti/sciatori, inoltre, vivono un'esperienza negativa, caratterizzata da alti prezzi e da un sovraffollamento dell'area che limita sia la fruizione propriamente sciistica, sia, più in generale, il divertimento e il relax associati alla vacanza.

Il contesto sino a qui descritto riguarda la generalità delle stazioni sciistiche dell'arco alpino, anche se esistono notevoli differenze a seconda delle caratteristiche geo-morfologiche e dimensionali che connotano ogni realtà. Il *range* delle situazioni è infatti ampio e diversificato, passando, nei due estremi di un *continuum*, dalle stazioni ad alta capitalizzazione, situate in comprensori sciistici con elevata intensità turistica, fino alle piccole stazioni di prossimità, con limitata capacità ricettiva, situate, talvolta, a quote dove non è più garantito l'innevamento naturale. Le stazioni del primo tipo, oltre a disporre di capitali e di volumi di fatturato che consentono un maggiore ricorso alla tecnologia e alla creazione di nuovi servizi per rispondere, almeno in parte, alle sfide del cambiamento climatico, hanno la possibilità di puntare sull'allungamento della stagione (o addirittura al suo raddoppio estivo) grazie alla loro collocazione in aree ad alta densità turistica (si pensi, ad esempio, alle più rinomate stazioni dell'area dolomitica) (Martini *et al.*, 2019). Rimane per esse il rilevante problema dell'*overtourism*, rispetto al quale, tuttavia, l'affacciarsi della cultura della sostenibilità, unita ai cambiamenti in atto nelle preferenze dei turisti, stanno portando alla diffusione di alcune buone pratiche tese al contenimento dell'antropizzazione in quota e alla limitazione dell'impatto dello sci. In ogni caso, come è stato evidenziato da alcune autorevoli ricerche svolte nel contesto internazionale (Weiermair, 1993; Gill e Williams, 1994; Todd e Williams, 1996; Bicknell e McManus 2006), le grandi stazioni possono attuare appropriate strategie di destination management e marketing attraverso le quali affrontare le sfide indicate.

Scenario diverso si presenta invece per le stazioni sciistiche minori che si trovano ad affrontare le medesime sfide con un assetto strategico, organizzativo ed economico finanziario profondamente diversi (Flagestad e Hope, 2001; Martini *et al*., 2019). Per tali ragioni, la scelta di competere con i medesimi binomi prodotto/mercato dei grandi comprensori sciistici non appare convincente se non addirittura impossibile. L'*ipotesi* di fondo del presente studio consiste nel ritenere che le stazioni sciistiche minori possano trovare una propria via all'offerta turistica, puntando sulla differenza rispetto alle stazioni di massa, anziché inseguire un modello che le porrebbe in posizione di inevitabile svantaggio competitivo, oltre a mettere a rischio la sostenibilità ambientale e sociale dell'offerta medesima. Si vuole quindi sostenere che il *path* strategico di sviluppo delle piccole stazioni, essendo centrato su una scala dimensionale inferiore, dovrebbe basarsi su due elementi di fondo:

- lo sviluppo del *sense of place*, ottenibile attraverso il forte coinvolgimento dei residenti;
- l'*esperienzialità dell'offerta*, ottenibile attraverso l'offerta di servizi semplici nella struttura ma ad alto valore simbolico ed immateriale.

Tale ipotesi trova fondamento nei contributi della letteratura illustrati nella sezione che segue.

2.2 Dal sense of place all'esperienzialità attraverso il coinvolgimento di turisti e residenti: opportunità per le stazioni sciistiche minori

L'importanza del ruolo della comunità residente nel turismo è ormai assodata, partendo dall'assunto che, quando l'attività turistica viene percepita come un beneficio, e, di conseguenza, la comunità locale assume comportamenti positivi e benevoli nei confronti degli ospiti, aumenta il livello di soddisfazione dei turisti, e si alimenta anche il passaparola positivo sulla destinazione (Presenza *et al.*, 2013). È evidente, quindi, come il ruolo dei residenti sia fondamentale per il successo di una destinazione, in un processo circolare: gli effetti (economici, sociali, ambientali) del turismo sui residenti sono essenziali per determinare la percezione positiva o negativa della comunità rispetto al turismo, cui consegue un'accettazione più o meno convinta dell'attività turistica e una conseguente qualità percepita da parte dei turisti (Oviedo-Garcia *et al.*, 2008).

Il processo di coinvolgimento dei residenti nell'attività turistica non è tuttavia semplice da pianificare, poiché i residenti hanno opinioni e interessi diversi rispetto al turismo, e la difficoltà sta nel far convergere idee, opinioni e comportamenti in una visione d'insieme condivisa. In questo senso, l'intervento del soggetto pubblico diventa strategico, anche attraverso un processo che miri all'informazione e all'educazione di tutti gli attori coinvolti (Simmons, 1994). Ciò permetterebbe di avere soggetti più consapevoli e con capacità tali da sostenere un turismo pianificato e organizzato, sviluppando l'economia locale attraverso un migliore equilibrio di potere fra gli attori della destinazione (Wondirad e Ewnetu, 2019).

La configurazione di offerta che una piccola stazione può assumere tramite il coinvolgimento degli stakeholder locali e della popolazione residente alimenta la creazione di *sense of place*, un concetto che racchiude in sé tre diverse componenti: l'ambientazione fisica, il comportamento umano, i processi sociali e psicologici (Relph, 1997), comprendendo i significati del luogo, l'attaccamento al luogo e la soddisfazione del luogo (Stedman, 2003). Quando l'individuo interpreta un determinato spazio vi associa alcuni significati, che sono relativi alla sua personale esperienza, e quando uno spazio assume un particolare valore per l'individuo, diventa un "luogo" che ne riflette l'unicità dell'aspetto sociale e culturale. Un luogo nasce quindi dalla formazione di relazioni reciproche tra natura e interazioni sociali (Eisenhauer *et al.*, 2000), dalla connessione tra natura, cultura e relazioni, cosicché le caratteristiche di alcuni paesaggi possono divenire la base dei sentimenti di *attaccamento* e di *soddisfazione*. Allo stesso tempo, però, i significati possono essere strutturati tramite dei comportamenti specifici, legati alle caratteristiche dell'ambiente (Stedman, 2003). Il *sense of place* connota anche i "luoghi speciali", ovvero quei luoghi che vengono consideranti particolarmente preziosi per gli individui, grazie alla presenza di attività ricreative di svago e di avventura, alla presenza di caratteristiche fisiche particolari dell'ambiente, e, infine, ai rapporti sociali che possono nascere (Eisenhauer *et al.*, 2000). Il *sense of place* non può prescindere quindi dall'attività umana, in termini di presenza e di azione, tenendo conto dell'atmosfera, del contesto sociale e dei legami che si creano con la comunità residente. In questo senso, la comunità, sulla base della sua cultura e degli elementi storici che la caratterizzano, determina il significato del luogo attraverso un processo di co-creazione (Campelo *et al.*, 2014).

Tale processo di co-creazione presuppone la partecipazione e la collaborazione tra comunità locale, produttori di servizi e consumatori/turisti. I turisti, peraltro, *desiderano* avere un ruolo attivo e partecipativo nel processo di produzione dell'esperienza (Prebensen et al., 2013; Prebensen e Xie, 2017). In questo modo, diventano soggetti attivi nel processo di produzione, generando valore aggiunto per lo stesso servizio (McLeay *et al.*, 2019). La risposta affettiva che i turisti generano durante il processo di co-produzione incide, infatti, sul valore dell'esperienza, stante l'esistenza, verificata empiricamente nel settore dei servizi, di una relazione positiva fra la qualità del servizio e la partecipazione diretta dei turisti all'esperienza (Gallan *et al.*, 2013). Nel momento in cui all'individuo viene chiesto di co-creare la propria esperienza, in modo particolare se avventurosa, risulta più facile che questa generi ricordi speciali, che contribuiscono alla creazione di esperienze memorabili ed uniche (Tung e Ritchie, 2011; Shaw *et al.*, 2011). In definitiva, coloro che hanno una parte attiva nella realizzazione del prodotto, vi attribuiscono poi un valore superiore: il tempo e lo

sforzo che i consumatori impiegano è direttamente proporzionale alla disponibilità ad acquistare e a pagare un prezzo più elevato (Lala e Chakraborty, 2015; Busser e Shulga, 2018 p. 70).

Nel turismo della neve gli sciatori co-creano la propria esperienza attraverso una serie di attività (sciare, pranzare/cenare sulle piste, socializzare con gli altri ospiti, condividere foto online, raccontare episodi della propria giornata) (Kreziak e Frochot, 2011). Gli sciatori cercano anche la possibilità di rilassarsi, di ricordare eventi legati al passato, di evadere, di migliorare le proprie capacità sciistiche e di provare emozioni adrenaliniche (Hall *et al.*, 2017). A questo proposito, McLeay *et al.* (2019) attraverso uno studio sulla co-creazione dell'esperienza negli ski-chalet, hanno evidenziato cinque elementi rilevanti:

- *Socializzazione*: godimento della convivialità nello chalet. La comunità presente nel rifugio diventa fondamentale per la possibilità di socializzare tra ospiti e condividere momenti della giornata. La possibilità di co-creazione deve essere condivisa anche dallo staff;
- *Infrastruttura pseudo-autentica*: il contesto di "villaggio ideale montano" è considerato come pseudo autentico, in quanto l'idea di naturalezza del paesaggio si scontra con l'artificialità delle strutture e dei servizi offerti;
- *Sci edonistico*: ricerca e possibilità di un divertimento nell'attività sciistica e nei servizi (après-ski). Nel momento in cui c'è condivisione e co-creazione dell'esperienza edonistica, gli sciatori sviluppano maggiormente l'aspetto della socializzazione;
- *Posizione/luogo*: posizione fisica dello chalet, ma anche atmosfera esistente;
- *Comunità potenziate di sciatori online e offline*: la condivisione di informazioni attraverso il passaparola, ma anche sui social media.

Il turismo diventa quindi un'attività a forte contenuto simbolico ed esperienziale, e la percezione di *evasione*, che è uno dei motivi principali del turismo, si avrebbe proprio nel momento in cui il turista prova la sensazione di essersi allontanato dalla routine della vita quotidiana (Oh *et al.*, 2007). Negli studi che hanno individuato i fattori capaci di generare esperienze nel corso della vacanza, con specifico riferimento al turismo in contesti naturali, Farber e Hall (2007) hanno identificato quattro tipi di stimoli (paesaggi, attività ricreative, fauna selvatica e interazione sociale), che concorrono a generare risposte emotive nei turisti e creare esperienze ricreative di alta qualità.

Lungo queste direzioni sembrano dunque potersi muovere le stazioni sciistiche minori per individuare strategie di offerta capaci di stimolare l'interesse di specifici segmenti di consumatori.

3. Metodologia della ricerca

3.1 Inquadramento e fasi della ricerca

Per la ricerca si è seguito un approccio *case study* mirato: la ricerca risulta essere un'analisi empirica che analizza in profondità un caso reale e attuale, considerando la difficoltà nel determinare i confini tra fenomeno e contesto (Gillham, 2000, pp. 1-7). Come suggerito in Yin (2006) lo studio di caso si avvale di approcci diversi adottando sia metodi quantitativi che qualitativi. Questo ha permesso di comprendere come manager, *club members* e soci attivi dell'associazione confezionino un'esperienza decisamente unica e come i visitatori percepiscano, e talvolta contribuiscano a creare, questa stessa esperienza. La componente quantitativa arricchisce la comprensione di quanto esplorato in modo soggettivo. L'interazione con stakeholder privilegiati e le interviste con gli sciatori del luogo hanno permesso di identificare dimensioni chiave dell'area sciistica sia da un punto di vista dell'offerta, sia da un punto di vista della domanda. L'organizzazione della ricerca in due fasi e la possibilità di condurre interviste in profondità ha consentito di adottare un approccio iterativo e incrementale come evidenziato in Eisenhardt (1989).

L'obiettivo principale di questa ricerca è stato quello di capire le forme di valore della *winter leisure*, e come questa si sia sviluppata in una piccola area sciistica gestita da un'associazione. Il focus è sul valore dello sci e le altre attività ricreative invernali in termini non economici, ma

analizzando l'esperienza e quanto può essere trasferito al territorio secondo il concetto analizzato in precedenza di "*sense of place*".

Dopo aver illustrato le caratteristiche dell'area oggetto di indagine e del modello dei club fields (par. 3.2) e delle specificità della stazione sciistica eletta a caso di studio (par. 3.3), si presenta la metodologia adottata per condurre la ricerca sul campo (3.4) che si è avvalsa di un'analisi qualitativa (interviste personali in profondità elaborate avvalendosi della content analysis e *thematic analysis*) e quantitativa (raccolta di 258 questionari e analisi di statistiche descrittive).

3.2 Area di indagine e modello di sviluppo delle stazioni minori: i Club Fields della Nuova Zelanda

La reputazione sciistica della Nuova Zelanda è nota in tutto il mondo, da giugno a ottobre le stazioni sciistiche sono frequentate da turisti neozelandesi e australiani, ma anche da sciatori provenienti dall'emisfero boreale. La Nuova Zelanda offre la possibilità di sciare in grandi spazi aperti, più o meno facili, che si adattano alle diverse capacità tecniche e alle preferenze degli sciatori. Sia nell'Isola del Nord che in quella del Sud è possibile trovare comprensori sciistici simili al modello europeo/nordamericano, con moderni impianti di risalita, ma l'elemento caratteristico è rappresentato da aree sciistiche di piccole dimensioni che sono sopravvissute negli anni e che costituiscono una realtà tipicamente neozelandese.

Nella regione vicino alla città di Christchurch si possono trovare i "club fields", unici nel loro genere, dove i rudimentali impianti di risalita e l'assenza di piste battute ne fanno la meta preferita da parte degli sciatori che antepongono l'avventura alla comodità. Queste realtà si trovano nel distretto del Selwyn, noto principalmente per il suo ambiente rurale, per le magnifiche montagne che appartengono alla catena montuosa delle Alpi meridionali e per i grandi fiumi.

La storia dei *club fields* in Nuova Zelanda è quasi centenaria, avendo avuto origine tra la fine degli anni '20 e l'inizio degli anni '40, tassello di una lunga catena di passioni e tradizioni. Queste realtà sono nate dalla volontà di alcuni gruppi di giovani alimentati dalla passione per la neve e la voglia di divertimento, compagnia e avventura, che hanno realizzato il sogno di costruire delle piccole aree sciistiche. I *club fields* sono organizzazioni no-profit gestite da un gruppo di membri che investono tempo e denaro, con lo scopo di avere un luogo comodo e familiare in cui poter sciare. Solo recentemente i *club fields* sono stati aperti anche ai non membri, che possono trascorrere tranquille giornate o vacanze sulla neve. Spesso, queste località sono difficili da raggiungere, tra strade di montagna sterrate e lunghi sentieri percorribili solo a piedi con attrezzatura sportiva caricata sulle spalle o su teleferiche.

Nel Selwyn District sono presenti sei *club fields* (Porters, Cheeseman, Broken River, Craigieburn Valley, Temple Basin e Mt Olympus) che hanno come punto di riferimento la città di Christchurch. Sempre in quest'area, è possibile sciare anche a Mt Hutt Ski Area, un comprensorio molto più grande e moderno dotato di impianti nuovi e piste preparate. I sei *club fields*, seppure accomunati dallo stesso tipo di organizzazione e gestione, si distinguono fra loro per le caratteristiche morfologiche del terreno, oltre che per i diversi gruppi associativi e conseguenti animi "campanilistici". La maggior parte non offre piste battute e nemmeno macchinari per produrre neve artificiale, e per questo sono sempre dipendenti dalle precipitazioni nevose naturali. La Tabella 1 riassume le principali caratteristiche dei Club Fields presenti nel Distretto di Selwyn. Una caratteristica tipica dei *club fields* neozelandesi è l'impianto di risalita: il "*rope tow*". Questo tipo di attrezzatura risale agli anni '40. Da allora niente è cambiato, eccetto a Porters e Cheeseman, dove sono state aggiunte una piccola seggiovia, dei tapis roulant e un T-bar. In tutti gli altri, è ancora presente il vecchio sistema del *rope tow*, che consiste in una corda di metallo posizionata a livello del bacino alla quale ci si deve aggrappare e agganciare tramite una pinza metallica (*nutcracker*) legata all'imbrago indossato per farsi trascinare in cima. È evidente che non è facile accedere a questo particolare sistema di risalita, che spesso spaventa gli sciatori. Tuttavia, questo tipo di impianto funziona da più di ottant'anni e ben si adatta alle condizioni climatiche del luogo (aree remote, spesso non servite da energia elettrica ed esposte al vento neozelandese, che sovente

costringe a tener chiusi gli impianti di risalita non a livello del suolo tipici di altre aree sciistiche). In più, anche l'impatto ambientale è molto limitato, in quanto, essendo di piccole dimensioni, non serve tanta energia per alimentare un *rope tow*. In passato erano azionati da motori di trattore agricolo, ora sono collegati perlopiù a un generatore elettrico.

Tab. 1: Elementi strutturali dei Club Fields nel Selwyn District

	DIstance from Christchurch airport	Lift	Top elevation	Bottom elevation	Skiable terrain	Access
Portes	83,8 km	1x Chairlift, 3x T-Bars, 1x Platter, 1x Carpet Lift	1980m	1302m	285 etteri	breve strada di accesso, 2WD con caterne da neve
Cheeseman	105 km	2x T-Bars, Learner Lifts, 1x Rope Tow	1860m	1540m	50 ettari	2WD con catene da neve
Broken River	106 km	5x Rope Tow	1820m	1425m	175 ettari	2WD con catene da neve più 30 miniti hiking
Craigieburn Valley	107 km	3x Rope Tow	1811m	1310m	290 ettari	2WD con catene da neve
Temple Basin	146 km	3x Rope Tow	1923m	1493m	380 ettari	45-60 minuti hiking
Mt Olympus	135 km	4x Rope Tow	1880m	1430m	60 ettari	4WD con catene da neve

Fonte: ns. elaborazioni su materiali originali

3.3 Il caso di studio: il Club Field Broken River

La ricerca si focalizza sul caso di studio dell'area sciistica di Broken River. Essa è nata grazie ad un gruppo di giovani tra i 20 e 28 anni. Per prima cosa venne realizzata la strada di accesso, presente tutt'ora, che dalla Statale 73 attraversa tutta la foresta di Craigieburn e arriva fino all'attuale parcheggio. Il legname tagliato per fare spazio alla nuova via di comunicazione è stato utilizzato per realizzare i rifugi dell'area. La data della prima sciata alpinistica a Broken River risale al 1951, e da lì a poco è stato realizzato il primo impianto di risalita *rope tow*. Tutti i lavori sono stati svolti volontariamente dai membri del club. Il clima che si respira nell'area sciistica è molto familiare e accogliente, adatto sia a famiglie che a gruppi di amici di ogni età.

Oggi Broken River vanta 400 membri, quattro *huts* (rifugi, di cui uno in quota), cinque *rope tows* e un sistema funicolare che inizialmente era usato per il trasporto merci e nel 2009 è stato collaudato anche per il trasporto passeggeri. Tuttavia, la svolta decisiva è avvenuta tra la fine degli anni '80 e l'inizio dei '90, quando è avvenuto il passaggio della fonte di alimentazione degli impianti di risalita da gasolio a elettrico, con l'allacciamento alla rete principale.

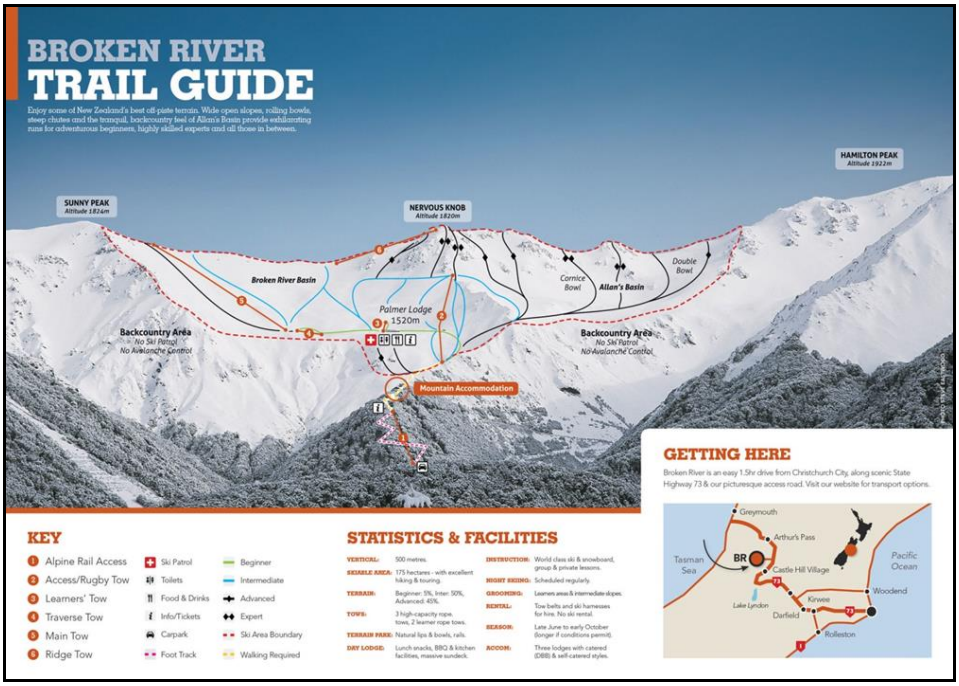
Il clima che si respira a Broken River è quello di una grande famiglia che si ritrova nel tempo libero a sciare e passare del tempo in compagnia. Molti dei membri sono addirittura figli o nipoti dei soci fondatori, che portano avanti le passioni e le tradizioni dei propri antenati. Il concetto di giornata sciistica che si trova in questo luogo è molto diverso da quello percepito nei grandi resort commerciali. Qui si respira un'atmosfera di pura tranquillità, non ci sono code fuori dal *ticket office*, durante la pausa pranzo tutti sono liberi di cucinarsi il pranzo nel *daily lodge* grazie alla grande cucina e al barbecue messi a disposizione degli ospiti e a fine giornata si condividono i momenti pre e post cena nel lodge-rifugio giocando a carte e trascorrendo tempo assieme. In più, gli ospiti sono chiamati a svolgere delle mansioni per aiutare il personale del rifugio, come lavare i piatti, portare fuori la spazzatura o spalare la neve per liberare il sentiero a seguito di una grande nevicata, in quanto non sono presenti mezzi spartineve.

Il *club field* Broken River è stato scelto per la ricerca grazie alle sue caratteristiche strutturali e culturali, nettamente distinte sia da quelle dei grandi comprensori sciistici, sia degli altri *club fields* presenti a poca distanza. Rendono diverso Broken River il *lodge* presente in cima all'impianto, l'atmosfera di tranquillità e il tipo di terreno sciabile. In secondo luogo, il *club field* accetta volontari, e di conseguenza è stato possibile entrare a far parte dello staff della comunità per tutta la stagione invernale. Ciò ha garantito lo sviluppo di una posizione di favore per lo studio. In questo

modo è stato possibile osservare determinati fenomeni sociali e di "vita da club" da vicino.

In Figura 1 è presentata la mappa di Broken River con i cinque impianti di risalita e l'area in cui è possibile sciare. In questo *club field* la maggior parte del terreno è per sciatori medio-avanzati (in grado di sciare in qualsiasi tipo di terreno), tuttavia è disponibile anche un'area dedicata ai meno esperti e ai più piccoli.

Fig. 1: Mappa del Broken River Ski Field



Fonte: materiali originali

3.4 Fasi della ricerca sul campo: strumenti di indagine e tecniche di analisi

La prima fase della ricerca è stata condotta avvalendosi di interviste personali in profondità. La scelta della tecnica per le interviste è stata quella di condurre lunghe interviste semi-strutturate, di persona e sul sito. Seppure con dei costi elevati in termini di preparazione, analisi, e interpretazione, risulta essere il sistema più idoneo per studi esplorativi (Gillham, 2005, pp. 70-71). Lo schema utilizzato per le interviste include delle domande guida da rivolgere ai manager e a chi lavora nell'area, ma anche ai turisti. Per esplorare alcuni temi emersi durante la raccolta dati sono state proposte anche domande specifiche, al fine di ottenere un arricchimento dei dati seguendo motivazioni, informazioni e concettualizzazioni (Gillham, 2000).

La "*interview guide*" predisposta contiene una prima fase di presentazione, con l'obiettivo di orientare l'intervistato al progetto, a cui segue l'intervista vera e propria con la presentazione delle domande chiave. Segue una parte aperta per raccogliere ogni possibile input dal rispondente. La parte conclusiva è mirata invece ad alcune dimensioni specifiche dello studio che si vogliono raccogliere fra tutti i partecipanti, talvolta anche invitando l'intervistato a compilare autonomamente il questionario. Nel redigere la *interview guide* sono state seguite le sei fasi proposte da Ritchie e Lewis (2003, pp. 144-147):

1. *arrivo*: nel contesto in questione si è identificato il soggetto a cui proporre l'intervista e lo si è coinvolto nel progetto creando un ambiente il più possibile informale e amichevole;
2. *introduzione del progetto*: è stato presentato lo studio e gli obiettivi della ricerca, consegnando un "Research info sheet";
3. *inizio dell'intervista*: presentazione delle domande chiave ed evoluzione della conversazione adattandola alle specifiche risposte dell'intervistato;

4. *durante l'intervista*: osservazioni e richiesta di chiarimenti;
5. *fine dell'intervista*: breve conclusione della conversazione in cui sono stati riassunti i punti chiave dell'intervista;
6. *dopo l'intervista*: a seguito del ringraziamento alla partecipazione dell'intervistato, e interruzione della registrazione, segue una chiacchierata informale con l'individuo allo scopo di mantenere un ambiente amichevole e familiare.

L'intervistatore ha anche assunto il ruolo di facilitatore per mettere a proprio agio gli intervistati e stimolare dichiarazioni relative a sentimenti ed esperienze (Ritchie e Lewis, 2003, pp. 147-148). Sono state raccolte nella stagione invernale 2019 un totale di quindici interviste *face to face*, cinque delle quali proposte a membri dello staff e ad alcuni soci con ruoli strategici all'interno dell'associazione. Le interviste hanno avuto una durata variabile tra i venticinque e cinquantacinque minuti.

L'analisi qualitativa dei dati scaturiti dalle interviste personali in profondità è stata condotta attraverso la *content analysis*, con una fase successiva più vicina alla *thematic analysis* (Vaismorandi *et al.*, 2013). Nella prima fase di codifica è stata seguita la *content analysis*, che ha permesso di ottenere una serie di codici che sono stati poi utilizzati per l'interpretazione dei dati e sono serviti nella fase successiva in cui, grazie alla *thematic analysis*, è stato possibile determinare i temi chiave per rispondere alla domanda di ricerca.

I dati provenienti dalle interviste sono stati classificati in base alla loro rilevanza per ciascuna delle principali domande di ricerca. Inoltre, dalla trascrizione dell'intervista, sono stati individuati significati impliciti per garantire che tutti i punti delle narrazioni autentiche fossero collegati tra loro. Le interviste sono state trascritte. Per otto di esse è stata fatta una trascrizione completa, indicando per ogni dichiarazione dell'individuo il minuto corrispondente. Per le altre sette si è fatta una trascrizione parziale per le sezioni ritenute salienti dopo averne svolto una prima riproduzione.

Una volta esplorate le informazioni sono stati elaborati dei codici che hanno permesso di categorizzare e ordinare i dati raccolti. Per la determinazione dei codici è stata seguita la *content analysis* perché considerata migliore per analizzare la sfaccettatura, l'importanza e la sensitività del fenomeno in questione (Vaismorandi *et al.*, 2013). Per la fase di codifica è stato usato il software NVivo, che ha facilitato la comprensione e il processo di categorizzazione delle citazioni nei vari codici individuati. Utilizzando la metodologia di Babbie (2015, pp. 388-392) sono stati creati tre diversi tipi di codici: *aperti*, *assiali* e *selettivi*. Creati i codici, si è passati alla fase operativa, avvenuta attraverso NVivo. Analizzando una ad una le interviste si è potuto determinare l'appartenenza delle dichiarazioni a uno o più codici. I risultati di questa fase di ricerca sono illustrati nel paragrafo 4.1.

La seconda fase della ricerca si è avvalsa della somministrazione di questionari che presentavano sia domande aperte che domande chiuse (dicotomiche e a scelta multipla). La decisione di avere anche domande aperte nel questionario è stata presa per adattarsi alle peculiarità di una collezione dati in rifugio dove i partecipanti dispongono di tempo libero per poter elaborare le loro opinioni su un questionario cartaceo. La selezione dei partecipanti da intervistare è stata mirata e sono stati scelti individui in base alla loro conoscenza del club (membri di lungo termine o con un ruolo strategico all'interno del consiglio dell'associazione, manager dell'area) unitamente a semplici sciatori ospiti della struttura. Per quanto riguarda i questionari sono stati invitati prevalentemente ospiti. I questionari raccolti sono 258. In media per rispondere alle domande del questionario il tempo richiesto è stato di circa venti minuti.

L'analisi dei dati si è basata su analisi delle frequenze e di alcune misure di statistica descrittiva. Per identificare gli elementi di attrattività si è adottata una scala di desiderabilità con valori da 1 a 5: sono stati considerati valori alti gli elementi con una media superiore a 4 e valori stabili quelli con una deviazione standard inferiore a 1. Per questa seconda fase i dati raccolti sono stati analizzati utilizzando il software SPSS. I risultati di questa fase di ricerca sono illustrati nel paragrafo 4.2.

4. Principali risultati della ricerca

4.1 Risultati dell'analisi qualitativa

L'elaborazione dei dati attraverso la *content analysis* e *thematic analysis* ha permesso di identificare i temi rilevanti per l'attività sciistica nel *club field* di Broken River, ossia il senso di comunità e di appartenenza, la partecipazione, le tradizioni e la consapevolezza ambientale.

Il primo tema è relativo al *senso di comunità* e al *senso di appartenenza* e raggruppa tre diverse categorie identificate durante il processo di interpretazione dei dati:

- *Social aspect*: il senso di appartenenza alla comunità è forte nelle persone intervistate, gli sciatori hanno non solo la possibilità di praticare l'attività sciistica, ma anche di instaurare relazioni di amicizia che valorizzano l'attività stessa. Le caratteristiche di Broken River a livello sciistico contribuiscono alla formazione dell'esperienza, ma il beneficio principale, che non va solamente agli sciatori ma anche al club stesso, è la forte comunità che lo sostiene. Alcuni intervistati hanno dichiarato che l'attrazione principale risulta essere quella di avere la possibilità di salire al rifugio e semplicemente incontrare amici o conoscere nuove persone. La possibilità di instaurare relazioni durante la giornata di sci risulta quasi spontanea a Broken River.
- *Sense of place*: in questo contesto è fortemente collegato con il senso di comunità. Anche sciatori che non fanno parte dell'associazione sviluppano la sensazione di sentirsi parte di un qualcosa di più grande e a fine giornata provano un sentimento di appagamento che deriva non solamente dalla giornata di sci, ma anche dall'atmosfera affiliativa che hanno respirato. Non è necessaria una lunga permanenza per sentirsi parte della comunità, basta solamente una giornata per percepire il *sense of place* connesso a Broken River. Il *sense of place* è percepito dalle persone anche in relazione a caratteristiche fisiche naturali di Broken River, e questo risulta essere insolito in ambito di *winter leisure*, dove generalmente gli impianti di risalita possono compromettere la percezione di un ambiente naturale di montagna.
- *Kind of experience*: il concetto di *unique in this kind* riassume chiaramente cosa gli sciatori percepiscono a Broken River e che cosa rappresenta per loro l'esperienza di sciare in quest'area. Nonostante le difficoltà iniziali con il *rope tow*, alla fine lo si considera divertente, ma soprattutto un ottimo "strumento" relazionale perché gli sciatori si aiutano a vicenda, ed essendo un sistema di risalita unico nel suo genere, diventa un argomento di conversazione e discussione interessante durante tutta la giornata. Alcune percezioni positive derivano dal tipo di esperienza che può essere sperimentata a Broken River, in quanto una serie di peculiarità aiutano ad instaurare relazioni, come la possibilità di avere a disposizione la cucina e di prepararsi il cibo, il momento della cena in cui tutti, staff e clienti, condividono gli stessi tavoli, e si occupano, poi, di pulire e di lavare i piatti. Sciare in un *club field* è come fuggire in un altro luogo e immergersi in una diversa dimensione.

Il secondo tema emerso è quello della *partecipazione*, che è stato identificato, a seguito dell'analisi delle interviste, riconoscendo tre diverse categorie:

- *Volunteer dedication*: la dedizione al volontariato è un'attività pienamente condivisa e insita nell'atteggiamento dei membri di Broken River, i quali partecipano in prima persona per garantire l'esperienza migliore possibile per i turisti ma anche per gli altri membri. Broken River cerca di coinvolgere i giovani fin dall'inizio all'interno delle attività del club, e questo si traduce in conoscenze e capacità che vengono trasmesse di generazione in generazione È importante anche l'attività svolta da alcuni soggetti che durante le loro giornate libere si mettono a disposizione come volontari. Ciò permette di responsabilizzare i membri e di renderli partecipi in prima persona della gestione e delle condizioni del club: l'impegno dei volontari non riguarda solamente lavori marginali, ma anche vere e proprie mansioni connesse alla gestione dell'attività.
- *Co-creation*: l'attività di volontariato non è limitata solamente ai membri, ma coinvolge anche gli sciatori stessi attraverso delle semplici attività in cui sono direttamente chiamati in causa, e

questo li rende soggetti attivi nell'offerta. Tale sistema è un modo divertente e utile per instaurare rapporti con gli altri soggetti presenti nell'area sciistica. In più, l'associazione dispone di soggetti con conoscenze e capacità tecniche importanti per la strutturazione e la co-creazione di alcune attività specifiche.

- *Activity opportunities*: le attività e gli eventi organizzati da Broken River sono stati percepiti come importanti sia dai membri, sia dai non membri. In alcuni casi è l'evento stesso che permette agli sciatori di venire a conoscenza dell'esistenza di Broken River. La peculiarità del sito è dovuta al fatto che offre non solo attività legate allo sci, ma anche una serie di iniziative (come il *barbecue bake off*) che coinvolgono in maniera divertente gli sciatori in attività ricreative e contribuiscono a coinvolgere gli sciatori e offrire loro un'atmosfera più familiare.

Il tema delle *tradizioni* raggruppa, in terzo luogo, le categorie di *Club field whises, Cultural heritage e Skiers characteristics.* L'importanza del patrimonio culturale dei *club field* è stato percepito dagli intervistati in modo particolarmente rilevante, a tal punto che i soggetti hanno dichiarato che tra i loro desideri principali c'è quello del mantenimento dello status quo. È evidente che le caratteristiche per cui Broken River è famoso, come il basso livello di affollamento e di conseguenza un tempo di attesa per l'impianto di risalita basso, con un aumento dei turisti si andrebbero e perdere. Gli sciatori vanno a sciare lì perché sanno cosa trovano, ed è esattamente quello che vogliono. Le tradizioni dei *club fields* sono fortemente sostenute dalle generazioni che nel tempo si sono susseguite nella gestione e nella frequentazione di questi luoghi, ma ciò che gli intervistati hanno dichiarato essere importante a livello culturale è anche il tipo di esperienza unica che si può fare qui e non in altri ski resort, perché qui è rimasto il modo di sciare di un tempo. Gli intervistati hanno espresso l'importanza del patrimonio culturale di Broken River, che è dovuto non solo alle caratteristiche fisiche del comprensorio sciistico (la presenza del *rope tow* e del *nutcracker* come sistema di risalita, un livello base di servizi, l'importante impegno fisico richiesto per raggiungere l'area sciistica), ma anche delle persone che di generazione in generazione trasmettono la passione di sciare nei *club fields*. Ciò fa sì che il tipo di persone che si possono trovare in questi ambienti condividono delle caratteristiche e degli atteggiamenti simili, che sono in sintonia con il luogo.

Infine, il tema della *consapevolezza ambientale* è emerso con molta chiarezza nel corso delle interviste. L'impressione che gli intervistati hanno avuto dei *club fields* è quella di piccole realtà che adottano semplici pratiche per avere il minore impatto ambientale possibile, incoraggiando gli sciatori a fare lo stesso. Broken River adotta diversi sistemi per cercare di avere il comportamento più "green" possibile. Questo riguarda non solo la gestione dei rifiuti e delle buone pratiche di comportamento, ma anche le attività di gestione degli alloggi, la quale è svolta con un'attenzione particolare alla minimizzazione del consumo energetico. Molte constatazioni sull'impatto del cambiamento climatico sull'attività dei *club fields* sono state sollevate da una serie di intervistati che hanno messo in dubbio la sopravvivenza di queste realtà nelle prossime generazioni

4.2 Risultati dell'analisi quantitativa

L'analisi dei 286 questionari somministrati agli sciatori di Broken River ha identificato sia fattori di attrattiva e servizi che fanno prediligere quest'area per la pratica dello sci, sia fattori che descrivono le emozioni riconducibili all'esperienza vissuta in loco. Gli sciatori di Broken River provengono principalmente dall'Isola del Sud della Nuova Zelanda (57,7%), seguiti dall'Australia (16,3%) e dall'Isola del Nord (14,3%). Solamente una parte residuale arriva dal Nord America, Canada, Europa e Asia. La maggior parte degli intervistati pratica lo sci (67%), mentre tutte le altre discipline, quali snowboard, ski touring e telemark, non sono risultate molto praticate. I rispondenti sono soggetti piuttosto esperti, in quanto l'84,8% pratica sci/snowboard da più di cinque anni, mentre 11,3% lo pratica da tre a cinque anni, il 3,1% da uno a due anni e solamente 1 persona ha dichiarato di sciare da meno di un anno. Solo il 28,6% ha detto di essere un membro del club, contro il 71,4% che invece non lo è.

Una parte del questionario chiedeva di indicare da 1 (*not important*) a 5 (*very important*) l'importanza che gli elementi elencati avevano nella scelta della destinazione. La Tab. 2 presenta i risultati ottenuti, ordinando i fattori dal punteggio più alto a quello più basso. La Tab. 3 mostra invece i servizi disponibili nella stazione ordinati per importanza attribuita. I rispondenti sembrano essere molto sensibili all'aspetto legato al *customer service*, mentre per la parte di intrattenimento per i più piccoli o la possibilità di noleggiare attrezzatura non vi è particolare interesse.

Tab. 2: Fattori di attrazione in ordine di importanza per la scelta della stazione di Broken River (scala 1 – 5)

Carattteristiche fisico-tecniche dell'area sciistica	Media	DS	N
Off-pist skiing	4.29	0.987	256
Level of crowding	3.97	1.151	256
Snow condition, quality of slopes	3.89	1.169	255
Lift line waits	3.81	1.206	255
Number of trails	3.53	1.061	257
Sufficient nr of difficult slopes	3.45	1.377	256
Skiing hours	3.42	1.238	257
Maintenance of lift services	3.42	1.273	255
Vertical drop	3.32	1.131	256
Many non-groomed slopes	3.27	1.414	256
Height of the mountain (elevation)	3.11	1.164	256
Quality of lifts	3.08	1.206	255
Sufficient nr of easy slopes	2.25	1.293	255
Snow making	2.09	1.174	257
Many groomed slopes	2.09	1.171	255
Ski Special facilities (snow park, jumps)	1.95	1.070	257

Fonte: ns elaborazioni dal questionario tramite SPSS e Excel, n = 258

Tab. 3: Servizi in ordine di importanza per la scelta della stazione di Broken River (scala 1 – 5)

Servizi disponibili nell'area sciistica	Media	DS	N
Courtesy of employees	4.00	1.004	257
Competency of employees	3.84	1.139	254
Availability of toilets	3.46	1.174	256
Quality of food at resort	3.39	1.125	256
Available accommodation	3.36	1.191	257
Facility quality (chalet, cafeteria,)	3.02	1.097	257
Resort facilities (catered accom)	2.91	1.139	256
Language ability of Staff	2.69	1.191	257
Quality of lessons available	2.42	1.363	255
Organized transport to ski area	2.18	1.214	257
WI-FI	2.14	1.290	256
3G- 4G coverage	2.13	1.206	256
Quality of guided services	2.12	1.183	257
Day care / children entertainment	1.68	1.124	257
Equipment rental	1.54	0.957	256

Fonte: ns elaborazioni dal questionario tramite SPSS e Excel, n = 258

Relativamente alle caratteristiche dell'ambiente fisico dell'area sciistica, i soggetti ritengono molto importanti i fattori *The big open* (4.32) e *Landscape (uncontaminated environment)* (4.31). Per entrambi la deviazione standard si attesta a 0.86, indicando che la valutazione dei rispondenti ha avuto volatilità bassa. Dai dati appare evidente che i rispondenti ritengono particolarmente importanti i fattori ambientali. Il fattore relativo all'ambiente dell'area sciistica che non è stato considerato particolarmente importante è *Familiarity: a resort I know* (2.72). Rispetto, invece, agli aspetti economici dell'area sciistica, *Price of tickets* ha un'importanza media (3.44), mentre il

Resort advertising è stato valutato con l'importanza minore (2.01). In relazione all'importanza degli elementi sociali e di intrattenimento, *Type of people who visit the area* è stato il fattore che i rispondenti hanno valutato come più importante (4.06), mentre quello meno rilevante è stato *Option of extra activities* (1.92). Nel questionario è stato chiesto anche di descrivere con parole o aggettivi la giornata perfetta in montagna. La Tab. 4 contiene l'elenco in ordine decrescente delle parole più utilizzate, mentre in Tab. 5 sono riportate le parole che i rispondenti hanno utilizzato per descrivere la loro prima impressione del *club field*.

Tab. 4: Aggettivi/parole utilizzate per descrivere la "giornata perfetta" (conteggio)

Word	Count	Weighted Percentage (%)
powder	126	050.81
bluebirdday	65	026.21
friends	19	007.66
goodsnow	17	006.85
uncrowded	8	003.23
relaxed	3	001.21
backcountry	1	000.40

Fonte: ns elaborazioni dal questionario tramite SPSS e Excel, n = 258

Tab. 5: Aggettivi/parole utilizzate per descrivere la prima impressione avuta del club field (conteggio)

Word	Count	Weighted Percentage (%)
goodvibe	87	036.10
friendly	37	015.35
unique	15	006.22
fun	8	003.32
hardwork	8	003.32
challengingterrain	7	002.90
relaxed	7	002.90
family	6	002.49
hardropetow	5	002.07
rustic	5	002.07
goodsnow	4	001.66
smallclub	4	001.66
remote	3	001.24
uncrowded	3	001.24

Fonte: ns elaborazioni dal questionario tramite SPSS e Excel, n = 258

5. Discussione dei risultati

I risultati delle interviste hanno dimostrato che gli sciatori che scelgono di recarsi nel *club field* sono individui che ricercano un determinato tipo di vacanza, sono consapevoli della differenza tra queste realtà e gli ski resort e optano per i *club fields* proprio per le caratteristiche che questi hanno. Primo fra tutti è il *rope tow*, l'impianto di risalita per eccellenza. Perfino coloro che si sono approcciati a questa struttura per la prima volta, anche se all'inizio ne erano intimoriti, a fine giornata si sono dichiarati soddisfatti e divertiti. In più, la possibilità di trovare il *rope tow* si ha

solamente frequentando i *club fields*, tanto che diventano l'oggetto identificativo di queste piccole realtà neozelandesi. Il secondo elemento che incide in maniera decisiva sul giudizio e sul ricordo dell'esperienza è rappresentato dalle avventure affrontate sulla neve, in particolare sulla cosiddetta *powder snow* (neve soffice e polverosa). *Powder snow* è risultata, infatti, la parola più citata dai rispondenti nel questionario quando dovevano descrivere la propria giornata perfetta sugli sci.

La morfologia del terreno è stata considerata un'attrattiva dei *club fields*, perché un terreno sfidante è quello che dà agli sciatori l'adrenalina necessaria per godere della neve e dell'attività sciistica. In più, non ci sono piste, non ci sono macchinari che preparano piste battute e lisce come negli *ski resort* commerciali, ed è proprio per questo che gli sciatori scelgono di recarsi nei *club fields*. Un'altra particolarità è la presenza di pochi turisti, a Broken River il numero massimo di sciatori che è stato registrato in un giorno è di circa 300. Questa condizione è data anche dal fatto che per raggiungere Broken River è necessario camminare lungo un sentiero in cui non ci sono impianti di risalita che possono aiutare a trasportare l'attrezzatura (caratteristica che accomuna, peraltro, la maggior parte dei *club fields*). Ciò comporta uno sforzo fisico non indifferente che non tutti sono disposti a fare. Questa particolarità seleziona il tipo di sciatori: i frequentatori di questi luoghi condividono la stessa passione e lo stesso modo di viverla, cercano adrenalina ma allo stesso tempo tranquillità, desiderano sciare immersi nella natura, avere la possibilità di essere i primi a tracciare delle linee in neve fresca, e avere un luogo non affollato. Considerano il *club field* come modo per fuggire dalla frenetica vita di città, e il terreno diventa così un rifugio, un luogo sicuro in cui ripararsi e rilassarsi facendo quello che amano. Tutte queste caratteristiche fanno sì che chi frequenta i *club fields* condivida la stessa passione e le stesse sensazioni, ma possieda anche più o meno le stesse competenze tecniche.

L'unicità dei *club fields* è data anche dal fatto che, considerati come dei rifugi in montagna, danno la possibilità di pernottare in loco, caratteristica non comune nel contesto neozelandese. Tale possibilità non solo arricchisce l'unicità dell'esperienza e la peculiarità di questi luoghi, ma garantisce un vantaggio per gli sciatori, che possono rilassarsi e spendere la notte in rifugio.

Ciò che dalla ricerca è emerso in modo rilevante è l'atmosfera che si respira nei *club fields*. Sia dalle interviste che dai questionari, la sensazione di familiarità e di ambiente amichevole è stato considerato come punto focale e aspetto caratterizzante di queste piccole realtà sciistiche. Molti sciatori sono rimasti colpiti dal fatto che ogni persona incontrata ha rivolto loro un saluto o addirittura iniziato una conversazione. Questo perché quando i "veterani" del club, che si conoscono tutti, vedono un volto nuovo, sono curiosi di conoscerlo e di poter instaurare un rapporto confidenziale.

C'è uno spirito di collaborazione che fin dalle prime fasi della giornata è stato percepito dalle persone intervistate. Ad esempio, quando qualcuno è in difficoltà con il *rope tow* subito arriva assistenza dallo staff o addirittura da qualche altro sciatore. A volte qualcuno si carica in spalla sci o zaini di qualcun altro in modo tale da facilitarne la salita al rifugio.

Dopo una mattinata passata a sciare le persone si ritrovano al Palmer Lodge per pranzare. In questa struttura il *club field* mette a disposizione degli sciatori la cucina, le stoviglie e tutto ciò di cui questi hanno bisogno per cucinare. Nella pausa pranzo diventa quindi normale vedere le persone che assieme preparano dei piatti per loro e per le altre famiglie. Ovviamente tutti devono poi pulire e lavare i propri utensili e questo favorisce un senso di condivisione e di partecipazione che non si prova nei normali *ski resort*, ci si sente come a casa propria, e come tale si devono svolgere alcuni compiti. Infatti, ogni giorno viene stilata la *Duty list* in cui ogni ospite ha una mansione da svolgere: chi deve lavare i piatti, chi deve buttare la spazzatura o chi ancora deve mettere in ordine le tavole. Anche questo concorre a generare la sensazione di essere una comunità.

È evidente come un lungo periodo di tradizioni e di eventi si siano susseguiti, creando una solida base di usi e consuetudini condivise da tutti i membri. Si è nel tempo generato un attaccamento al luogo grazie ad una speciale intesa e comunanza di sentimenti riguardo all'attività sciistica praticata nel *club field*. Dalle interviste è emerso distintamente il ruolo che il *sense of place* gioca sia in termini di appartenenza ad una comunità, sia nel suo vero significato intrinseco di luogo speciale che racchiude una serie di significati e valori. Dalle testimonianze sono stati evidenziati i

significati del luogo, l'attaccamento al luogo e la soddisfazione legata ad esso. Inoltre, anche l'ambiente fisico di Broken River, caratterizzato dal suo particolare accesso all'interno della foresta di Craigierburn e dal suo terreno e morfologia accattivanti, permette di stimolare una serie di sentimenti che sono riconducibili al *sense of place*. In questo contesto, il *sense of place* è supportato anche dalla partecipazione che gli ospiti (membri e non) hanno nella formazione della propria vacanza.

Un altro aspetto decisivo nel modello del *club field* è rappresentato dall'attenzione alla salvaguardia del patrimonio ambientale. Spesso quando si parla di aree sciistiche si pensa al loro importante impatto ambientale. Per i *club fields* il ragionamento è diverso da quello che si può fare per i grandi ski resort. Infatti, queste piccole realtà sciistiche possono garantire un limitato impatto ambientale che concorre a creare un vantaggio non indifferente per il territorio in termini di vivibilità e basso inquinamento. Questo è dato dal fatto che la dimensione contenuta e il limitato numero di sciatori che raggiunge questi luoghi permette ai *club fields* di produrre un'impronta ecologica limitata per il tipo di servizio offerto. In più, Broken River, al contrario di altri *club fields*, utilizza l'energia elettrica per far funzionare gli impianti di risalita. A ciò si aggiungono una serie di politiche per il risparmio energetico e di incentivo a buone pratiche che permettono di avere un migliore risultato in termini ambientali.

L'aspetto finanziario rappresenta un punto debole dei *club fields*, che faticano a sostenere le spese di gestione. È per questo che il volontariato risulta essere indispensabile. Ciò che potrebbe aiutare la situazione finanziaria dei *club fields* sarebbe avere più turisti, innovare e ampliare l'area in modo da poter accogliere più persone e di conseguenza avere più entrate. Tuttavia non è questo che i membri vogliono, infatti la semplicità e le dimensioni ridotte sono ciò che più di tutto viene apprezzato dei *club fields*. Sia dalle interviste che dai questionari è emerso che gli individui non vogliono grandi cambiamenti, molti hanno richiesto che il tram ritorni a funzionare, ma non sono state avanzate ulteriori richieste in termini di innovazioni o cambiamenti. C'è quindi una richiesta di mantenimento dello status quo. Questo rappresenta un'enorme sfida per i *club fields* perché devono riuscire a trovare il giusto equilibrio tra l'avere più risorse finanziarie per poter garantire una gestione efficiente, ma allo stesso tempo non diventare troppo commerciale ed attrarre troppi sciatori, in quanto il basso livello di affollamento è una delle caratteristiche più apprezzate dagli sciatori di Broken River.

6. Conclusioni

La ricerca illustrata nel presente contributo si pone l'obiettivo di capire le forme di valore della *winter leisure* e come questa si possa sviluppare in una piccola area sciistica gestita da strutture imprenditoriali di piccole dimensioni che, per loro natura, presentano criticità sotto il profilo della capitalizzazione, ma anche importanti potenzialità in termini di flessibilità e rapidità di adattamento a stimoli esterni. Il lavoro presenta i risultati di uno studio condotto in una tipica area sciistica della Nuova Zelanda che si contraddistingue per piccole dimensioni e caratteristiche organizzazione e gestionali profondamente diverse dai comprensori sciistici all'avanguardia.

La ricerca ha verificato la coerenza tra i fattori considerati in letteratura come indispensabili per creare valore esperienziale nel settore sciistico e quanto ricercato dagli sciatori in queste destinazioni: la presenza di grandi spazi aperti, i paesaggi incontaminati, la possibilità di sciare fuori pista, la tipologia di persone che frequentano l'area e la cortesia del personale. La partecipazione, la co-creazione e di conseguenza il senso di appartenenza percepito dagli sciatori danno significatività all'esperienza che si trasmettono poi al luogo. In più, solo per il fatto che il *club field* è nato e gestito da un insieme di persone che cooperano per raggiungere più obiettivi, evidenzia la presenza di collaborazione interna. La risposta affettiva, ovvero quella reazione emotiva che, direttamente collegata alla partecipazione, genera il valore intrinseco del *club field* che, nel caso osservato, si manifesta con il senso di appartenenza e il ritorno allo *ski field*. Ciò che sostiene il valore dei *club fields* per il territorio sono quindi le tradizioni e la filosofia che con gli anni si sono trasformate in

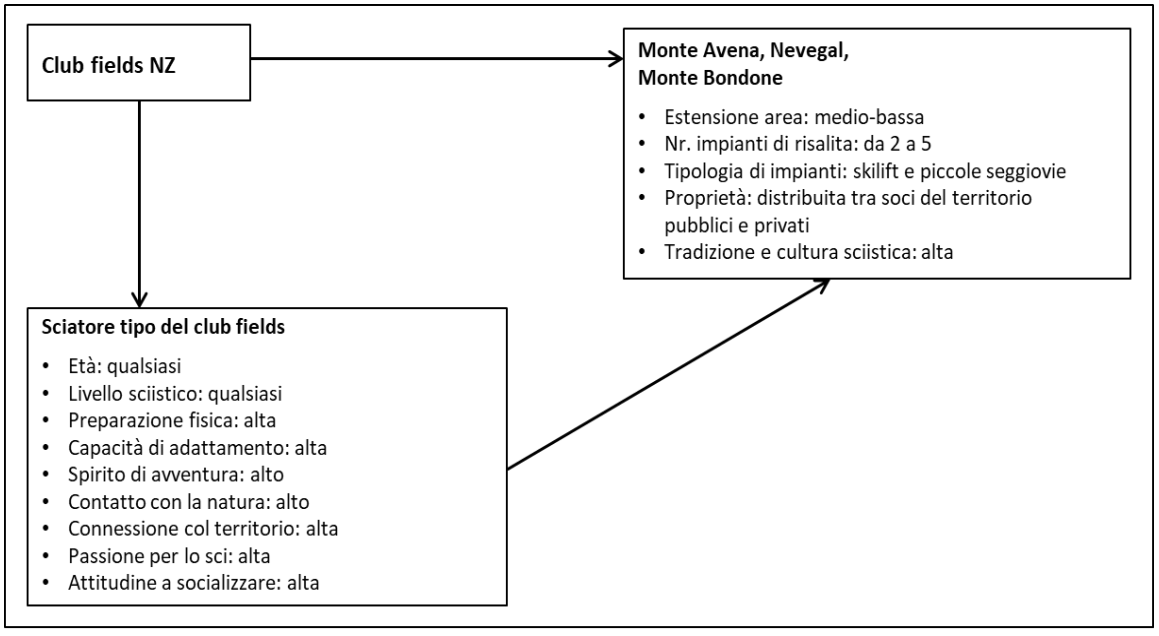
una vera e propria cultura dello sci neozelandese in cui lo spirito dei "clubbies" favorisce lo sviluppo di un clima familiare e coinvolge i giovani nella gestione tramandandone usi e consuetudini.

Altra conclusione che si può trarre dai risultati di questa ricerca, è la semplicità con cui si creano situazioni di sintonia tra i valori del turista e quelli della destinazione. Vi è una grande attenzione sia da parte degli ospiti che da parte dei gestori di mantenere un comportamento il più possibile rispettoso dell'ambiente e ciò favorisce una migliore sinergia tra domanda e offerta. In più, questo permette ai *club fields* di offrire la possibilità di praticare la winter leisure mantenendo una gestione sostenibile che, se dal punto di vista economico ogni stagione invernale è una sfida, ha vantaggi di minor impatto ambientale e maggior costruzione del tessuto sociale non possibile in *resort* di tipo commerciale.

È dunque interessante, in definitiva, confrontare questo modello sciistico con altri che sono caratterizzati da una gestione della *winter leisure* con il solo scopo di business e trascurano ambiente e comunità locale. Nel contesto alpino europeo, ad esempio, i piccoli paesini montani sono stati letteralmente isolati costruendo delle vere e proprie città commerciali idonee a ospitare il maggior numero di turisti e garantire loro qualsiasi tipo di comfort. Tali realtà sono amministrate spesso da grandi gruppi imprenditoriali, che tuttavia sempre più spesso chiudono i bilanci stagionali in rosso e impoveriscono la cultura locale e il patrimonio sociale.

Il modello dei *club fields*, seppure adattato alle caratteristiche morfologiche, climatiche e culturali delle Alpi, potrebbe rappresentare una risposta alle sfide che le stazioni sciistiche minori si apprestano ad affrontare, e che il cambiamento climatico induce a non rinviare ulteriormente, pena il definitivo abbandono della montagna dello sci minore. Certamente si tratterebbe di un'offerta diversa da quella delle stazioni maggiori, ma proprio in questa differenza (di contenuti e di filosofia) sarebbe racchiuso il valore della proposta. Confrontando caratteristiche strutturali dell'area sciistica e tipici frequentatori (come sintetizzano in Figura 2), possibili aree in cui il modello del club fields potrebbe trovare applicazione sono gli impianti del Monte Avena, Nevegal e Monte Bondone (rispettivamente in Veneto i primi due e in Trentino il terzo). L'applicabilità di tale modello tuttavia richiede ulteriori step di ricerca che in un prossimo futuro potrebbero indirizzarsi ad indagare sia elementi strategico manageriali adottati dai comprensori sciistici, sia caratteristiche distintive del profilo di sciatore interessato a tale tipologia di offerta.

Fig. 2: Club fields neozelandesi e criteri concreti di attuazione a realtà italiane



Fonte: ns elaborazione

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Torino City Lab, an open innovation participatory ecosystem. The city works with entrepreneurial universities in shaping the smart city ecosystem♦

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Abstract

Objectives. *Our work introduces an open innovation participatory system by* ***a*** *holistic case study of one of the most innovative Italian city, that is Turin.*

Methodology. *The present work employs a holistic, qualitative case study methodology due to the new, recent phenomenon of smart cities. The case of Turin city lab (TCL) allows to enlarge the existing literature on smart cities with a specific focus on the role exerted by entrepreneurial universities. Basically, this work aims to provide an outlook how a city creates a synergic network among different sectors and generating the public value in partnerships with local universities*

Findings. *The project known 'Turin city lab' is narrated to describe the involvement of different actors and mainly the active commitment of entrepreneurial universities. Hence, the concept of the 'city meets entrepreneurial universities' has brought up a new shape of smart city, letting them to be an experimental lab where citizens are demanding to co-create innovations.*

Research limits. *The main limitation is certainly the use of a single-case design through documentary analysis. This influences the ability to generalize the results. The second limitation is the lack of empirical development, which makes it difficult to extend the results to other industries and contexts. This so encourage further research.*

Practical implications. *In this scenario, entrepreneurial universities foster new skilled people so as to satisfy smart city's needs. This study shows a positive model to be replaced by other cities and it draws the attention on policymakers and other institutional bodies in developing smart cities in a collaborative way.*

Originality of the study. *The originality of the article employs a new vision of the smart city converging the meaning of smart cities from ' urban technological utopias' to urban innovation labs.*

Keywords: *smart city; entrepreneurial universities; open innovation; ecosystem, Torino City Lab*

♦ The paper "Torino City Lab, an open innovation participatory ecosystem. The city works with entrepreneurial universities in shaping the smart city ecosystem." was jointly developed by Cillo V., Farronato N., Scuotto V., Pironti M., Pisano P., Del Giudice M. Especially, Pisano was in charge of the *introduction*; Cillo was in charge of *the theoretical background and propositions development*; Scuotto was in charge of *research context and design* along with Farronato, respectively she analysed the secondary sources, whereas Farronato conducted out the interviews; Pironti was in charge of the *discussion;* and Del Giudice was in charge of *conclusions.*

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1. Introduction

The present research aims to explore how government along with entrepreneurial universities are shaping a new wave of *Smart City Ecosystems*. Especially, it offers a holistic, empirical case study of one of the most innovative Italian cities, that is Turin. Since 2018 Turin has developed a project known Turin City Lab (TCL) which seeks to provide a new perspective of a smart city. TCL represents an active city which connects a diverse set of actors such as public and private investors, banks, foundations, and R&D centers. The originality of the article employs a new vision of the smart city converging the meaning of smart cities from "urban technological utopias" to urban innovation labs (Glasmeier and Christopherson, 2015). This so creates a synergy among different actors forging an open innovation participatory ecosystem.

In this context, an open innovation participatory ecosystem plays a huge role in facilitating this balance, encompassing the distance from the stakeholders at the bottom (i.e. civil society) to the top level (i.e. government), sustaining a circular flow of ideas, information, knowledge, and technology solutions, and fostering relationships with financial investors. In this regard, smart environments can qualify as a positive and favorable business crossroads, a place of meetings for policy making, technology exchange, and for firms and institutions to interact directly and reciprocally with citizens as urban users in order to sustain the diffusion of a fresh innovation climate for knowledge (Dezi, Pisano, Pironti, and Papa, 2018).

According to Service Dominant Logic, ecosystem perspective can be seen as a model through which explain value co-creation (Mars, Bronstein and Lusch, 2012). Several authors analyzed smart cities in the light of value co-creation practices (Pellicano *et al.*, 2019). Smart cities could improve deeply human conditions. In this line, the participation and collaboration among the various social actors is an important prerequisite. The creation of value can be considered as the central purpose of exchange between actors (Vargo, Maglio and Akaka, 2008; Baden-Fuller and Morgan, 2010). Such engagement could support in developing continuous relationships with relevant stakeholders and in fostering value creation (Baden-Fuller and Morgan, 2010). According to Moeen and Agarwal (2017), the more actors adopt open innovation practices, the greater is the impact on the ecosystem on value creation and value capture. In this perspective, linear value chain is transformed into the value network: a flexible set up of value chain, externally oriented (Romero and Molina, 2011).

In this line, the openness of smart city projects can be explained in terms of propensity to collaborate and intensity of collaborations between firms and local external partners (Lee, Bakici, Almirall and Wareham, 2011; Scuotto *et al.*, 2017). These forms of collaborations are explicated in the triple helix model which involves "universities-industry-government". Especially, universities can contribute as potential driver for change in different ways: the creation of new knowledge, its transmission through education, its dissemination through information and communication technologies, and its adoption in new industrial processes or services (Carayannis and Campbell, 2012; Carayannis *et al.*, 2017; Etzkowitz and Leydesdorff, 2000). For example, through their academic programs, universities provide graduates with knowledge and skills to contribute to growth of new and existing companies. In addition, universities can foster and support the creation of new ideas, innovation and commercialization. They also have an important role to provide research into entrepreneurship and growth of small to medium enterprises (SMEs).

Hence, universities are assuming a strategic role in entrepreneurial ecosystem framework acting as catalysts through their three core functions of education, research and economic development (Isenberg, 2011). Universities are becoming more enterprising nurturing new entrepreneurs and so contributing to the economic growth of "innovation leader" and "strong innovator" countries. Entrepreneurial university aiming to connect the solution seekers with solution providers in order to generate co-innovations (European Commission, 2019).

The leading role of entrepreneurship in the context of education is reasonably well-grounded in the literature (Foss and Gibson, 2015). However, considering that existing managerial studies focus mainly on entrepreneurial education (Matlay, 2008), as far as we know there is still a lack of knowledge about how universities could embrace entrepreneurship as a part of their institutional

mission. Yet, despite the significance of such challenges, very little is known on how business processes in universities should be innovated for engaging external actors and citizens as problem-solvers and co-creators of the public value. More specifically, how universities could effectively manage business processes in order to create as much value as possible from the relationships with stakeholders is still largely unexplored.

Most of the management literature on business processes has focused on private companies (Del Giudice, 2016; Scuotto *et al.*, 2016), while only limited attention has been paid to universities. The recent paradigm shifts which have characterized the public sector have led also universities to a greater openness to collaborations with external actors, especially citizens, as knowledge and value co-creators (Bryson *et al.*, 2014; Caputo *et al.*, 2019).

This purpose can be reached by going beyond the logic of linearity, which usually characterizes business processes in public administrations, and adopting system thinking approach.

The paper contributes to tackle these issues by exploring an open innovation participatory ecosystem where the 'city' as a public institution works with entrepreneurial universities in giving a new shape to the modern smart city - shifting the meaning of smart cities from 'urban technological utopias' to urban innovation labs. We present a holistic case study on the Turin city known Turin City Lab (TCL). In particular, we show how the city engages with entrepreneurial universities to generate a public value.

The remainder of this paper is structured as follows. Section 2 offers an overview of the theoretical background on smart cities and entrepreneurial universities along with the development of propositions. Section 3 justifies the methodology and describes the holistic case study, that is TCL. Section 4 discusses the case study in line with the theoretical background. Finally, the paper concludes with Section 5, which provides implications, limitations, and related possible avenues for further studies.

2. Theoretical background and propositions development

Smart Cities initiatives are spreading all around the world very quickly. Their main objective is to increase the competitiveness of communities through innovation and to improve wellbeing for citizens through better public services (Appio, Lima and Paroutis, 2019). Smart cities can be considered as an open platform of external codified knowledge (Del Giudice, Della Peruta, and Maggioni, 2013).

Smart city projects suggest new forms of interactions and collaborations, boosting new innovation models and processes coming contemporaneously from different market-based partners, such as competitors, suppliers, urban society, and universities (Carayannis *et al.*, 1999; Santoro *et al.*, 2016; Wang *et al.*, 2015). This is recognized also by Caragliu *et al.* (2011).

The scientific literature on innovation allows to integrate the dimensions of smart cities into a holistic conceptual model that relates the themes of green cities, connected life, smart communities, innovative ecosystems and environmental and social sustainability with urban growth. Smart City refers to an interconnected and intelligent city. However, the most significant dimensions can be summarized as follows: 1) the technological innovation; 2) the policy innovation; 3) and the management innovation (Kehoe *et al.*, 2011).

The smart city is a complex ecosystem of people, processes, policies, technology and other enabling factors working together to deliver a set of outcomes.

The smart city is not managed exclusively by the city. Successful and sustainable smart cities adopt a strategic approach to engage stakeholders across the ecosystem.

Consistently with stakeholder theory, interaction with both market and non-market players is shown to affect performances (Freeman, 1984). For example, relationships with stakeholders increase trust and social capital, thereby reducing transaction costs (Greenwood *et al.*, 2010). In this way, ability to manage relationship with stakeholders for value creation, known as *stakeholder-*

related capability, is assuming increasing relevance also in smart ecosystems debate (Jones *et al.*, 2018). Stakeholder engagement allows organizations to acquire information from other stakeholders (Sharma, 2005), and this supports the development of individual and organisational knowledge (Nelson and Zadek, 2000; Katsoulakos and Katsoulacos, 2007).

In the smart city ecosystem, stakeholders take an active role: private sector participation is strategic in project sustainability; citizens can interact directly to institutions and provide useful information; and governments foster the collaboration of different actors.

The emerging collaboration between public and private organizations, therefore, offers the potential for new ways to co-innovate goods and services of collective interest. However, this potential largely depends on the willingness and ability of organizations to plan participatory governance and implement activities together.

According to Albino, Berardi and Dangelico (2015) "the smart city should have a strong governance-oriented approach which emphasizes the role of social capital and relations in urban development" (p.1).

A number of studies argue that by focusing on a process of value co-creation with a range of stakeholders, organizations could gain positive financial returns (Albort-Morant, Leal-Millán and Cepeda-Carrión, 2016; Mehrpouya and Chowdhury, 2018). Such a process of the co-creation of value to be shared among different stakeholders and actors assumes that co-creatively leveraging all stakeholder capabilities can lead to better states of governance, infrastructure development and sustainability, with 'win-win' outcomes and the expansion of wealth, welfare and well-being (Ramaswamy and Ozcan, 2014). In turn, this results in increased competitiveness. From the perspective of stakeholder theory, stakeholder capabilities can be defined as the stakeholders' effective opportunities to undertake actions and activities through which they choose to engage in the value creation process (Garriga, 2014).

In this line of research, scholars have emphasized the importance of governance in reference to the inward/outward exchanges with parties of the ecosystem (Matricano *et al.*, 2019; Natalicchio *et al.*, 2017).

Skidmore, Bound and Lownsbrough (2006) identified three fundamental reasons for promoting participatory governance and co-innovation of public services:

1. It leads to better and closer services to citizens' needs;
2. It addresses disengagement from politics and democracy, strengthening the sense of trust;
3. It increases intellectual capital and community cohesion, and strengthens individual relationships.

Regardless to say a smart city plan needs an orchestrator with executive and policy planning authority, such as the city's council. Creating a smart city from scratch requires leadership to monitor the plan. This top-down approach in master planning smart cities must be balanced with the ability to constructively engage local stakeholders into a hybrid model that combines central city monitoring with bottom up community participation to contribute to solutions to social problems.

To this aim, universities are rich in resources that can be mobilized. Researchers have the technical skills to collect and evaluate empirical data, to address the development of sustainable and innovative solutions and to identify potential potholes in the implementation process. Moreover, universities can transmit information across sectors, through student training and partnerships with funding agencies, private investors, public policy regulators, and the communities themselves.

Unlike the first studies on partnerships and alliances focused primarily on transaction cost economisation, recent research focuses on how inter-organizational relationships can improve value creation towards citizens' needs (Enkel and Gassmaan, 2010).

Given the growing need to acquire further knowledge and skills to foster innovation processes, studies on the creation and management of interorganizational relationships with citizens, customers, competitors, suppliers, public and private research institutions are increasingly growing (Hauser, Tellis and Griffin, 2006). As several studies highlighted, there are three main types of collaborative to create connections: contractual, reciprocal and proprietary. However, these

categories are not necessarily exclusive and some inter-organisational relationships are often hybrid and can cover more than one type of category (Howells, James, and Malik, 2003).

Therefore, the first proposition of this work is:

P1. A greater increment of Smart cities like laboratorial cities, more involve an open innovation participatory ecosystem approach

As highlighted in the discussion about open innovation, smart cities are required to adopt a collaborative approach in which chain partners and even competitors work together to develop new products/services and processes quickly and effectively (Chesbrough *et al.*, 2006; Santoro *et al.*, 2018). Chesbrough *et al.* (2014) clarified how during last years the concept of open innovation overlaps with user innovation. Both open and user innovation analyze the role of users in a distributed innovation process. The involvement of user knowledge in the innovation process requires companies to cooperate beyond their borders. User Innovation model supports a decentralization of innovation that changes the place of innovation from enterprises to users and leads to "democratization of innovation". In the user innovation model (Von Hippel, 2005) knowledge is widely distributed and users represent a source of innovation. Innovation is based on a collaborative and co-creative process, in which users share the activities and cost of developing innovative products and services. In other words, the motivation for innovation revolves around the concept of user utility rather than direct economic return. Von Hippel and Von Krogh (2003) define this innovation model as a "collective-private" model that contains elements of both private investment and collective action models.

In this vein, several scholars adopt the conceptual model of co-innovation as a social platform where new ideas or approaches from various internal and external sources are applied differently to create new value or experience for all stakeholders, including consumers (Von Hippel *et al.*, 2011). The core of co-innovation includes engagement, experience, and co-creation for value.

Interactions between actors could facilitate value co-creation. However, the effectiveness of the interaction process between actors depends on their openness as well as on the availability to share their resources in order to make value proposals (Frow *et al.*, 2014). Open innovation literature has demonstrated the full array of possibilities of both stages of value creation and value capture, including both inbound and outbound directions (Kavadias *et al.*, 2016). Through the knowledge inflow, outside-in or inbound innovation, organizations could source and acquire knowledge and expertise from outside (Chesbrough and Bogers, 2014). The knowledge outflow, inside-out or outbound innovation, is focused to internally identify under-utilized resources to be shared and valorized with an external partner (Ferraris *et al.*, 2017).

Kujala (2003) has identified among the main benefits related to the involvement of users a higher quality of services, a better adaptation between services and users' needs, and a better satisfaction of users or customers. Alam (2002) similarly identified among the benefits of user involvement the development of new personalized services with exclusive benefits and better value for users, reduction of development time, training of users (about the use, attributes and specifications of a new service), a better understanding of the market, improvement of public relations, as well as better long-term relationships between service providers and customers.

In addition, Kristensson, Magnusson and Matthing (2003) conducted various experiments in which they invited users to generate ideas for innovative services in ICT sector. They found that "users" can generate ideas that are useful inputs for service innovation, their ideas are more innovative ("originality") and respond more to user needs ("user value") than the ideas generated from professional developers, although the ideas of professional developers "are more technologically feasible ("productability") than the ideas of "users " (Magnusson and Matthing, 2010).

Several authors from the United Kingdom recently dealt with co-innovation (Cottam and Leadbeater, 2004), services co-design (Parker and Heapy, 2006) and design transformation (Burns,

Cottanello, Vanstone, and Winhall, 2006), with particular attention to the innovation of public services in health sector. Cottanello and Leadbeater (2004), for instance, stated that "the key to successful doctor-patient partnerships is to recognize that patients are more" experts "of their life experiences than professionals and that are necessary both types of knowledge in co-design".

The result is a shift of attention from the product to the customer-consumer, or rather to the use that the latter makes of the first.

The European smart and sustainable city paradigm offers a very useful framework for understanding how to co-innovate in order to design better public services.

Caragliu, Del Bo and Nijkamp (2011) stated that smart cities are characterized by one or more of the following attributes: smart economy; smart mobility; smart environment; smart people; smart living; and, finally, smart governance. Other authors outlined the growing demand for a more efficient, sustainable, and livable model in urban development, highlighting the conception of "sustainable cities", by setting the environmental and social sustainability as the clear vision of smart cities (Toppeta, 2010; Greenburg, 2015)

Hence, the second proposition of this work is:

P2. Improving user innovation tools and system thinking approach will result in better public services

The recognition of the contribution of universities to societal and economic well-being makes it crucial to consider how to support entrepreneurs and public entities in order to enable them to make the desired and much-needed contributions. Rice *et al.* (2014) highlighted several key success factors that allow universities to achieve a sustainable and high-impact entrepreneurial ecosystem. The types of support needed include: a) assistance in recognizing and exploiting opportunities consistent with needs and capabilities of a city; b) guidance and support for growing the capacity of an entrepreneurial team through talent acquisition and talent development; c) networking to enable entrepreneurs to access expertise not resident within the entrepreneurial firm; d) advising and networking to support the acquisition of financial resources needed to support the development of the firm until it achieves self-sustainability; e) support for developing, protecting and accessing intellectual property that can be a source of innovation; f) providing a dynamic and integrated network of interlocking providers of entrepreneurial support to fill gaps in the resources and capabilities of entrepreneurial firms.

With the pressures coping universities, and encouraging them to become more entrepreneurial, most of these institutions have adopted a number of strategic approaches useful to set up an *entrepreneurial culture*.

Daniel Isenberg (2011) summarizes entrepreneurial domain on the following elements: politics, finance, culture, support, human capital, and market. Culture is one of the essential parts of entrepreneurial ecosystem. The values, norms, attitudes, risk tolerance of a society can be crucial determinants of entrepreneurial activity within a country. Some research discussed and highlighted the importance of cultural determinants on entrepreneurial activities (Castaño, Méndez, and Galindo, 2015; Dubina and Ramos, 2016; Siqueiraand Honig, 2019).

According to OECD (2012), to set up an *entrepreneurial culture*, universities should activate themselves in the following seven areas: *a) Leadership and governance*; *b) Organizational capacity, people and incentives*; *c) Entrepreneurship development in teaching and learning* in order to stimulate and support the development of entrepreneurial mindsets and skills; *d) Pathways for entrepreneurs* to ensure entrepreneurs are adequately prepared for creating start-ups through their education; *f) University - business/external relationships for knowledge exchange* with industry, society and the public sector; g) *Entrepreneurial University as an internationalized institution*; *h) Measuring the impact of the Entrepreneurial University* monitoring and evaluating entrepreneurial teaching and learning across the institution as well as the impact of start-up support.

From an organizational perspective, questions arose on how universities could enhance entrepreneurial culture.

According to OECD (2012), in order to develop an entrepreneurial culture, strong leadership and good governance are essential. Since universities include "entrepreneurship" in their mission statements, they should see themselves as entrepreneurial organizations. In order to develop as an entrepreneurial organization with an entrepreneurial culture the entrepreneurial activities should be included in the strategy. From an organizational perspective, universities can build and encourage an entrepreneurial culture by recruiting staff that have a strong entrepreneurship background. However, to improve social and economic impact, institution should use entrepreneurial attitudes and experience as criteria in the recruitment process. People from outside academic environment, such as entrepreneurs, guest lecturers, can also bring important skills to academic institutions; they carry an external viewpoint as well as skills and abilities which are not available internally.

The U.S. scientific literature has highlighted before the European one the drivers and barriers to improve the university's capacity to create connections with entrepreneurial ecosystem.

Numerous studies have analyzed the barriers to the commercialization of university research, including poor economic incentives, the lack of a commercialization infrastructure within universities, restrictive regulations and policies, the lack of commercialization capacity and entrepreneurial mindset among professors, and the need to establish stronger interactions with industry representatives (Vanderford, *et al.*, 2013). The main conclusion reached by the different authors is that the linear model of technology transfer is inadequate to capture the complexities of an ecosystem (Ostergaard, 2009).

Based on that, the third proposition is :

P3. The greater the university's capacity to create connections with local communities, profit and not-for-profit organizations, and public institutions, the greater its ability to improve the entrepreneurial ecosystem orientation towards citizens' needs.

3. Research context and design

3.1 Methodology

The present work employs a holistic, qualitative case study methodology due to the new, recent phenomenon of smart cities (Van den Bergh and Viaene, 2016; Flyvbjerg, 2006; Scholl and AlAwadhi, 2016; Ruddin, 2006; Wiles *et al.*, 2011). The case of Turin city lab (TCL) allows to enlarge the existing literature on smart cities with a specific focus on the role exerted by entrepreneurial universities. Basically, this work aims to provide an outlook how a city creates a synergic network among different sectors and generating the public value in partnerships with local universities. Turin is selected as one of the most innovative cities in Italy even in Europe. Indeed, Torino is ranked the 3rd Italian city in terms of GDP, with about 900,000 citizens, 75,000 companies (80% SMEs), 350 start-ups and more than 100,000 students among the two university campuses: University of Turin (with a more humanistic and economic focus) and Polytechnic of Turin (with a more tech and engineering focus) (Camcom, 2017).

We present TCL case study in a narrative way thanks to the co-authorship with the main players of this project: the current Ministry of technological Innovation and digitalisation, the Deputy Mayor in Innovation, and advisor of the Deputy Mayor in Innovation. Therefore, thanks to their active role in this project, we have collected all crucial information by interviews to the main partners (such as Reale Mutua, Iren, and Cirfood) and secondary data to build up the single case on the city of Turin. A narrative approach shows a case by stories (Riessman, 1993) offering 'thick description' (Geertz, 1993) and construct new concepts (Berger and Luckmann, 1966; Boje, 2002). This analysis lasted two years, commencing in 2018.

In a nutshell, this methodology has allowed us to structure an explicative scenario on the evolvement of a smart city into an experimental lab, suggesting an open innovation participatory ecosystem approach (Shaffers *et al.*, 2011). Alongside, this analysis has allowed us to shift the common bran image of Turin city - from a "Fordist one-company town" (Vanolo, 2015) to one of the most innovative smart city.

3.2 Turin City Lab: A usecase of a smart city evolving in a City lab

In 2018, the project 'Turin city lab" was founded with the scope of develop the first sustainable, successful smart city in Italy as well as in Europe. By interconnecting 'intelligent' tools of technologies along with national and international players, TCL is considered an innovative urban policy paradigm. It combines benefits stem from green cities, connected life, intelligent communities, innovation ecosystems, and environmental and social sustainability along with urban growth (Kehoe *et al.,* 2011). The broad concept of a city looking to adopt digitalization and technology to become more futuristic and smarter, connecting urban infrastructures with human capital and social behaviour of those inhabitants of the city, has been brought to the "interpolation of smart cities within the same city".

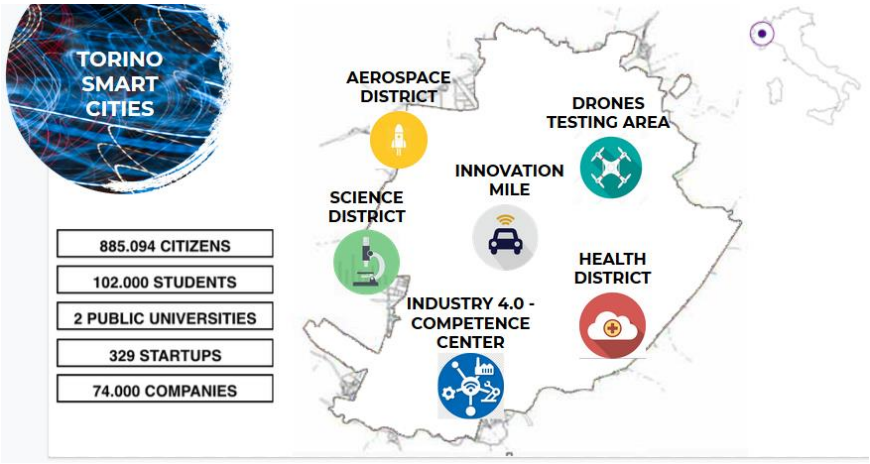
Indeed, the mission and the vision of TCL concern giving a new shape of Turin, shifting from the classic, general concept of smart city to a participative, active city like an experimental laboratory which involves several local actors such as public and private investors, banks, foundations, and R&D centers. All together aiming to improve city's quality life and making a social impact. Turin is so elected to be *the city partner of innovation.*

The logic behind this payoff is to generate a propensity to collaborate and intense collaborations with all players. According to Vanolo (2015), synergies between local economic cultures and practices could lead to evolutionary patterns and foster the capability of coping external challenges. In this vein, author pointed out that urban resilience is a central characteristics of smart cities (Vanolo, 2015). Again, Colombini and Vanolo (2017) describes such resilience of Turin arguing the evolution\revolution of the "local urban heritage". In fact, Turin can be considered an ongoing innovative city, driven by four main actors: 'universities-industry-government- civil society' (Carayannis and Campbell, 2012).

The city of Turin acts as a facilitator in spurring innovations and inducing new tests of pre-commercial products, services, and technologies. This scenario calls for an intertwining process which scouts new technologies and innovation models - from single innovators to start-ups, and to well established small, medium and\or international big enterprises. Besides, it has attracted the attention of European funds, increasing the degree of partners' engagement and international collaboration exploitation approach. Yet, the innovation team of TCL promotes the partnerships, regular meetings, participation to international contexts, and adoption of leading positions in innovative, sustainable ideas.

As showed in the image below (figure 1), TCL has adopted an open innovation participatory ecosystem approach where each dot represents a single smart town. A smart town operates in one of the innovation areas such as manufacturing 4.0, aerospace, healthcare, mobility, and urban air mobility allocated within the city of Turin. Those dots also form an accelerator space stimulating new research and development projects.

Fig. 1: Smart towns in Turin



Source: our elaboration

Torino City Lab has collected almost fifty experimentation proposals with an effective launch of three real cases and involving more than fifty partners.

The chance to propose an innovative idea occurs by an online platform *www.torinocitylab.com* where the submission window is available throughout the year. The reviewing process lasts six weeks where a special commission is formed to judge the proposals. Those judgers come from the municipality, university, and industry who have to evaluate the desirability, feasibility, and viability of a project (Murray and Scuotto, 2016). If the proposal is accepted, the accelerator process is granted to the team so as to put in reality their innovative idea. This process offers mainly the access to national and international key players (figure 2).

Fig. 2: Some key players of TCL

Source: our elaboration

The involvement of several, different actors - local and international corporates, research organizations, venture capitalists, and innovators - is one of the crucial success keys of TCL.

3.3 TCL and entrepreneurial universities

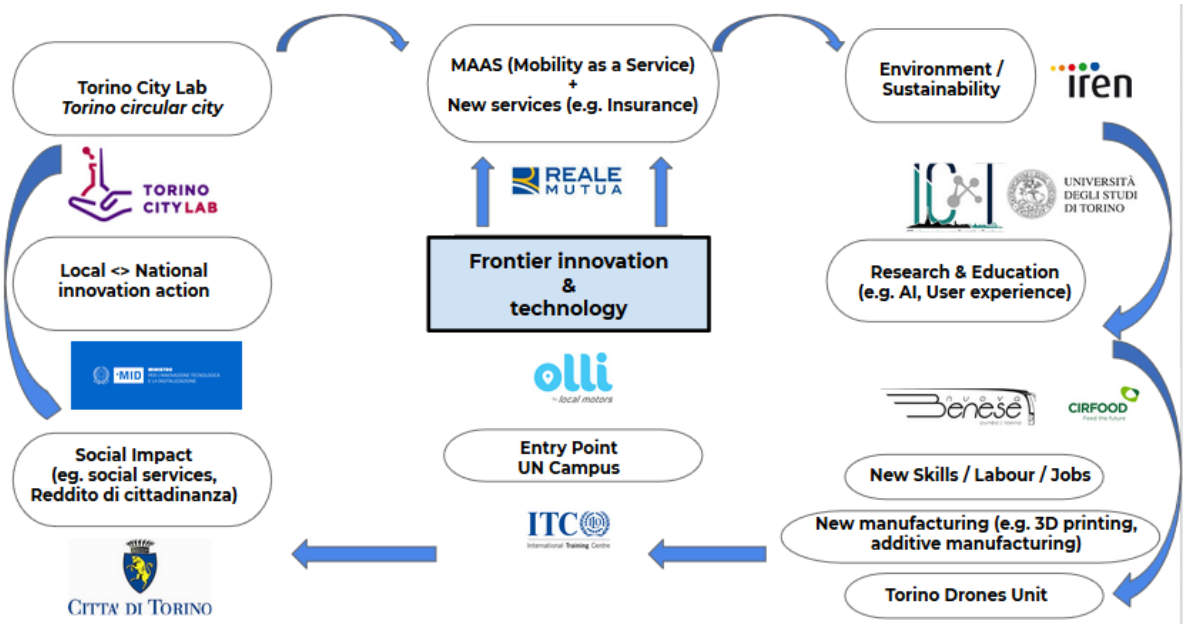
In this context, entrepreneurial universities play a central role in TCL partner network, with a key involvement in many innovation projects and events. The public-private partnership approach of TCL is a good example of a way to manage innovation proactively by a City.

TCL connects different dots. This has produced the first experimental lab in the smart road area. The Smart Road is an urban circuit of 35 km in which technology and mobility industry, and research players are developing the infrastructure towards the autonomous and connected driving. Torino Smart Road is a very important project because of it represents a crucial step in the transition of the City from an automotive-led economy to a smart-mobility new development opportunity. A number of top companies has been attracted by TCL mission, encouraging the other Italian cities to follow the smart innovative, automotive path.

For instance, recently TCL has launched the first autonomous shuttle service known as "OLLI" in Italy. This shuttle has been developed in collaboration with local universities, the international training center of International Labour Organization (ITC ILO), and other partners (such as Reale Mutua, Iren, and Cirfood).

The project "OLLI" represents a model of open innovation participatory ecosystem developed by TCL and its partners (figure 3). It has started by identifying the innovation experimentation opportunity (i.e. the possibility to be the first city in Italy to launch an autonomous shuttle service) and a suitable circuit compatible with the current Italian legislation (MIT, 2017), which does not allow to non-car makers to test autonomous driving. Hence, TCL team has been able to pull together the expertise and in-kind resources to run "OLLI" project thanks to a systemic work of multiple partners and an institutional endorsement by the Italian Ministry of Innovation and the Mayor of Turin.

Fig. 3: An example of open innovation participatory ecosystem



Source: our elaboration

The project "OLLI" calls for new talented skills and the entrepreneurial universities are so nurturing those talents in order to satisfy industry needs. It evokes a model of the intertwining of government- universities - industry.

Innovation means more jobs opportunity for the future of the city and the city of the future. With this claim Torino has just hosted a three-day workshop entitled "Torino skills city" along with global education specialists: some national bodies as the university of Turin and the Polytechnic of Turin alongside international bodies as European Training Foundation (ETF) and ITC ILO. The scope is to forge people with new skills - re-skilling of citizens and working class - according to a smart city's needs.

As a result of the combination of know-how, skills and automotive history, Torino is recognized as one of the most dynamic European cities in terms of smart mobility innovation. In 2019 Turin hosted one of the most important global automotive annual conference, the 5GAA. Moreover, this year one of the top global start-up accelerator, id est *Techstars*, has selected Turin as the accelerator space for international smart mobility start-ups.

Moreover, TCL seeks to educate citizens to the use of new technologies, like drones. For instance, the increasing utilization of drones to monitor public security, traffic, and other environmental issues, has also induced a new use. Indeed, TCL has been employed drones to organize a big event in Turin, that is the annual St. John's celebration, taking place on 24th of June. Differently to the past, fireworks are replaced with drones to produce technological, sustainable showcases. With this intent the organizers have shown about 300 drones in automatic flight mode, with a drone-lights performance show; some autonomous vehicles self-driving in the main square; 5G connectivity to enable the fast infrastructure for both vehicles autonomous driving and drones automatic flying.

The scope is, thus, to get closer citizens to the new technologies and so educate them in being more technological.

These projects also generate a social impact innovation by adopting a bottom -up approach. The main idea is to encourage innovations from citizens. In this scenario, TCL along with local entrepreneurial universities is fostering 'edutech' projects and new entrepreneurial ideas. This has induced a project called AxTO which is a local Living Lab by European programs. As emerged, circular innovation is becoming another hot topic in the modern society. Again, this project employs an open innovation participatory ecosystem which has generated twenty circular innovation projects in the past twelve months.

4. Discussion

4.1 Theoretical implications

Our holistic, single case study based on Turin city lab offers an outlook of the evolvement of the concept of smart city. TCL points out the relevance of creating an open innovation participatory ecosystem by employing a bottom -up approach (id est citizens - government) (Popa *et al.*, 2017).

Hence, the first assumption "P1. A greater increment of Smart cities like laboratorial cities, more involve an open innovation participatory ecosystem" can be explicated by TCL mission and vision. As state above, "*the broad concept of a city looking to adopt digitalization and technology to become more futuristic and smarter, connecting urban infrastructures with human capital and social behaviour of those inhabitants of the city, has been brought to the "interpolation of smart cities within the same city". Indeed, the mission and the vision of TCL concerns giving a new shape of Turin, shifting from the classic, general concept of smart city to a participative, active city like a live laboratory which involves several local actors such as public and private investors, banks, foundations, and R&D centers. All together to improve city's quality life and making a social impact. Turin is so elected to be the city partner of innovation."*

According to Lee *et al.* (2012) the openness of smart city involves two forms of collaborations: propensity to collaborate and intensity of collaborations between firms and local external partners. Such collaborations evoke the quadruple helix model - 'universities-industry-government- civil society' so as to generate a collective, bottom-up innovations (Carayannis *et al.*, 2018; Carayannis

and Campbell, 2012; Leydesdorff and Deakin, 2011; Etzkowitz and Leydesdorff, 2000). Hence, a new knowledge is produced by trainings and new entrepreneurial programs. Specifically, TCL has introduced another projects "Torino skills city" which requires the commitment of national and international global education specialists: some national bodies as the university of Turin and the Polytechnic of Turin alongside international bodies as European Training Foundation (ETF) and ITCILO. A re-skilling program meets one of the criteria of the entrepreneurial culture (OECD, 2012), that is *university - business/external relationships for knowledge exchange*. University performs a collaborative knowledge acquisition approach in partnership with the City and the industry. Another example is the AxTO project which induces citizens' idea generation in the context of the circular, sustainable economy.

Therefore, we can also support our assumption on (**P3.)** The greater the university's capacity to create connections with local communities, profit and not-for-profit organizations, and public institutions, the greater its ability to improve the entrepreneurial ecosystem orientation towards citizens' needs. This supports the quadruple helix model which introduce a democratic way of generating innovations (Carayannis and Campbell, 2012) where citizens are involved in such process. Smart cities become a source of competitive advantage at an urban and national market position.

4.2 Managerial implications

According to European Union (2017), technological, socio-demographic and behavioral change are promoting multimodal transport - combining walking, cars, buses, bikes, kick scooter, trains, and other forms of shared transportation. Encouraged by the transition from "owning" to "using", mobility as a service (MaaS) could enable multimodal mobility by providing user-centric information and travel services such as navigation, location, booking, payment and access that allow the use to consume mobility as a seamless service across all existing modes of transport.

In this context, innovation strategies and programs should design and deploy innovative but robust arrangements for public-private co-production of transport and mobility service.

Today, collective intelligence and crowdsourcing are possible through formal channels and/or social networks. While increasingly people use social technologies to get what they need from other individuals rather than from formal channels, such arrangements often lack compelling experience among the participants. The key element of co-innovation is to provide compelling experience with network effects for value creation. The first area is to leverage innovative ideas to introduce new products, services or even new ventures. This process requires collaborative efforts with internal and external partners so that a new blue ocean, where there is no competition, can be created (Kim and Mauborgne, 2005). New products or services may not be based on new technology or invention. They could also be results of new convergence or bundling with different complements or applications. New ventures can be based on a combination of intrapreneurship or interorganizational collaboration. The second area of value co-creation involves value chain innovation to make the architecture more efficient which in turn will cut the cost, improve quality, and/or increase the speed of the process. Many process innovations, such as Just-in-Time, TQM, Six Sigma, Lean Manufacturing, etc. are all intended to make the value chain architecture more efficient. The third area of value co-creation is reinventing the concept of customer value. This area is especially fruitful for value co-creation with customers for a shared value.

The fourth area is to expand the customer base. The final area where co- innovation can create value is new business models. Business models represent the approaches that the organization strategized to produce and deliver its goods or services to the customer. These new, innovative technologies can be represented in some of the TCL projects such as ILLO, the use of drones, and 5 G connectivity which are illustrative of our assumption based on (**P2.)** Improving user innovation tools and system thinking approach will result in better public services.

Looking into the TCL case, it has possible to show a successful project which can be replicable into other cities. Nowadays, the need of being smarter is getting pervasive and so this case offers an outlook of what a city can do if it works in a synergic way with all players of the local ecosystem.

We deem that more focus should be done to the concept of an open innovation participatory ecosystem. Especially, this can be a new 'business model' that policymakers can adopt to be technological efficient. Consequently, our smart model provides new insights into the current innovation and management literature. As aforementioned in the discussion section, this model supports previous studies and offers a new concept of smart city - which considered like an experimental lab.

5. Conclusions

This research has focused on the exploration of an open innovation participatory ecosystem where the 'city' as a public institution works with entrepreneurial universities. According to our results, this could give a new shape to the modern smart city shifting the meaning of smart cities from "urban technological utopias" to urban innovation labs. Considering the importance of comprehensive value creation this study highlights the relevance of interaction between stakeholders. Collaboration and resources sharing are directly related to a process of creating value (Frow *et al.*, 2014). The transfer and sharing of value can have themselves several implications. Shared value can generate competitive advantages deriving from the nature of the value activities and from the degree of openness of the firm to the outside. This process feeds the network between the actors that collaborate in the ecosystem (Santoro *et al.*, 2018). In this vein, the managerial implications underlying this paper would stimulate the managerial debate about how collaboration processes between organizations leads to value co-creation (Amit and Zott, 2010).

The study has some limitations due to its exploratory nature. The main limitation is certainly the use of a single-case design through documentary analysis. This influences the ability to generalize the results. The second limitation is the lack of empirical development, which makes it difficult to extend the results to other industries and contexts.

Starting from the results related to the proposed case, further insights could emerge regarding the segmentation of users, the analysis of the context of use, i.e. the methods of access and use of the service, how the size of firms could affect the ability to access advanced technical-scientific knowledge and generate new industrial technologies, how collaboration encourages the integration between different phases of the innovation cycle, i.e. between applied research, experimental development and engineering and industrialization.

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Circular economy strategies for healthcare sustainability: some insights from Italy

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Abstract

Objectives. *Over the recent years, healthcare organizations together with international and national policymakers have developed actions and plans pointing to better manage economic, social and environmental resources. Thus, some of these organizations have taken a step forward the application of Circular Economy (CE) strategies, mainly intended to meet the goal of zero waste. In this vein, this paper explores if and how healthcare organization are open to enact CE strategies.*

Methodology. *A qualitative approach, based on the case study method, has been implemented to investigate and compare Italian healthcare organizations approach to CE. The analysis involved two Italian healthcare organizations, which have implemented sustainability programs over the last five years*

Findings. *The achieved results highlight the need for some enhancing socio-economic actions, pointing to push healthcare providers to go beyond the mere law compliance, assuming a proactive approach to one of the most challenging sustainability issues, waste minimizatio*n. *In fact, specific social, legal and economic initiatives can boost a mindset change among healthcare providers, making them as committed as possible to sustainability issues and, therefore, willing to approach the purchase and use of medical products in a more responsible way.*

Research limits and originality. *Even though the qualitative analysis somewhat limits this study, it represents one of the first attempts to frame the perception and the implementation degree of CE solutions among Italian healthcare organizations.*

Practical implications. *Taking the results of this research and the current literature into account, policymakers should better support healthcare management to better approach CE strategies for waste management, educating and making them more aware about the importance of reducing the impact of medical waste, making them able to proactively approach waste reuse, recycling and remanufacturing strategies.*

Key words: *Healthcare; Sustainability; Circular Economy; Waste management.*

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1. Introduction

Over the last decades, a lively debate on sustainability engaged scholars and practitioners. Thus, they focused their theoretical and practical efforts on making socio-economic activities as fitting as possible with the principles at the core of sustainable development for balancing social, economic and environmental goals (Elkington, 1994; 2013). Due to the social desirability of sustainability goals, policymakers and companies are worldwide trying to change "the so-called 'green economy' from a niche into a mainstream economy" (Gasbarro *et al.*, 2018, p.3). In this vein, a United Nation (UN) resolution - *Transforming our World: the 2030 Agenda for Sustainable Development* (UN General Assembly, 2013) - lied the foundations for a more holistic approach to sustainable development based on the introduction of 17 Sustainable Development Goals (SDG). This resolution - together with UN Global Compact - called companies to align their strategies and operation with sustainability principles globally (UNGC, 2017). The 2030 Agenda for Sustainable Development also stated that the SDGs and their 169 targets, "are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental" (UN, 2015, p.8). This resolution also focused on human health and wellbeing, highlighting that they are often threated by spiralling conflicts, extremism, humanitarian and environmental crises. Therefore, to face such problems it suggested to "reduce the negative impacts of urban activities and of chemicals which are hazardous for human health and the environment, including through the environmentally sound management and safe use of chemicals, the reduction and recycling of waste" (UN, 2015, p.13). This statement put at the forefront of the public debate the need in every sector and industry for a more sustainable approach to the use of chemicals and hazardous materials as well as to waste management.

As for many other sector, over the time healthcare has been even more concerned about sustainability (World Health Organization, 2017, 2019; Lancet Commission, 2015). Thus, due to its daily activities it is one of the major industries worldwide, which accounts for the 10% of Gross Domestic Product (GDP) in European Union (EU), the 15% of public expenditure and the 8% of the EU's workforce (OECD, 2015), while in Italy it accounted for 8,9% of the GDP in 2016 (ISTAT, 2017). The dimension and the number of activities done led healthcare to create worldwide a huge amount of waste, ranging from 0.44 kg of waste per hospital patient per day in Mauritius to 8.4 kg in the US, with the EU countries positioned between the afore-mentioned two extremes (Minoglou *et al.*, 2017). More in details, the 25% of the total amount of medical waste - a quantity expected to rise with world population ageing - are hazardous for human being and for the environment, containing radiological, biological or chemical threats (WHO, 2012; United Nation, 2017). This has led international and national institutions to define a standard classification for healthcare waste, based on their riskiness for human health and intended to establish good practices pointing to meet the general goal of zero-waste (The Ellen MacArthur Foundation, 2015). In this vein, in 2015 the European Commission defined an action plan for Circular Economy (CE) directed to "extract the maximum value and use from all raw materials and products, while converting waste to resources" (Voudrias, 2018, p.1), also when these products and materials comes from healthcare sector (Domenech and Bahn-Walkowiak, 2019; Leissner and Ryan-Fogarty, 2019). This stimulated sustainability research, which further explored the application of circular solutions to healthcare processes to better recognize the related opportunities and constraints, especially when applied to waste management (Murray *et al.*, 2017; Smol *et al.*, 2017). This implies a renewed approach to resource management, which should be handled implementing innovative and transdisciplinary practices, defined intertwining different scientific and non-scientific disciplines such as, for example, management, medical sciences, biotechnologies, and engineering. It follows that "on this basis it is possible to timely build future scenarios more reliable for business decision-making, and able to encourage economic development policies oriented towards greater vitality" (Vona, 2014 p.45).

Focusing on healthcare transition towards sustainability, the extant literature still calls for further research on if and how health organizations (e.g. public and private hospitals, clinics, labs,

etc.) are enacting CE strategies pointing to stimulate medical products and materials reuse, recycling and remanufacturing (Voudrias, 2018). Therefore, this paper is aimed at contributing to bridge this gap further investigating the way Italian healthcare organizations are approaching waste management. To this end, a case study analysis was conducted, comparing the approach of two Italian healthcare organizations to waste management to grasp and describe their orientation towards sustainability as well as their disposition towards a circular waste management.

The remainder of the paper is organized as follows. Section 2 presents the theoretical background of CE and briefly reviews the existing research on CE in healthcare, while Section 3 describes the implemented methods. The achieved case studies' results are presented and discussed in Section 4 and 5. Finally, Section 6 provides some concluding remarks.

2. Theoretical background

2.1 Circular economy for sustainable development: from rhetoric to implementation

CE is a popular notion within the policy and business advocacy groups as well as within society (Tukker, 2015; Stahel, 2016; Geissdoerfer *et al.*, 2017). Due to its inherently transdisciplinary nature and to the lack of a single origin (Winans *et al.*, 2017; Korhonen *et al.*, 2018), several research fields, such as economics, management, chemistry, engineering and even architecture differently approached CE (Sigh *et al.*, 2017; Bridgens *et al.*, 2019). Thus, even though one of its first appearance goes back to 1970, with the publication of the "Limits to growth" thesis (Meadows and Meadows, 1972) where "spaceship earth" metaphor was presented, the definitions of CE remain several and somewhat opposite (Kirchherr *et al.*, 2017). However, one of the most popular definition approached CE as an "industrial system that is restorative or regenerative by intent and design" (Ellen MacArthur Foundation, 2013, p.7).

Over the last decades, CE has become prominent in most of western countries policies; thus, both international and national institutions started to inspire their development programs to sustainable development principles and to the related circular strategies. In this vein, the European Commission draw attention to CE potential for adding competitiveness to all member states (European Commission, 2015), outlining the "Roadmap to a resource efficient Europe" - a program intended to make European countries fully based on recycling and recovering by 2020 (European Commission, 2014) - and the "Closing the Loop. An Action Plan for the Circular Economy" (European Commission, 2015). These initiatives were intended to harmonize as well as to make more global, holistic and systematic the nationally different approaches to CE, to stimulate more aligned programs, based for example on the shared "reduce-recycle-reuse" approach, intended to support companies in acting without harming environment and society (McDonough and Braungart, 2002). This led scholars, practitioners and policymakers to go beyond the concept of the "end-of-life" for assuming a different approach to production, distribution and consumption processes pointing to minimize waste production and to boost materials and products' reuse, recycling and recovering (Kirchherr *et al.*, 2017). The main CE strategies lied their foundations on these three essential elements (or the 3Rs) (Wu *et al.*, 2014), which lately evolved into reusing, recycling, redesigning, remanufacturing, reduction and recovery (or into the 6Rs) (Jawahir *et al.*, 2016). Such processes are becoming even more crucial for accomplishing sustainable development goals, based on environmental quality, economic prosperity and social equity for benefitting current and future generations. In a similar vein, industrial ecology approached CE focusing on material flows (Lifset and Graedel, 2002; Stahel, 2013) and their shift from a linear to a circular management, aimed at reducing and even eliminating waste, extending products' life and/or 'looping' them and their constituent materials back into the system to be reused (Reuter *et al.*, 2019).

In linear economy, what changes a product into waste is the obsolescence, which Den Hollander *et al.* (2017) defined as a loss of product perceived value, which led to discharge it from the economic system. The authors also recognized that obsolescence can be *functional* (e.g.

products that no longer perform as expected), *technological* (e.g. new technologies outperform products), *economic* (e.g. no more profitable products), *regulatory* (e.g. products no longer legal) or even *aesthetic* (e.g. products are outmoded and no more appealing). Assuming a circular perspective, obsolescence no more led to waste creation, but rather to products' recovery, based on the restoration of their perceived value (Hollander *et al.*, 2017). This implies, on the one hand, the refurbishing and/or the remanufacturing of obsolete or near to the obsolescence products (e.g. at the end of their lifecycle). On the other, the recycling of products/materials that can no longer be revitalized or their braking into single materials (known as second raw materials) used as inputs of other productive processes (Bakker and Poppelaars, 2018). It follows that according to a circular perspective "value can be maximised and environmental losses minimized if a product is recovered by changing it as little as possible from its original manufactured state" (Kane *et al.*, 2018, p.36) or, in other words, improving its reparability, re-manufacturability and/or recyclability (Prendeville *et al.*, 2016).

2.2 A circular approach for managing healthcare waste: a focus on Italy

Several are the challenges that currently affect healthcare, such as the low adaptation to sustainable development principles, the prioritization of patient safety and the growing needs of the aging population (Ertz and Patrick, 2020). To counteract this situation institutions has globally developed specific enhancing programs - e.g. those encouraged by European National Health Services - intended to promote strategies and policies for boosting healthcare sustainability (Jamieson et al, 2015). To achieve this goal, some issues remains to be addressed, such as: 1) the regulatory and ethical complexity of health products and services, 2) the lack of a methodological history (e.g. little projects and research addressed healthcare sustainability), and 3) the need for restorative or regenerative strategies based on interdisciplinary methodology and procedures (Barbero *et al.*, 2017).

In recent years, another issue related to healthcare restorative strategies has come to the forefront of public opinion: the management of medical waste (Daù *et al.*, 2019), which the World Health Organization (WHO) classified it in solid (e.g. disposable devices, electronics, plastics, bandages, furniture, etc.), liquid (e.g. organic and non-organic fluids, drugs etc.) and greenhouse gas emission (WHO, 2014). In fact, this sector and its "facilities produce a very wide range of waste streams, some of which are hazardous, but most are non-hazardous" (Viani *et al.*, 2016, p. 3). Thus, if around the 80% of medical waste worldwide generated can be considered "general waste" (WHO, 2014), the remaining fraction is made up of harmful waste, which need for sterilisation and, therefore, for specific treatments, based on devices and technologies able to eliminate possible infectious and contagious particles. Even though, infectious and hazardous waste (e.g. drugs, chemicals, needles, etc.) represent a minimum amount of the total medical waste, their disposal cost is (around 5-10 times) higher if compared with the costs of non-hazardous ones (Ghasemi and Yusuff, 2016). In this vein, a recent analysis - the Report on Special Waste 2019 - registered that in Italy the National Healthcare System (NHS) in 2017 produced 12.508 tons of hazardous special waste and 436 tons of non-hazardous special waste (ISPRA, 2019). Dealing with hazardous medical waste, the United Nation (UN) estimated that those disposed from hospitals and clinics represent a concrete risk for illness and contamination for over half the world's population (Georgescu, 2011). Drawing on these waste, some scholars and practitioners recently maintained that a good segregation should reduce it dangerousness both for people and environment (De Feo and Malvano, 2009; Di Maria and Micale, 2014; Windfeld and Brooks, 2015). Moreover, the EU enacted the Directive 93/42 on Medical Devices, introduced in Italy with the Legislative Decree 46/97, which set the minimum parameters for medical device and products sterilization - intended to ensure patients and people's health and safety - as well as the efficiency and effectiveness of sterilization tools. In the first years of XXI century, the Italian government enacted a further law directed to "special waste" management (the DPR 245/03), which better defined both urban and special waste even when coming from healthcare industry.

More recently, the European Waste Framework Directive (WFD) (European Commission, 2014) inspired nationally wide initiatives, calling for a more efficient and effective healthcare waste management, not harmful for people and environment. Focusing on Italy, the Legislative Decree 152/2006 - amended by the following DLgs. 205/2010 - set some guidelines for the development of waste management system oriented to the restoration, recovery and recycling, which can be applied also to healthcare sector (APAT, 2008). This implied the possibility to integrate into healthcare supply chain reverse logistics system or even circular processes (Gaur *et al.*, 2017). However, some are the obstacles to the establishment of reverse and/or CE solutions in this sector, most of them coming from the streams of infectious, sharps, pathological, pharmaceutical, chemical, radioactive waste that cannot be recycled, reused or retreated (Rawlings and Pora, 2009; Bergsma and Sevenster, 2013). Moreover, some materials, such as polymers, do not reach a critical mass to justify their recycling economically, so they tend to be traditionally disposed (Hopewell *et al.*, 2009; d'Ambrières, 2019). It worth noting that even though the Italian government as well as other national governments usually disclose statistics about national production and disposal of medical waste, information about the way value can be recovered, recycled or reused remain poor (Viani *et al.*, 2016). In this sense, a change into the decision-making processes at the core of medical materials and products purchase, use and disposal should be encouraged to minimize the production of medical waste and lower the related impact on people and environment (Castellani *et al.*, 2015; Caniato *et al.*, 2015; Ghisellini *et al.*, 2015). To this end, a change in consumers' behavior, supported by situational and organizational factors (e.g. information and feedback sharing, social participation, etc.), is even more necessary (Grimmer and Bingham 2013).

2.3 CE strategies for healthcare waste management

Dealing with CE, scholars recognized some essential strategies that healthcare organizations can develop (Voudrias, 2018): 1) "*green team" establishment*, 2) *waste production measure*, 3) *waste minimization*, 4) *safe reuse*, 5) *recycling*, 6) *reprocessing*.

Focusing on the establishment of green teams, it worth noting that this activity is in charge of administrators, managers and chief physicians, who should to interact and cooperate with the purchase and safety directors (HCWH, 2001). The main goal of these teams is the design of the strategic courses of action for healthcare waste management, based on the monitoring and reporting on the related social and environmental performance (Landi and Sciarelli, 2019), and/or the definition of CE strategies directed to the whole health organization (Daddi *et al.*, 2011).

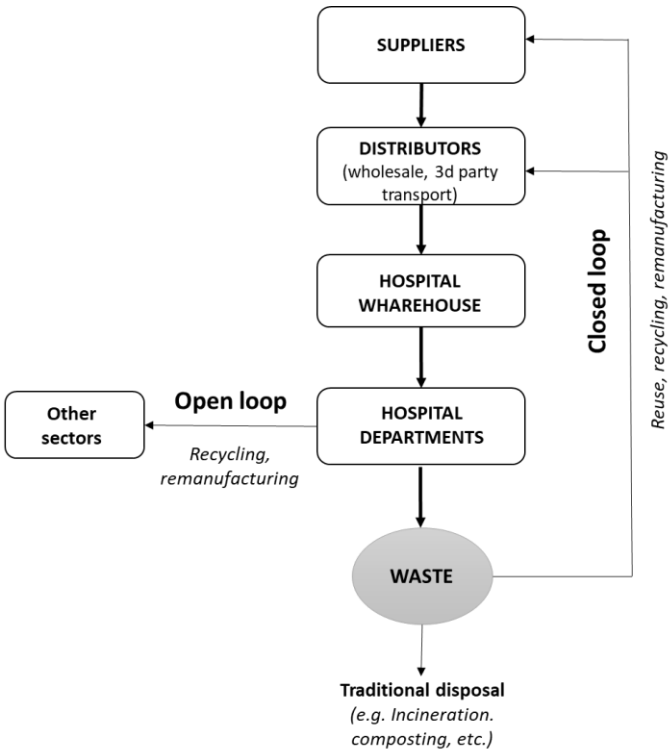
The waste production measurement mainly delves on the recoding and the analysis of purchases and waste management, pointing to provide information about waste composition and to define specific practices intended to manage each waste component effectively, not forgetting that around 15-20% of total clinical waste is hazardous (Andersson *et al.*, 2019). In this way, health organizations could better define actions for improving waste segregation and treatment (e.g. incinerating, dumping, reusing, recycling or reprocessing) (Vogt and Nunes, 2014).

Focusing on the safe reuse of clinical waste, it worth noting that it is a recent trend, which is trying to counteract the worldwide diffusion of costly disposable and single-use materials. Thus, in some occasions, reusable materials and products (such as laparoscopic tools, suction receptacle, plastic anaesthetic trays, etc.) demonstrated a lower environmental impact as well as lower costs if compared with single-use ones (Uger *et al.*, 2017). As stated, medical materials and products often need for specific treatments such as sterilization. In this sense, some research pointed out that choosing reusable sharp container, a 1000-bed hospital could save $175.000 per year, reducing at the same time 15,500 kg per year of waste (Kwakye *et al.*, 2011, Azouz *et al.*, 2019). However, the regulation related to medical hazardous and infective waste still constrains the activation of effective recycling programs, even though many other materials and products (e.g. blue wrap, cardboards, cans, PETE and HDPE plastics, electronic equipment, etc.) could be "easily and safely recycled, leading to both environmental and financial savings" (Voudrias, 2018, p.2). An example come from blue wrap, used to cover sterilized tools and made up of polypropylene, which is highly

recyclable together with PVC tools such as anaesthetic and oxygen masks and oxygen tubing, which can be recycled and used into horticultural industry, boosting the activation of circular processes alongside the health supply chain (Voda and Justice, 2015). To this end, medical materials and products should be handled according to an "upcycle" logic aimed at converting waste or unused materials into something new with a clear environmental value or into second raw materials (Song *et al.*, 2015).

Finally, some medical materials and products can be reprocessed or reused after having repaired, cleaned and/or sterilized. This process can be widely applied to medical devices or materials such as disposable gloves, plates, ultrasound catheters, laparoscopic equipment, heart monitoring catheters, balloon angioplasty catheters. These devices and products are currently classified according to their riskiness (high, medium and low risk) (USGAO, 2008) for storage, shipping to reprocessing companies, cleaning, sterilizing, repackaging and resold to clinics and hospitals. However, even though several medical waste can be circularly treated, others (e.g. infectious fractions such as body tissues, downgraded contaminated materials, etc.) cannot abandon the traditional linear solutions. Drawing on the previous considerations, a tentative model of a circular hospital supply chain has been developed (Fig.1).

*Fig. 1: Healthcare circular supply chai*n.



Source: Adapted from Farooque *et al.*, 2019.

3. Methodology

3.1 Research objectives, research approach and case study selection

This study is aimed at better understanding if Italian healthcare organizations orientation towards sustainability is also based on the implementation of circular systems of waste management. Therefore, two are the research questions that the following analysis points to address:

RQ1: How Italian healthcare organizations perceive sustainability?

RQ2: Do Italian healthcare organizations consider waste a valuable resource? If so, what they do to exploit them?

Due to the explorative nature of this work, a qualitative methodology and a case study approach have been implemented to grasp information about the phenomenon under investigation. Thus, qualitative methodologies represent "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2009, p.13).

The analysis involved two Italian healthcare organizations, which have implemented sustainability programs over the last five years. These two organizations - a university hospital and a surgery clinic - were selected according to a non-probabilistic technique (Pathak *et al.*, 1980), because CE strategies for manage medical waste are not so spread among Italian healthcare organizations. For confidentiality purposes, we agreed to not reveal organizations as well as the respondents' identities; therefore, they were classified as case organization A and B.

For the sake of the research, some preliminary themes and subthemes were identified, based on the review of the extant literature on sustainability in healthcare, CE and waste management (see Tab.1).

Tab. 1: Themes and subthemes for investigating CE strategies for healthcare sustainability.

Themes	Subthemes
Sustainability orientation	Approach to healthcare sustainability Adaptation to the changing business and environmental issues
Green teams' establishment	Products and materials purchase inspired by eco-friendly aspects Suppliers' selection based on sustainability-oriented criteria Increase in environmental awareness
Waste production	Initiatives and tools for monitoring waste production Initiatives and tools for separating waste
Waste minimization	Initiatives and tools for reducing waste Initiatives and tools for classifying waste Initiatives and tools for treating hazardous waste
Reuse	Waste, materials and products that could be reused, are reused and cannot be reused
Recycling	Waste, materials and products that could be recycled, are recycled and cannot be recycled
Reprocessing	Waste, materials and products that could be reprocessed, are reprocessed and cannot be reprocessed

Source: our elaboration

3.2 Questionnaire development and data collection

As stated, to understand the relevance (Schamber, 1994) that the sample organizations attached to CE strategies intended to waste minimization, following Eisenhardt's (1989) suggestions different data collection methods were combined and implemented. Therefore, a desktop study and an empirical analysis have conducted. On the one hand, the desktop analysis interested corporate documents (e.g. reports, handbooks, booklet and scientific papers) provided by the case organizations or accessed via corporate web site and social media. On the other, the empirical analysis was based on telephone interviews, conducted to obtain a deeper understanding of the phenomenon under investigation.

Two health organizations agreed to participate to the study, identifying a key informant (e.g. sustainability director or the administrative director), who responded to a semi-structured interview, based on 20 open-ended questions inspired by the specific themes and subthemes presented in the Table 1. The interviews were conducted via telephone during January 2020, lasted at average 30-40 minutes and were recorded with the permission of the interviewees. Then, the interviews were verbatim transcribed and coded to identify the themes to be discussed. For ensuring the case studies validity and reliability, data were triangulated (Merriam, 1995) using corporate document as well as

information website and local/national policy documents (e.g. national and regional management plans). An iterative coding process was implemented, based on the classification, test and rearrangement of the gathered data through a critical debate between the authors. Finally, the collected data were critically examined and a research report was written.

4. Findings

For readability purpose, findings were organized around the main themes presented previously (see Tab.1) and discussed in the following.

4.1 Sustainability orientation

The two case organizations demonstrated a different orientation towards sustainability; thus, if the case organization A showed a proactive attitude toward sustainability, the case organization B showed just a rigorous compliance to the existing laws. In this direction, the general manager of the case organization A reported:

"*Sustainability is essential for healthcare. It is not merely a matter of the quality of care, but it is rather about the need for balancing cultural, social and economic goals, in order to meet all individuals access to care and above all their and future generation wellbeing. So, we contribute to address this global and intergenerational goal re-orienting our health practice to sustainability principles*".

Drawing on the same theme, the general manager of the case organization B reported:

"*Sustainability is a contemporary duty. Therefore, we must respect the current laws, regulations and standards, even though some healthcare professionals see this compliance as a problem, because it requires a great organizational and economic effort for reorganizing resource allocation*".

The two case organizations demonstrated a good awareness about the importance to respond to the several changes that interested business and environmental issues, putting a great emphasis on national and international regulations and standards as well as on customers and people demand for safe, affordable and eco-friendly medical products. Thus, the general manager of the case organization A stated:

"*Our corporate values, culture and an ever-updated knowledge together with the current legislation and regulation have made us able to respond to the challenge that a sustainable society calls for*".

The general manager of the case organization B stated:

"*At the beginning, to be compliant especially with environmental-friendly law and regulation required great efforts for our organization, but today, I can say that we are totally compliant with it, because we do exactly what it calls for, especially in terms of waste management".*

4.2 Green teams' establishment

In recent times, also healthcare organizations have started to create the so-called "green teams" for better organize communication around sustainability issues as well as for coordinating and perform sustainability tasks, such as waste minimization. The action of these teams is mainly intended to identify and propose possible solutions to environmental and social issues. In this sense, if the general manager of the case organization B underlined the lack of any "green teams" in his organization, the other manager reported:

"*In our organization, a sustainability unit is active since 2016. Its main scope is not only the*

coordination of each formal and informal sustainable initiative, but also the promotion of an active dialogue and commitment towards it among our medical and non-medical staff. This unit is also active in suppliers' evaluation, that is an internal process intended to screen suppliers' approach to sustainability, in order to decide if maintain or not them. Finally, the unit is used to propose eco-friendly improvements in terms of process management and products/materials selection".

4.3 Waste production

As stated, healthcare organizations (e.g. hospital, clinics, laboratories of clinical analysis, etc.) produce a great amount of waste, classified as hazardous and non-hazardous. Therefore, these different streams of waste need for specific and different monitoring and management systems to be handled and removed in accordance to current regulation. Dealing with this issue, the general manager of the case organization A reported:

"*I know that in our days waste management is a hot topic. People are even more concerned about this. Thus, some years ago our hospital started a program for improve our staff awareness about waste generation, handling and disposal, focusing on both potential and real risks for human being and for the environment. Moreover, according to international and national law we have set specific guidelines for managing waste, supported by a digital system and some advanced technological tools, which allow medical and non-medical staff to register, report and monitoring type and amount of waste produced for each medical and administrative unit".*

The general manager of the case organization B reported:

"Following the current law in terms of medical waste management, this hospital - as all the other Italian hospitals, clinics and medical labs - has implemented a specific protocol for waste collection, dispose and transportation, separating them according to type (solid and liquid) and to hazardousness. We are used to pay great attention to infectious waste, monitoring the application of the related treatment protocol established by national law".

4.4 Waste minimization

Waste minimization is an essential goal not only for healthcare, but also for taking a step forward a global sustainable development. Thus, it implies the enactment of solutions and tools intended to reduce waste production (e.g. using material that generate small amount of waste, reducing the use of chemicals, preferring reusable materials and products, etc.). In this sense, the general manager of the case organization A stated:

"*I think that waste reduction is one of the most important action that people, and organizations should perform to reduce pollution, simply dropping the amount of waste to be disposed or burned into incinerators. We are trying to reduce waste, changing purchase and consume behavior in terms of medical and non-medical products, such as food, plastics objects and several. Therefore, when possible we prefer reusable products to single-use ones, which we can safely reuse after the sterilization".*

The general manager of the other case organization maintained:

"We are trying to re-educate our personal to reduce waste production, but it is so hard, because our daily work needs for a lot of products, chemicals and drugs, which mostly are single-use products or materials".

4.5 Reuse

Reuse is the first measure that - together with recycling and remanufacturing - healthcare organizations can enact for meeting the zero-waste goal. In terms of waste reuse, the general manager of the case organization A reported:

"In our hospital there are some specific procedure intended to reuse products and materials. In particular, the diagnostic equipment as well as sharps and dialyzers are reused more than once, after being sterilized. Moreover, we have also implemented a new approach to drugs; thus, we return to the distributor the drugs not used during the previous three months. In sum, whenever it is possible, we prefer reusable products instead of disposable ones".

The general manager of the case organization B maintained:

"We don't have any program intended to products or device reuse, but we are thinking to do something in this sense over the next months. It is a hard work, because we are grown up as the generation of single-use product. However, in this hospital we usually tend to use as much as possible medical equipment, before substituting and discharging them".

4.6 Recycling

Waste recycling is a practice not so spread in healthcare, due to the number of limitations and standards that specific regulatory restrictions have posit at both international and national level. Focusing on this specific practice, the two case organizations demonstrated a quite different approach to waste recycling. In fact, the general manager of the case organization A stated:

"Our commitment with sustainability is also based on a challenging program of recycling. Of course, we recycle common waste such as paper boxes, non-contaminated glass, PVC plastics and products, but in doing so we strictly follow the segregation criteria, even though this implies more individual efforts and attention. In this way, we contribute to reprocess waste and create new and different products in other locations. In this sense, I heard something about the possibility to use placentas as a raw material for cosmetic and pharmaceutical products. It sounded very interesting, so together with our sustainability division I'm trying to activate this kind of process".

Drawing on the same theme, the general manager of the case organization B stated:

"It is not so simple recycling medical waste and when materials are recyclable, the related processes are timely and costly. So, we decided to not develop specific recycling programs, limiting these activities to common paper and plastic packages".

4.7 Remanufacturing

Remanufacturing concerns the possibility to retrieve obsolete products, which manufacturers can put back into service, replacing some of their most important parts. Dealing with this process, the general manager of the case organization A reported:

"We have implemented a simple process of remanufacturing together with one of our primary medical device suppliers, who supplied our hospital with reconditioned imagining systems, which scanning technologies is always updated".

The general manager of the second case organization stated:

"Unfortunately, we didn't have any remanufacturing initiative, even though we are thinking to enact this kind of processes together with a partner for reconditioning and reuse x-ray device, in order to reduce our annual expense for substituting medical device".

5. Discussions

The case studies findings offered some additional insights into the way Italian healthcare organizations tend to approach CE strategy for adding sustainability to their processes. Thus, the two case organizations demonstrated a different perception and approach to the main themes

identified to assess the disposition towards sustainability and circular strategies for waste minimization (see Tab.2).

Even though both the case organizations were sustainability-committed, the organization A revealed a proactive approach towards sustainability issues, especially when intended to the implementation of circular strategies for medical waste management. Conversely, the case organization B was focused on the mere compliance to international and national standards or laws dedicated to sustainable development and waste management (RQ1: How Italian healthcare organizations perceive sustainability?). This implies that even though Italian NHS is sensitive to sustainability issues, the way organizations are approaching them remains different, because they have achieved different levels of maturity in terms of sustainable orientation (Kane and Bakker, 2018). This different level of maturity also influenced the way these organizations approach medical waste management. Thus, even though CE strategies intended to reduce waste and to restore its value are not so common in Italian NHS (due to special waste amount and their hazardousness), some organizations together with committed suppliers have implemented specific CE strategies. These are often intended to prefer reusable products to single use ones and to remanufacturing medical device (Vaccari *et al.*, 2017), such as x-ray device or imagining systems (RQ2: Do Italian healthcare organizations consider waste a valuable resource? If so, what they do to exploit them?).

Tab. 2: Case findings comparison.

	Case company A	**Case company B**
Sustainability orientation	Proactive	Law compliant
Green teams' establishment	Sustainability division	No teams
Waste production	New solution of waste management	No waste management system, but waste treated according to the current law
Waste minimization	Change of purchase and consume behavior, preferring reusable products	Educational initiative to re-educate medical and non-medical staff
Reuse	Reusable products preferred to single-use one, reuse of sterilized tools and devices.	No reuse program
Recycling	A specific program of special materials and products recycle	No special waste recycling (paper, plastic and glass)
Reprocessing	A remanufacturing process developed together a primary supplier	No remanufacturing program

Source: our elaboration

It worth noting that healthcare law and regulation are driving organizations toward the progressive activation of reverse logistics networks based on CE strategies (Shi *et al.*, 2009). To this end, the action of the aforementioned green teams is essential, due to their ability to facilitate a permanent dialogue on sustainability (Sciarelli and Tani, 2015), on the enactment of the related best practices as well as on individuals' (suppliers, managers, employees, physicians, patients, etc.) commitment to the greenness of healthcare practices.

Focusing on CE strategies, especially when intended to meet the goal of zero-waste, the case organizations have started to explore and implement them, even though with a different effort, commitment and results in terms of waste monitoring, separation, reuse, recycling and even remanufacturing. In fact, on the one hand the case organization A demonstrated a great commitment and proactivity towards circular strategies of waste management, considering them as intended not only to face economic and environmental issues, but also to support those ethical issues, related to patients and health workers safety and security (Hailey *et al.*, 2008). On the other, the case organization B demonstrated a lower disposition towards the implementation of the most CE strategies intended to minimize medical waste. Focusing on this last issue, one of the three Global Compact principles on environmental protection (Principle IX), extracted from the International Action Plan for Sustainable Development "Agenda 21", called companies for encouraging the development and the spread of environmental-friendly technologies to support and exploit,

according to a circular logic, waste management (UNCED, 1992). In this sense, if compared with the case organizations B, the case company A recognized the importance of new and advanced technologies to gain a more efficient and effective waste management. In terms of reuse, recycling and remanufacturing strategies, the two case organizations demonstrated a very different approach; thus, if the case organization A put in practice to some extent each of the afore-mentioned strategies, the other did not apply any circular strategy for managing waste. Thus, on the one hand if the remanufacturing of medical products and devices is performed in practice to some extent, due to the advancement of supplying reconditioning. On the other, the reuse of medical products based on the hygienic recovery still has some criticality for healthcare organizations due to practices still poorly performed, which led to prefer single-use products (Lepawsky *et al.*, 2017). This happens even if the price of cleaning or restoring processes tend to be lower than the price of single-use products (Cavagliato *et al.*, 2015).

Focusing on remanufacturing strategies, as the case organization A demonstrated, they tend to be usually implemented to extend products' life-cycle thanks to the abilities of suppliers in updating and putting them back into service when near to the end of their life or when obsolete (Thierry *et al.*, 1995; Ardente *et al.*, 2018). This process is usually intended to save money, because remanufactured device can be sold at a lower price than new ones (Hatcher *et al.*, 2013). However, not all the healthcare waste (e.g. infectious, pathological and radioactive streams of waste) can be managed in a circular way, due to their hazardousness for individuals' health, even though some technology-advanced practices are still under exploration.

6. Implications and final remarks

In recent years, people are even more demanding for high quality, safe and sustainable healthcare services; thus, to meet customers and citizens' demand, healthcare organizations are starting to renew their approach to several processes and activities (Leissner and Ryan-Fogarty, 2019). As research findings demonstrated, even though sustainability is a priority for healthcare organizations worldwide, it is pursued differently, assuming an orientation that ranges from the mere compliance to current laws and regulation to a proactive approach to each different sustainability issue.

Over the last years, the environmental dimension of sustainability has gained momentum among healthcare scholars and practitioners, being even more oriented to meet the zero-waste goal (The Ellen MacArthur Foundation, 2015). Therefore, healthcare organizations developed some initiatives of circular waste management both at national and European level. According to EU regulation for health waste management, circular strategies must be mainly oriented to waste reduction, supported by reuse, recycling and remanufacturing processes (Voudrias, 2018). However, due to healthcare industry criticality for environment as well as for public health and safety, a more conscious approach to medical waste is essential (Martin and Miller 2005). Therefore, the action of specific units might be beneficial for stimulating the emergence of a sustainability-oriented mindset among healthcare professionals, inspiring a behavioural change in terms of medical products and device procurement, medical protocols, consume habits and general facilities (WHO, 2014). To this end, more holistic approaches based on an open cooperation between all the actors of healthcare systems (from service providers to consumers) are needed to start a general rethinking of processes and practices for waste management. Therefore, some return or circular practices, built upon a shared responsibility between manufacturers and/or suppliers, health professionals and patients should be enacted, in order to promote a safer, measurable and accountable waste management also through a more extensive adoption of innovative tools and technologies (Domenech and Bahn-Walkowiak, 2019). In this sense, the implementation of experimental and/or innovative tools or processes coming from a transdisciplinary and holistic approach to healthcare sustainability could boost a somewhat "cultural revolution", able to trigger "significant progresses through a positive impact on knowledge and quality of life" (Vona, 2014,

p.47). However, to achieve this goal a close collaboration between disciplines, institutions, business organizations and even citizens is essential. This implies that institutions together with organizations and in particular with healthcare organizations should be engaged with the need for addressing the existing gaps in the current waste management system in terms of sustainability as well as for providing a longstanding sustainable vision able to drive their current and future investments (Gaur *et al.*, 2017). In other words, this renewed approach to resources (e.g. material, products or even waste) can led to the definition of new, innovative and often different technological and/or organizational solutions, which transdisciplinary make them "applicable in very different context and markets" (Vona, 2014, p.50).

Even though this study provides a starting point for better understanding the Italian healthcare organizations approach to CE strategies for waste management, there is much more to be learned as the field quickly progresses. Therefore, some are the limits of this study, such as the qualitative nature of the analysis as well as the narrow sample, which will be addressed in future research, for example implementing a longitudinal analysis on a wider sample to grasp, compare and describe the advancement of Italian healthcare organizations in terms of waste minimization.

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Critical management education, “the role of the reader” and “new media literacy”: teaching management studies as a social practice

FRANCESCO CRISCI*

Abstract

Objectives. *This work investigates an urgent challenge of Management Education (ME) and business schools: “(re)considering the dichotomy between (i) what students learn and academics theorize and (ii) what professionals believe should constitute "useful knowledge" and "relevant skills". The article aims to: (a) bring out the participatory dimension of learning processes by introducing a practice-based learning approach; (b) analyse this mechanism as a form of "intellectual activism" and "cultural emancipation and responsibility" (Critical Management Education).*

Methodology. *The case study, "an ethnography from the field" of a work practice, reconstructs a teaching experience in an undergraduate management course. The hypothesis is that the intertwining of theory and practice is a pedagogical problem related to the character of reflexivity in the ME: "management learning changes as it applies the principle of learning to itself".*

Findings. *By combining narrative theories (textual cooperation) and linguistics studies (new media literacy), the participatory dimension of learning arises from the "dialogue" between the text produced by the course films and the constructs to reread management theories in a knowledge-based key. Management tools and economic paradigms come out “thoughtfully”, problematized through the same dimensions that characterize “the methodological tools for theorizing on ME as a practice, materially and historically situated”.*

Research limits. *The dynamics between practical and theoretical knowledge emerges in the perspective of the CME, only one of the possible expressions of critical pedagogy.*

Originality of the study. *The topic is addressed in terms of organisational learning (practice-based approach) with an interdisciplinary approach.*

Key words: *critical management education; practice-based learning; textual cooperation; new media literacy; participatory culture*

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1. Introduction and Theoretical Context

This work investigates one of the most pressing challenges in the evolution of Management Education (ME: Burgoyne, Reynolds 1997; Reynolds, Vince 2007; McLean 2006; Alvesson 2013) and in the transformation of the (dominant) organisational model of business schools (Khurana 2007; Anteby 2013; Bok 2013; Kennedy *et al*. 2015): "(re)consider" the debate on the alleged dichotomy between (i) what students learn and academics theorize and (ii) what professionals believe should constitute "useful knowledge" and "relevant skills". Framing the phenomenon in a particular organizational learning perspective (Esterby-Smith *et al*. 1998, 2000; Esterby-Smith, Lyles 2011; Gherardi, Nicolini 2002; Gherardi 2009; Nicolini 2012; Gherardi 2017a, 2017b), the work hypothesis is that the intertwining of theoretical and practical knowledge is a pedagogical problem, which can be traced back to the character of reflexivity in the ME: "management learning changes as it applies the principle of learning to itself" Burgoyne, Reynolds 1997: p. 6). The article, a grounded-theory-based interpretive research (Alvesson, Sköldberg 2009), has a dual function: (a) to bring out the participatory mechanism of learning processes by introducing a practice-based learning approach (Reynolds, Vince 2007; Gherardi 2009, 2017b; Kennedy *et al*. 2015); (b) to analyse this mechanism as a tangible manifestation of "intellectual activism" and "cultural emancipation and responsibility" in a Critical Management Education perspective (CME: Cunliffe *et al*. 2002; Cunliffe 2008; Grey *et al*. 1996; Burgoyne, Reynolds 1997; Reynolds 1998; Adler *et al*. 2007; Perriton, Reynolds 2004, 2018; Boje, Al Avkoubi 2009; Contu 2009).

The term practice is so pervasive that it could fuel some ambiguity when one approaches a perspective labeled *practice-based learning* to the investigation of the relationship between theory and practice in management studies. On the contrary, the term practice naturally links the two terms of the issue: training for students' professional careers and the legitimacy of management knowledge in such professional contexts. First of all, in the evolution of ME, the ambiguity around the term practice is fueled by its static conception, when it is declined as a synonym of both "workplace" and "occupation or profession" (Gherardi, in Kennedy et al. 2015). Among other things, such a conception can produce a certain contradiction also in the perspective of critical pedagogy which risks accentuating, trivializing them, certain dualisms such as "worker vs. manager, reflection vs. experience, individual vs. organizational" (Fenwick 2005).

Moreover, this ambiguity has a foundation in the birth of the very model of business schools, starting from the United States (O'Connor, in Steyaert *et al*. 2016; Grey 2004; Anteby 2013; Bok 2013). These historical events date back to the period between the last quarter of the 19th and the first two decades of the 20th century (Bok 2013): the Wharton School, at the University of Pennsylvania, was founded in 1881; and between 1898 and 1913 at least twenty other universities created business schools, including the University of California, Berkeley, Northwestern, Michigan, Harvard, and Chicago. The modern history of business schools and the very evolution of the organizational model of the ME are focused on the issues of "professionalization" for management knowledge and the "institutionalization" of management as a scientific discipline, so that Khurana (2007) highlights how: "an institution created to legitimate management has become, through the abandonment of the professionalization project that provided its initial direction and impetus, a vehicle for the *de*legitimation of management" (p. 363).

The term practice in ME retains its pervasiveness and ambiguity even in the most recent debate: with the emergence of the journal *Academy of Management Learning and Education-AMLE* (in 2002); with the growing scientific interest in ME (for a review: Currie, Pandher 2013), the expansion of the topic in the UK, as well as outside the Anglo-Saxon context (e.g. in France: Harker et al. 2016; Hahn, Vignon 2019); with the publication of the "Carnegie Report" in 2011 (Steyaert et al. 2016); in the "guiding concepts" of the most current pedagogical approaches dealing with linking social sciences and ME ("experiential learning theory", "psychodynamic theory", "critical theory", "sociomaterial" and, coincidentally, "practice-based approaches": Reynolds, Vince 2007; Thomas, Seely Brown 2011; Kolb 2015; Steinberg, Down 2020). The interpretative perspective of this work is summarized by Silvia Gherardi (in Kennedy *et al*. 2015):

«What is silenced is the *situated nature of knowledge* and its organizational dimension. Can a profession be learned once and for all, and independently from the workplace where it will be practiced? (The professional knowledge) is anchored in the *sociomaterial relations of the workplace in a specific organization*. (…) A more dynamic and process-oriented concept of practice (i.e. as *practicing*) may be more productive. Moreover, when 'practice' is used as a synonymous for 'profession', the tacit assumption behind the use of the expression (…) is that *'the profession' remains the same in different contexts of practice and in different organizations.* This ambiguity become important when we must answer the question: what is learnt in the context of situated working practices, and how can teachers provide significant learning opportunities generating significant personal experiences? (…) In the passage *from knowledge to knowing*, we can focus on how becoming a professional (and teaching for it) is related to learning how to produce knowledge within a professional field and how a professional field validates its epistemic practices» (p. 175).

In line with Dewey's classic definition of learning ("as a deliberately conducted practice"), according to Kolb (1984/2015), "learning is the process whereby knowledge is created through the transformation of experience" (p. 49). In particular, the notion of "experiential learning" (Kolb 2015; Brandi, Elkjaer in Steyaert *et al*. 2016), developed in the context of philosophical pragmatism (à la Dewey) and in its variants (e.g. Lewin's "action research"; Piaget's constructivism; Vygotsky's "proximal zone of development"; or Freire's "experience in dialogue"), is the link between *practice-based learning* (as an operational approach) and CME (as a pedagogical perspective) (Reynolds, Vince 2004; Perriton, Reynolds 2004, 2018).

On the one hand, the tradition of pragmatism "brings important dimensions to practice theory when the issue is the complexities of contemporary management practice" (Gherardi, in Steyaert *et al*. 2016: p. 265), starting from the fact that "what makes the world of practice is not just sociocultural but also sociomaterial" (Fenwick in Steyaert *et al*. 2016; Fenwick *et al*. 2010). On the other hand, "critique in management education is sustained through a continuous desire to doubt or unsettle prevailing knowledge" (Gherardi, in Steyaert *et al*. 2016: p. 266), emphasizing one of the principles of critical pedagogy that an educator should never shirk from (Steinberg, Downcoming): presenting alternatives, bringing out and discussing different positions, proposing a multiplicity of points of reference, "without imposing any of them" (Freire, 1972; Freire, Macedo, 1995; Giroux, 2011; Cowden, Singh, 2013; Melling, Pilkington, 2018). So, in a *practice-based learning* approach, managerial knowledge is:

«an *epistemic object* (…), is 'always in the making' and the *texture of practices* in which it is produced is the symbolic space in which the negotiation of meanings and the influence of imagination of the future are exerted. (…) In the present, there is the need to make management teaching more meaningful for students to learn, and the quest for sense is grounded in an ethical stance that is not external to managerial practices, but is internal to the way in which sociomaterial collectives perform responsibility and care for the world. The challenge for a managerial experimentation with education is an open possibility to engage with ways to *de*-naturalize the world of management, as we know it, in order to keep it open practices to emerge and become institutionalized. In fact, when we consider educational practices in their emergence we become able to appreciate local experimentations and the autonomous bricolage in renewing academic work» (Gherardi, in Steyaert *et al*. 2016: p. 269-270).

The previous passage is related to the subject of this work: the relationship between *practice-based learning*, critical pedagogy and CME is declined through the specific "participatory" mechanism in learning processes. The next paragraph describes the structure of the educational project designed for an undergraduate course of management theories. From a methodological point of view, the case study is configured as "an ethnography (a tale) from the field" of a working practice (Czarniawska 1997; Gherardi 2012): in terms of course contents, management tools and economic paradigms emerge "thoughtfully", problematized through the same dimensions that characterize "the methodological tools for theorizing on ME as a practice, materially and historically situated" (Gherardi, in Steyaert *et al*. 2016).

In the results section, combining narrative theories (the concept of *textual cooperation*: Eco 1994/2005) and linguistics studies (the *new media literacies*-NMLs: Jenkins *et al.* 2009; Gee 2004; Gee, Hayes 2011), the participatory mechanism comes out through the narrative logic that characterizes the educational project (Czarniawska 1997). The text "produced by the classroom" (the classroom discussion on the video materials of the course) "dialogues" with the text "produced

for the classroom" (the textbooks, dealt with as weekly "assignments", in preparation for the lessons), taking the form of a "meta-text": the classroom tries to bring out the properties of the categories (the different "constructs") through which to "reread" management phenomena (theories and practices) in a knowledge-based perspective. The NMLs constitute the set of skills that students are called to exploit and develop in the interaction between the two "texts": to a first approximation, the concept of participatory culture, "shifts the focus of literacy from one of individual expression to community involvement" (Jenkins 2006; Jenkins *et al*. 2009). In the conclusions, the concept of participatory culture is traced back to the logic of "intellectual activism" and "cultural emancipation and responsibility" that characterize the CME as *critical pedagogy*.

2. An experience in lecturing practices

The experience described in this work concerns an undergraduate course of management theories in an Italian university (9 CFU/ECTS). The relationship between learning objectives (a re-reading of management theories and economic paradigms in a knowledge-based perspective) and teaching philosophy (a "critical pedagogy" approach, declined in terms of CME) develops in a narrative perspective (Czarniawska 1997): the course itself can be interpreted as the construction of a "narrative text" (Echo 2004, 2005) which is the result of different stories collected in video format; the stories used draw from very different "genres", such as journalistic inquiries, TED talk, documentaries and theatre performances (Strati 2007; Bell *et al*. 2019; Martin *et al*. 2018; Laurell *et al*. 2019; Starkey *et al.* 2019). The materials selected in this way form a "story", a screenplay whose coherence is given by a specific plot and by the succession of topics dealt with within the course calendar; on the other hand, the need for story and narrative discourse (Eco 2004, 2005) influenced the selection of materials and particular events covering a period between the mid-19th century and the present day (on the historical approach in the ME: Bridgman *et al.* 2016, 2019; Cummings, Bridgman 2011, 2016; Tennent *et al.* 2019). What emerges is the development of a narrative text that is prepared to be interpreted and then used as a "meta-text" (Eco 2004) to address the dimensions and logical categories that allow (literally) a "rereading" of organizational and management phenomena in a knowledge-based perspective.

This paragraph describes the structure of the course in terms of: (i) how the "narrative text" was conceived, (ii) how its plot takes shape with respect to the narrative discourse, (iii) and how the themes and dimensions of analysis hold the overall narrative together. Figure 1 (taken from the syllabus of the course), provides a representation of this structure. In the upper part, the figure shows the scheduling of the lessons (three interventions per week for thirteen weeks of work), the succession of the six assignments, the division into four themes (A. Design & Social Movements, B. Design & Utopia, C. Design & Ethics, D. Design & Innovation) and as many dimensions of analysis (agency, structure, sociocultural context, competitive context). In the lower part of the figure the 14 videos (plus 2 videos used as introduction and conclusion) are presented in succession, resuming the sequence of assignments and drawing a sort of plot of the course. The note to the figure lists the compulsory course readings and the label that will be used in this text to identify the materials as sources (i.e.: Rullani, 1989, 2004a, 2004b). The (Handbook) label identifies the manual that students use in addition to the mandatory readings (students select the "reading" manual from a list of management texts provided to them at the beginning of the course).

The themes (social movements, utopia, ethics, innovation,) are the common thread around the concept of design in order to decline an idea of "socialmateriality" of a practice-based project (e.g.: Strati 2007): on the one hand, «(socio-material approaches) promote methods by which to recognize and trace the multifarious struggles, negotiations and accomodations whose effects constitute the 'things' in education: students, teachers, learning activities and spaces, knowledge representations such as texts, pedagogy, curriculum content, and so forth» (Fenwick *et al*. 2011: p. 2); on the other hand, «sociomaterial is a broad term adopted here to represent a range of theoretical approaches: STS (science and technology studies), including actor-network theory and its many 'post'

development; 'new materialism' and posthuman analyses; geography and complexity theory-based resources» (Fenwick, in Steyaert *et al*. 2016: p. 251).

The objects ("artifacts") protagonists in the various stages of the story are: (1) a small prototyping card adopted by the world community of digital makers and (2) the first personal computer, made by one of the most innovative companies in the history of modern capitalism, to question the business models and theoretical oppositions around the dualism agency/structure; (3) the "construction" of a dam and the dramatic story of a man-made-disaster, an infrastructure to face the idea of social complexity; (4) an ancient clay cylinder, from one of the most prestigious museum collections in the world, to introduce the idea of "archaeology/biography of things"; (5) the events of a fabric and a garment (the blue jeans) that have accompanied the succession of industrial revolutions from a cultural point of view; (6) an iconic Italian city car and the stories of the great Italian coachbuilders (i.e., Pininfarina, Bertone, Michelotti, Zagato, Giugiaro) as examples of "hybrid assemblages of materials, ideas, symbols, desires, bodies, natural forces, etc.". (Fenwick 2005) in the evolution of industrial design. In the conclusion, the TED Talk by Neri Oxman, from MIT Media Lab, talks about "hybrid objects", "things" thought by crossing computational design, additive manufacturing, materials engineering and synthetic biology.

On the other hand, the four dimensions of analysis explicitly recall the contents of the course, with the dual purpose of providing a "guide" around the emergence of: (a) the assumptions and didactic choices; (b) the constructs and factors that characterize the re-reading of organizational and management phenomena in a knowledge-based key. In the first case, didactic choices are based on the idea that (Rullani 1989): management theory and practice cannot be separated; "theoretical representations" cannot be "deterministic" in nature but "experimentation" needs "a space of interpretative and innovative discretion"; the management theory that emerges is "historicized", i.e. "the abstract categories of theory can become more concrete if they are qualified and specified by the definition of the historical context in which the individual management problems are placed" (p. 14). Secondly, the same structure of the course brings into play the dimensions of analysis related to its contents: the morphogenesis of business models, through the subject-system-context scheme (Rullani, 1989); the dimensions that characterize knowledge as a productive factor (personal, social and proprietary dimension) and the functioning of the knowledge factory (the knowledge economy is a production chain economy, based on a multipliable and not scarce resource, whose propagation requires creative processes (Rullani 2004b)).

Introduction (Week 1). In which students become familiar with the contents of the course (the introduction to management theories and tools), with its logic (the CME), with the tools and methods used (the didactics), with the learning and evaluation methods. And in which, through the excerpt of the play "ITIS Galileo" by Marco Paolini (video #01, about 13') and with the parable of "Old-New-Education" (Rullani, 2004b), students become familiar with the idea that the ME issues in which they will be directly involved (critical pedagogy) are directly connected with the logic of the knowledge economy they are about to face (also high education systems are subject to theoretical experimentation and operational evolution of "unconventional" organizational models).

First episode (Assignment #01, Week 2 and 3). In which students address the topic of the "digital world" through two examples of investigative journalism (video #02 and #03 on digital manufacturing and Industry 4.0). In which, through the TED talk format (video #04 and #05), students discover the concept of community and the phenomenon of social movements: through the point of view of digital makers, starting from the entrepreneurial story of *Arduino*, a small digital prototyping board; reflecting on the functioning of social media algorithms and social networking. In which students become aware of what it means for social sciences to take an authentically inter/trans-disciplinary perspective to investigate phenomena such as new media. And in which, starting from phenomena that are only seemingly "new", the class begins to become familiar with the particular value drivers (effectiveness, multiplication and appropriation) that characterize knowledge as a productive factor.

Second episode (Assignment #02, week 4 and 5). In which students face the evolution of a business model (its *morphogenesis*: Rullani, 1989) through the story of Adriano Olivetti (video #06,

#07 and #08). In which students immerse themselves in a concept of ME as a learning process when they face Adriano's training path. And in which, from the dialectics used by Adriano to deal with the relationship between "theoretical knowledge" and "practical knowledge", an idea of experiential learning takes shape developing the peculiar business model of the "brick factory". In which students, when faced with the variety and variability of behaviour and content of Olivetti's managerial practices, begin to doubt the existence of a "one best way" and the myth of the standard company. In which, around the birth of "Programma 101", strong doubts are raised about how traditional theory deals, for example, with the themes of entrepreneurship, leadership, strategic analysis, innovation dynamics, organizational change processes (Handbook). In which, through documentaries, the importance of the historical perspective takes shape in the classroom. And in which students begin to become familiar with the idea that theories and practices of management and organizational studies are not "ready-to-use tools", and that they are phenomena that need to be "historicized/contextualized" (Rullani, 1989).

Third episode (Assignment #03, week 6 and 7). In which students address the issue of the competitive environment and the socio-cultural environment in a dialectical way with respect to the alleged dualism between agency and structure (value chain, business idea and strategic dimension: (Rullani, 1989)). In which the theme of territory (video #09) acts as a filter with respect to the umpteenth theoretical dualism between the concepts of society and community. In which students get used to an elusive concept, combined with the emergence of innovative business models and transitional economic paradigms. In which students, comparing stories, try to work out the meaning of the expression: "production of knowledge by means of knowledge" (Rullani, 2004b) and socialize with two relatively new concepts (coding and standards; sharing and experiences). In which the knowledge factory expresses its characteristics, bringing out the "machinery" through which knowledge is "transformed". In which students learn that "new" knowledge is combined in ways that are sometimes unexpected (or simply neglected by traditional theories (Handbook)) when cognitive machinery operates on the structure, the form, the flows and the relationships of "original" knowledge (Rullani, 2004a).

Fourth episode (Assignment #04, week 8 and 9). In which the classroom, facing "the story of Vajont" (video #10), the theatrical performance by Marco Paolini, openly confronts the theme of narration. In which the students, having examined the "machinery" of the knowledge factory, find themselves in the need to "read" the organizational and management phenomena "in action" (as processes). In which, in a clear way and confronted with the expression man-made disaster, students face the theme of the ethical dimension of management and organization studies (and the relationship between ethics and morality):

> Scene (1). November, eighth week of class. The classroom is called to reason on the concept of man-made-disaster proposed by Barry A. Turner: "The analysis (of) the "social distribution of knowledge" on potential dangers (of a disaster) is not intended to be limited to identifying the mechanisms of forecasting (...). We are interested in a much less dramatic but more pervasive form of knowledge. Disasters happen because we do not know enough about the forces we are trying to dominate. The result is that energy is released at the wrong time, in the wrong place or with the wrong intensity. It becomes so essential to consider (also) the ways in which we acquire, distribute, and control information about the exploitation (of energy). Evidently, this is not only about the technical information available to scientists and engineers: (many disasters) are caused solely by administrative and social factors, or by a combination of technical and administrative factors. Those who hold power positions, those who direct the management and decision-making processes and those who control the administrative systems will realize that their actions inadvertently contribute to the causes of a disaster" (from the syllabus of the course).

Fifth episode (Assignment #05, week 10 and 11). In which students are called to combine the three stories (the "digital world", the "Olivetti's world" and the "story of Vajont"). In which the classroom becomes aware of the complexity of epistemological positions in management and organizational studies. And in which students understand that the structure of knowledge is a powerful "machinery" that (re)brings into play very different logical structures (Rullani, 2004a): causal data and laws, information and algorithms, representations and models, functions and rules, meanings and languages, meaning and practices. In which students deal with the variety of forms of

knowledge and its material bases (Rullani, 2004a): culture and aesthetics, body, personal skills, artifacts and symbols, analog and digital technologies, simulations, rules. In which students, facing the logistic dimension of the knowledge factory, realize that the distributive space of knowledge is (still) multilevel (Rullani, 2004a): interpersonal flows, local flows, metropolitan flows and global flows. And in which the classroom understands that market and hierarchy are not the only (traditional: (Handbook)) ways to manage interdependencies (relationships) in the cognitive chain (Rullani, 2004a): self-production, industrial secret, market, hierarchy, network of companies, territory, community, public sphere, gift.

Sixth episode (Assignment #06, week 12 and 13). In which, from the story about the "Cyrus cylinder" (video #11), the classroom becomes familiar with the concept of "archaeolgy of things". In which the students face, by analogy, the history of industrial design as "history of things" (video #12, #13, #14 and #15). In which students definitely understand how "objects" can become 2things" when they become part of a "cultural project". In which students understand that a knowledge economy has always existed in the history of economic paradigms (Rullani, 2004b). And in which the classroom understands that by combining the characteristics of "knowledge as a productive factor" and the possible configurations of the "machinery" of the knowledge factory, plausible "theoretical frames" are produced. And in which, finally, the classroom realizes how it is possible to "redesign" the nature of historical paradigms in a knowledge-based perspective: in every historical moment, business models and organizational forms present themselves as "hybrids" between (Rullani, 2004a) traditional production, liberal capitalism, Fordism, widespread enterprise and communicative capitalism. In which, ultimately, students become aware of CME as a pedagogical perspective: every organizational and management phenomenon and every plausible "theoretical framework" can contribute to managerial knowledge (theoretical and practical).

3. Methodology

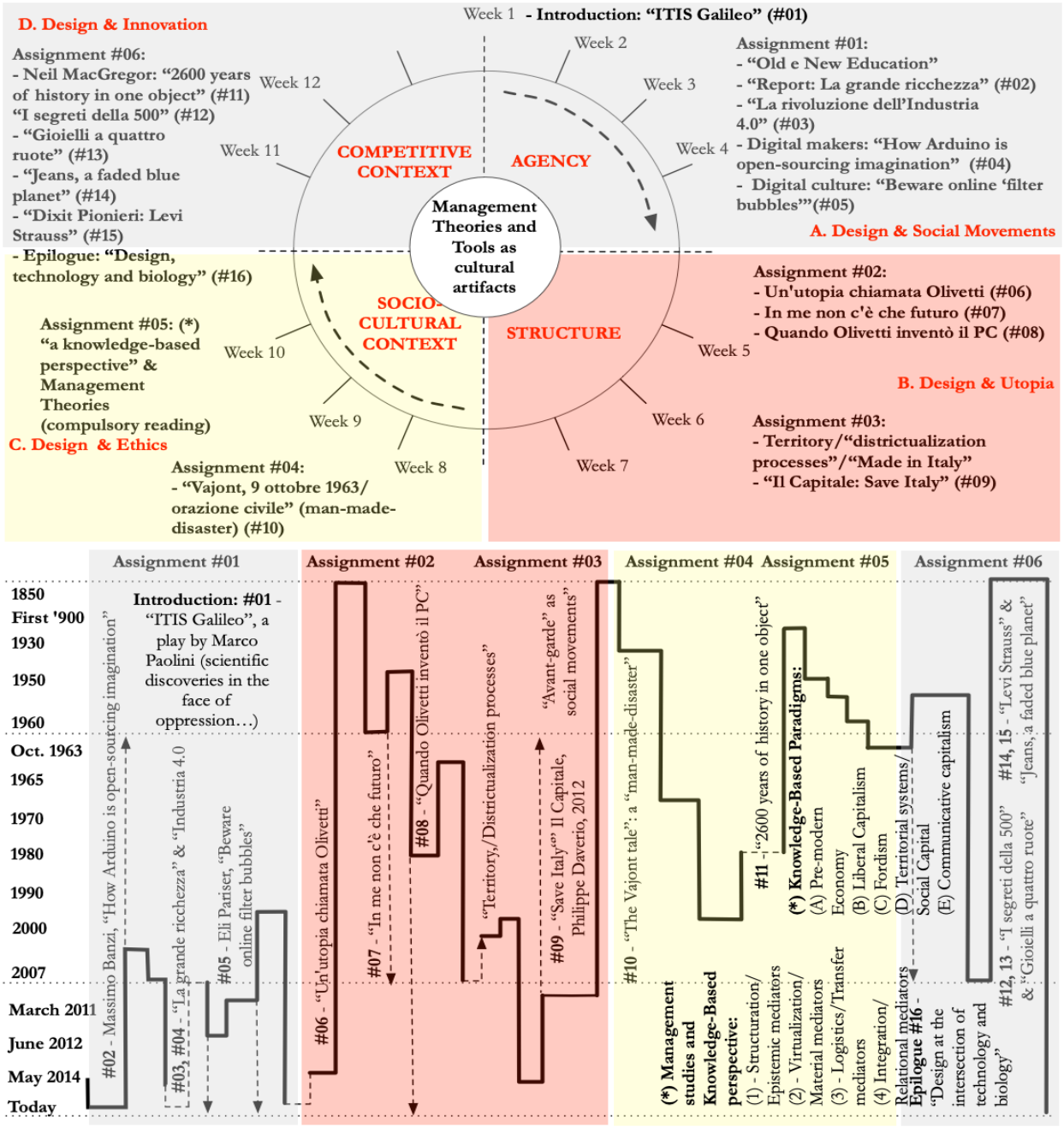
In order to "problematize" (Alvesson, Sandler 2011) the role of the pedagogical dimension in ME, the work takes on the form of a case study based on an "ethnography from the field" (on *autoethnography* in ME: O'Shea 2019; Tienari 2019) of a teaching experience as a working practice:

«(a) working practice is a collective activity undertaken in a particular place and at a particular time. It therefore assumes all the variability connected with the context and encloses it and makes it possible. It thus expresses a contextual rationality: that is, a form of action and practical reasoning applied to the work at hand, interactions with others, the setting and all the resources present in it (Gherardi 2012, p. 202).

Figure 1 provides a representation of the structure of the course: the research design, coherently with the perspective of the *grounded theory* (Glaser, Strauss 1967; Goulding 2002), reconstructs the logics that characterized its design. In fact, the teaching experience taken into consideration allows to investigate a particular empirical aspect which, in the language of the *grounded theory*, defines a *substantive theory*: the emergence of the participatory dimension in learning processes and the importance of the relationship between didactics and pedagogy in an education project. Considering learning processes as "social practices" emphasizes a fundamental structure, the "reflexivity (Alvesson, Sköldberg 2009; in the ME: Hibbert 2012; Hardy, Tolhurst 2014; Dyer, Hurd 2016; Vince *et al*. 2018):

«Embedded in the management learning idea is the proposition that theory and practice are deeply intertwined - all practice 'implements' some theory or constructs practice out of it, and all theory actually or potentially shapes or creates reality through its practice. The continuous mutual influence of theory and practice is one description of the learning process itself, which surfaces another primary characteristic of management learning: its *reflexivity*. *Management learning changes as it applies the principle of learning to itself*» (Burgoyne e Reynolds 1997, p. 6).

Fig. 1: The structure and the plot of the course



(*) Catalogue materials:

RULLANI 2004a - Rullani E. (2004), La fabbrica dell'immateriale [The Knowledge Factory], Carocci, Roma

RULLANI 2004b - Rullani E. (2004), L'economia della conoscenza [The Knowledge Economy], Carocci, Roma

RULLANI 1989 - Rullani E. (1989), "La teoria dell'impresa: soggetti, sistemi, evoluzione. In Rispoli M. (ed.), *L'impresa industriale. Economia, tecnologia e management*, Il Mulino, Bologna (pp. 12-110).

HANDBOOK - A handbook of management studies freely selected by students (in Italian).

Source: from the syllabus of the course

This position is consistent with Margaret Archer's (1979/2014) method suggestion who, by introducing the notion of *morphogenesis* to investigate the change in education systems, reiterates this statement: «This is a statement about the need to acknowledge, to tackle and to combine *agency* and *structure* rather than conflating them» (2014, p. ix).

The *participatory culture*, borrowed from linguistics studies, emerges as *conceptual category*, a "bridge concept" in the theory building logic which characterizes the *grounded theory*. The *substantive theory* on the participatory dimension of learning processes (compared to a more general "education theory") is based on the relationship between didactic and pedagogical choices: the first ones are attributable to the *practice-based learning* approach, whereby the principle of interpretative cooperation in narrative (Eco 2004, 2005) is approached to the *New Literacies Studies* (Gee 2004); the latter are associated with "intellectual activism" and "cultural emancipation and responsibility" and expressed in terms of CME.

4. Teaching Management Studies as a Social Practice

Scene (2). October, fifth week of class. The discussion in the classroom continues from the introduction of one of the videos related to assignment #02: "There was a moment, in the mid-1960s, when an Italian company had the opportunity to lead the world computer revolution, ten years before the "Boys of Silicon Valley", by Steve Jobs and Bill Gates: a technological revolution that had its roots in a cultural and social revolution, in an industrial model conceived beyond socialism and capitalism, and that its promoter, Adriano Olivetti, had begun to experiment since the 1930s, in Ivrea, in the province of Turin. Olivetti had become the largest Italian company, with the greatest international commercial success, capable of covering one third of the world market in its sector: an atypical multinational with strong territorial roots, characterized by futuristic social policies, permanent training and cultural activities of international scope that were the secret of its commercial success and not the philanthropic or patronizing consequence of its profits. What was this entrepreneurial model, which also promoted an alternative model of society and which led to the threshold of the greatest industrial opportunity that Italy has ever had? (…)» (source: "In me non c'è che futuro", see: figure 1, video #07).

The scene (2) is part of the story of the extraordinary entrepreneurial history of Olivetti of Camillo and Adriano. It is not (only) a case of *corporate social responsibility*. And it is not (only) a story of *family business*. The two parts of the film ("The origins of a model" and "The concrete community model") allow to historically reconstruct the "morphogenesis" of an absolutely anomalous business model (Rullani, 1989). "Problematizing" the relationship between *agency* and *structure*, by introducing the subject/system dialectic and the relationship with the (competitive and socio-cultural) context, students see a different system of capitalism emerge (within capitalism itself); and the same management tools, introduced a few days before by the course manual (Handbook), emerge as "cultural artifacts": not as "ready-to-use objects", but as integral and "coherent" parts of the story that produced them (ad e.g., on the theme of leadership: Shotter, Tsoukas 2014; Wolfram Cox, Hassard 2018; Willis 2019).

During the week students are encouraged to "compare" some of the analysis dimensions of the two *assignments* made. The combination between the "unconventional" entrepreneurship of *digital makers* and the "emerging properties" of an apparently more traditional business model revolves around two "artifacts": (i) the "Programme 101 (P101)", the first personal computer in the world created in 1964 by the team of Pier Giorgio Perotto; (ii) and "Arduino", a digital prototyping board born precisely in Ivrea forty years later, the most widespread micro-controller adopted by the world community of *digital makers*. In video #08 two protagonists of the original team of designers are intent on connecting a P101 to the Internet using an "Arduino" board, which in turn is considered a digital artifact (a *new media*), an entrepreneurial project and a learning platform (an authentic *sharing economy* model). The scheme of the *morphogenesis* of the entrepreneurial models (subject-system-environment: (Rullani, 1989)), emerges from the ability of the students to identify their structures through the aspects that the two experiences have in common (in an unconventional way, for example, with respect to the most common themes of the "entrepreneurial team formation" or "corporate entrepreneurship"). For example, the two entrepreneurial models have the peculiar collective dimension of the *organisational learning processes* in common: they are two examples of "educational platforms", an "epistemic community" dedicated to learning the entrepreneurship (Thomas, Seely Brown 2011). By analogy, the students realise that the (learning) experience they are having and some dimensions of the phenomenon that they have recognised "in action", in the

two entrepreneurial experiences overlap (reflexivity and *experiential learning*: Kolb 2015; Engeström 2015, 2016).

A *practice-based* theoretical perspective (Nicolini 2012) that frames the relationship between theoretical knowledge and practical knowledge in management studies as a pedagogical problem, attributes enormous value to narrative knowledge precisely for its characteristic of stimulating "reflexive thought" (Czarniawska 1997; Gherardi 2009). From the didactic point of view, the "text produced by the class", through discussion (a form of "dialogic learning"), constitutes in all respects a *narrative text* subjected to the principle that Umberto Eco (1979/2004; 1994/2005) defines as *interpretative cooperation*:

«The very existence of texts can not only be freely interpreted but also cooperativerly generated by the addresse (the original text constituting a flexible *type* of which may *tokens* can be legitimately realized) posits the problem of a rather peculiar strategy of communication based upon a flexible system of signification» (Eco 1979, p. 3).

Even the story that follows a text, in essence, "is a product whose interpretative fate must be part of its generative mechanism" (Eco 2004, p. 50). Eco, using the metaphor of a famous Borges' novel, suggests that:

«if "a wood is a garden of forking paths», in a narrative text «the reader is forced to make choices all the time. Indeed, this obligation to choose is found even at the level of the individual sentence (…). Whenever the speaker is about to end a sentence, we as readers or listeners make a bet (albeit unconsciously): we predict his or her choice, or anxiously wonder what choice will be made» (1994, p. 6).

This metaphor gave shape to the six Norton Lectures that Eco held at Harvard (1992-1993): the titles of those lessons are reproduced below (as a tribute to the author) to decline the principle of interpretative cooperation in the case of the narrative text "generated" in the classroom by the teacher and the students from the selected videos.

Entering the woods. When the reader enters narrative woods he is supposed to make choices as part of the "narrative triad". The *Empirical Reader* is anyone who reads a text, without particular rules of conduct and without any particular precautions: the history of Olivetti is a case of *family business*, Olivetti's social services are simply a *corporate welfare* , Olivetti's *business model* is that of a multinational company at most "with a human side", a *successful case* which however does not produce emulation and which inevitably disappears when the *entrepreneur-hero* disappears, therefore cannot be included among the *best practices.* The *Model Reader*, on the other hand, "lets himself be created by the text itself" by becoming aware of its "rules" and willingly accepting them. The rules of the "narrative game" are dictated by the Author: not by the *Empirical Author*, by whom physically making the documentary or the journalistic inquiry; or by the *Narrator*, by whom speaking firsthand within the stories without, however, necessarily having to coincide with the Empirical author; but by the *Model Author* (the teacher) who, sometimes addressing anonymously to the *Model Reader* (the student), even surreptitiously, suggests assignments and establishes strategies for interpreting the text.

The woods of Loisy. Therefore, according to Umberto Eco, there are at least two ways of walking in narrative woods (2005): the empirical student-Reader moves quickly as in a maze and tries to get out of it as soon as possible, trying to understand the end of the story in an instrumental way; on the other hand, the model student-Reader moves on so as to understand how the woods are made, to understand why "some roads are accessible and others are not", to "recognize the Model Author", understand his will and make it his own. Eco recalls his literary passion with the *Loisy woods*, but the story by Gérard de Nerval has characteristics that are common to the narrative texts:

«The apparent uncertainty concerning times and places which constitutes the fascination of *Sylvie* (and bridge about crisis in the first-level reader) is founded on a narrative strategy and grammatical tactics as perfect as clockwork - which, however, are visible only to the second-level reader. How does a person (a student) become a second-level model reader? We must reconstruct the sequence of events that the narrator virtually lost, in order to understand not so much how the narrator *(the classroom)* lost it but how Nerval *(the teacher)* leads the reader to lose it» (1994, p. 32).

Modern narrativity theories introduce the notion of *narrative structures* (Eco 1979): the themes of "fabula and plot" bring about the *content* of the text, while the "speech" refers to its *expression*. These dimensions are linked to the identification of the *topic*, the theme of the story, which means making hypotheses about the regularities that the text seemingly shows in terms of "textual behaviour", that is, through "the intentions virtually contained in the statement" (Eco 2005, p. 62). Through the narrative speech (the "themes" and the "dimensions of analysis") the teacher (Model Author) "manifests himself" in order to "organise the fabula": the representation in the lower part of figure 1 provides an example of how these dimensions can combine within the educational project.

Lingering in the woods. Eco emphasizes that the Author and Model Reader are therefore "textual strategies" (1975, p. 10): and thus the textual cooperation takes place between two textual strategies, not between two "real" subjects. In this passage Eco introduces the notion of *inferential walks*: «If a text is a lazy machine that appeals to the reader to do some of its work, why might a text linger, slow down, take its time?» (1994, p. 49). In analogy with teaching, the question is not only linked to the time needed to deal with the themes and to bring out the theoretical constructs. In Eco's metaphor:

«(…) in a wood, you go for a walk. If you're not forced to leave it (…), it is lovely to linger. Lingering doesn't mean wasting time: frequently one stops to ponder before making a decision. But since one can wander in a wood without going anywhere in particular, and since at times it's fun to get lost just for the hell of it, I shall be dealing with those walks that the author's strategy induces the reader to take» (1994, p. 50).

Inferential walks allow the reader to "exit from the text" and are necessary for the interpretation process to frame it with one's own experiences. This aspect, which is connectable to the teaching of *experiential learning*, is associated with the forms of "activism" and the sense of "emancipation" which should guide the relationship between teacher and student: through storytelling, narration and history, the class grasps how a theory arises from context in which it is practiced (and in which one's experience is "enacted", becoming "significant").

Possible woods. The narrative text is based on a *fictional pact*: «the reader has to know that what is being narrated is an imaginary story, but he must not therefore believe that the writer is telling lies» (Eco 1979, p. 75). Walking in narrative woods involves exploring the complex relationships between fictional worlds and the real world. On the one hand, "narrative worlds are parasites of real worlds" since what the former do not expressly mention or describe must be understood as if they followed the laws of the latter (Eco 2005). On the other hand, *inferential walks* and *possible worlds* do not flee away from the concept of "truth" which, in a narrative world, is reasonably attributable to what «is true within the framework of the *possible world* of a given story» (1979, p. 88). In other words, «the way we accept the representation of the actual worlds scarcely differs from the way we accept the representation of fictional worlds» (p. 90). The "text produced by the class", in essence: (i) both "negotiates" facts and events between the Author-Teacher and the Reader-Student; (ii) and provides the student with information on the real world that the teacher believes is essential for the class so as to contribute to the understanding of the story.

The strange case of the Rue Servandoni. The previous theme is connected to the episode that Eco uses to address this question: «what happens when in a fictional text the author posits, as an element of the actual world (which is the background of the fictional one), something that does not obtain in the actual world?» (1996: p. 100; Eco 2004). In Rue Servadoni, in A. Dumas' *The Three Musketeers*, an ontologically interesting situation takes place which makes the position of a character in the novel potentially inexplicable. That road could not have existed in 1625: Servadoni was an eighteenth-century architect involved a century later in designing the *façade* of the nearby church of Saint-Sulpice. But the author's material error produces an interesting phenomenon in his relationship with an overzealous reader. That road coincided (in 1600 reality) with another street mentioned in the novel, thus altering in substance the specific episode (of the *fictional* reality) in which D'Artagnan has an unexpected meeting, in an area of Paris involving (unintentionally) the alleged private accommodation of the three musketeers. This refined speculation poses a precise

question: if one can safely survive after Dumas' material error (assuming it is an error, *sic!*), what is the "knowledge of the real world" that the Model Author (the teacher) assumes a Model Reader (the student) must have? The answer Eco suggests is that the text is not supposed to make it explicit but understanding it is part of the problem of discovering the strategies of the Model Author: this dimension is also attributable to the "dialogue" between teacher and student based on "activism" and "emancipation" (and fueled by a good dose of "intellectual curiosity").

Fictional protocols. «If fictional worlds are so comfortable, why not try to read the actual world as if it were a work of fiction? Or, if fictional worlds are so small and deceptively comfortable, why not try to devise fictional worlds that are as complex, contradictory, and provocative as the actual one?» (Eco 1994, p. 117). The answer to the second question is quite immediate when the didactic choices are connected to the critical pedagogy: the "text produced by the class", being it a "meta-text", should be at least as complex (and provocative) as the text to which it continually alludes, that is the "text produced for the class" (Rullani, 2004a). Rereading the management theories and the reclassification of economic paradigms in a *knowledge-based* way aims *also* to address controversial aspects, at least unexpected or, in part, not fully considered in traditional studies on managerial knowledge (theoretical and practical). Umberto Eco answers to the first question in this way: «it is easy to understand why fiction fascinates us so. It offers us the opportunity to employ limitlessly our faculties for perceiving the world and reconstructing the past» (p. 131).

5. Discussion and Conclusion: Culture Participation and CME

The coherence of the training project passes through the connection between didactics (interpretative cooperation and the *practice-based learning*) and pedagogy (the CME). The conceptual category of the *participatory culture* renders this connection. In the interpretative cooperation *à la* Eco the existence of the text postulates the cooperation of the Reader (of the student) as the interpretative initiative is an integral part of the textual strategy of the Author (of the teacher): if this condition is valid for the text "produced by the class" (Author and Reader share the story plan); this same condition becomes decisive for "interpreting" the text "produced for the class", putting into play the *students' media skills* dealing with video materials, the stories they tell, the story "told in the classroom". Teacher and students produce their "meta-text" together, share the structures of the narrative text which, in its inside, inevitably alludes to that "text" through which the fact of entering into a relationship with the categories and properties that characterize the *knowledge-based* "rereading" of the management theories becomes possible.

New Media Literacies (NMLs) and participatory culture. James P. Gee (2004) suggests that «people do not just read and write texts; *they do things with them*, things that often involve more than just reading and writing» (p. 36). In linguistics studies the *New Literacies Studies-NLS*, compared to traditional psychological approaches, investigate the phenomenon of language skills as "a social and cultural achievement centered in social and cultural practices" (Gee, Hayes 2011). By introducing digital technologies, this perspective suggests an interesting connection between *media studies* and *pedagogical research*:

«the *NLS* views different digital tools as technology for giving and getting meaning, just like language (…). The NLS also argues that the meanings to which these technologies give rise are determined by the social, cultural, historical, and institutional practices of different groups of people. And these practices almost always involve more than just using a digital tool - they involve, as well, ways of acting, interacting, valuing, believing, and knowing, as well as using other sorts of tools and technologies, including very often oral and written language» (p. 44).

Among the various studies of *media education*, Table 1 reproduces the specific research conducted by Henry Jenkins and his collaborators for the *MacArthur Foundation* (Jenkins *et al.* 2009). Jenkins defines the *participatory culture* framework in educational contexts on the basis of the practices of "interpretative cooperation" which are typical of the phenomenon of *convergence*

culture (2006), "where *old and new media* collide, where grassroots and corporate media interset, where the power of media producer and the power of the media consumer interact in unpredictable ways" (p. 260). Likewise, "*old* and *new* education collide" coexisting in educational (more or less conventional) institutions. *NMLs* (tab. 1) are transversal skills: students can handle them even outside the classroom, sometimes unconsciously, and make them available to the group as an individual experience, however contributing to interpretative cooperation. Many young people are already part of the *participatory culture* defined by Jenkins (2009) in terms of *affiliations*, *expressions*, *collaborative problem solving* and *circulation*: but these skills can be further developed as a result of the educational practices that involve the students themselves.

Tab. 1: New media literacies, participatory culture e sfide pedagogiche

New Media Literacies	**Definitions:**	**Forms of Participatory Culture:**	**Policy and pedagogical interventions:**
Play	the capacity to experiment with one's surroundings as a form of problem-solving	***Affiliations***: memberships, formal and informal, in online communities centered aroud various forms of meda ***Espressions***: producing new creative forms, such as digital sampling, skinning and modding, fan videomaking, fan fiction writing, zines, mash-ups ***Collaborative problem-solving***: working together in teams, formal and informal, to complete tasks and develop new knowledge **Circulations**: shaping the flow of media (such podcasting, blogging)	***A. The Participation Gap***: the unequal access to the opportunities, experiences, skills, and knowledge that will prepare youth for full participation in the world of tomorrow ***B. The Transparency Problem***: The challenges young people face in learning to see clearly the ways that media shape perceptions of the world ***C. The Ethics Challenge***: The breakdown of traditional forms of professional training and socialization that might prepare young people for their increasingly roles as media makers and community participants
Simulation	the ability to interpret and construct dynamic models of real world processes		
Performance	the ability to adopt alternative identities for the purpose of improvisation and discovery		
Appropriation	the ability to meaningfully sample and remix media content		
Multi-tasking	the ability to scan one's environment and shift focus onto salient details on an ad hoc basis		
Distributed cognition	the ability to interact meaningfully with tools that expand our mental capacities		
Collective intelligence	the ability to pool knowledge and compare notes with others towards a common goal		
Judgement	the ability to evaluate the reliability and credibility of different information sources		
Transmedia navigation	the ability to deal with the flow of stories and information across multiple modalities		
Networking	the ability to search for, synthesize, and disseminate information		
Negotiation	the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative sets of norms		

Source: Jenkins et al. 2009

In the project described in this work, the *dialogue* between text produced "by the class" and "for the class" allows students to experience what surrounds them in the form of *dynamic problem solving*. Educational processes do not take place only within the classroom and in the space/time "institutionally" dedicated to teaching; and the educational dimension of the game goes beyond adopting a tool to motivate children to master a certain content. *Play* and *performance*, can, in this case, literally concern the "acting" and "staging", through narration, the historical events (Steinberg, Down 2020): both to discover directly applications of old concepts to "new contexts of use"; and to freely explore new concepts by interpreting and building real processes in the logic of learning by *trial and error*.

Furthermore, the evolution of the stories and the partial space-time overlap of the events they tell, allow to "mix different media contents" (*simulation* and *appropriation*), attributing meaning to new paths connected with the topics covered (e.g.: the *social movements*, the *community* or the *feminist thought*). In a first approximation, using different stories and recognizing their contact

points (*transmedia navigation*), it becomes possible for students to produce articulated comments, deal with similar problems in different historical periods, refine the *multitasking* ability to "scan real environments" paying attention to salient details, producing information flows around significant changes thanks to the ability to support multiple stimuli.

The ability to integrate the proposed stories (and to consider experiences in a "cumulative" way) poses the need to "know how to think" *with* and *through* the available narrative tools. An artifact connects to institutions and people, to specific space-time relationships, for example by problematizing the relationship between technology and society, marking the evolution of different epistemological and theoretical perspectives (*distributed cognition* and *collective intelligence*).

The "dialogical teaching" is not a simple conversation and constitutes a challenge for students and teachers: the latter cannot remain "neutral" and is not a simple "facilitator" (Freire, Macedo 1995; Giroux 2011; Melling, Pilkington 2018). By contrast, the "student's voice" in the classroom context should not be linked to "formal" adherence to an apparent democracy: it is the whole class that should remain "epistemologically curious" (Freire 1972). This involves sharing knowledge and comparing experiences and opinions, fuelling the critical sense and ability to evaluate the reliability of information and emerging points of view (*judgement*). Finally, the interlaced materials allows to "discipline" and "control" the sources that fuel the discussion, highlighting the collective dimension of *problem solving* (*networking*) and to critically evaluate the arguments produced, confronting communities with different systems of values and multiple analysis perspectives, up to being able to recognize if a topic is actually significant (*negotiation*).

CME between emancipation and activism. The three pedagogical challenges mentioned in table 1 and the participatory culture suggest the connection between didactics (*practice-based learning*) and pedagogy (CME). With the warning that «the association with critique and critical thinking is not the monopoly of something called 'CME'», Alessia Contu points out that: «the family of CME is distinctive in subjecting management practice and management knowledge to critical scrutiny *and* in attempting to develop and engender a critical pedagogy in the curriculum, its design, educative process, and method» (2009, p. 537). Burgoyne and Reynolds (1997), identify the common points of a critical reflection in the ME (p. 107): "it is concerned with questioning assumptions"; "its focus is social rather than individual"; "it pays particular attention to the analysis of power relations"; "it is concerned with emancipation" (Alvesson, Willmott 1992; Grey *et al*. 1996; Adler *et al*. 2007; Boje, Al Avkoubi 2009; Perriton, Reynolds 2004, 2018). In critical pedagogy, the reference to the "socialization" of the student and the concept of emancipation is inevitable (Harley 2007; Knights 2008; Contu 2009; Reynolds, Vince 2019). The Brazilian pedagogist Paulo Freire points out that: «(…) the oppressed need to develop the necessary critical tools that will enable them to read their world so they can apprehend the globality of their reality and choose what world they want for themselves» (Freire, Macedo 1995: p. 389). In the current debate on ME, it seems easy to identify who the "new oppressed" are (e.g., on the business school: Gioia, Corley 2002; Grey 2004; Harley 2007; Knights 2008; Berti *et al*. 2018; Butler *et al*. 2017; Contu 2018, 2019).

Conclusions and implications. This work suggests that the tension between theoretical knowledge and practical knowledge in management studies may be favoured by inattention to the pedagogical dimension in ME. By introducing a *practice-based learning* approach, the participatory mechanism of learning processes not only describes didactic choices, but also represents a concrete manifestation of (or a sign of absence of attention for) "intellectual activism" and "cultural emancipation and responsibility" in pedagogical terms (in this case declined in a CME perspective). In ME, the short circuit between theory and practice seems to be triggered precisely in university and business school classrooms, that is, in places where such knowledge should be "reflexively" produced and validated through learning processes. In other words, a debate is fundamental in order to deal with the relationship between *theoretical knowledge* and *practical knowledge* in management studies, which debate, for example, does not dwell on the sterile question of how to make the *curricula* of business schools more permeable to "experience, action, and multidisciplinarity" (Harney 2007; Contu 2009); so much so that teachers should ask themselves

«what kinds of social engagement and material setting provide the proper context for knowing, working, learning and innovating» (Gherardi, in Kennedy *et al*. 2015, pp. 177). Roy Bhaskar suggests requirements and programmes to be associated with an educational theory (*tout court*):

> "intentionality, agential capacity, structures of agency, materialism, reflexivity, the possibility of describing and changing the world, progression, education and the lifecourse, essentialism and human nature, pedagogy, knowledge and knowledge-development, thruth criteria, the formation of the self, curricular aims and objectives, being with other people, learning, the self in the learning process, the relationship between the self (or agency) and the environment, stratification, emergence, representation and its different modes, structures and mechanisms, the dialectic, and criticality" (Scott, Bhaskar 2015, p. 9).

CME activism consists precisely in subverting those positions that decline these aspects in a superficial or ephemeral way, and attributes an "ideological role" to education and to the process of emancipation of students: "what is undeniable is that *educating* is minimally a complex practice and in CME education there are a number of practical suggestions on how to develop such practice" (Contu 2009, p. 543). *De te fabula narratur*.

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Determinants of Commitment and Opportunism of institutional investors' behavior: an empirical investigation on robo-voting phenomena

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Abstract

Objectives. *Recent research identifies a troubling number of institutional investors that automatically follow the advice of their proxy advisors so that they can prove to have complied with their fiduciary duties, in a practice known as robo-voting. Therefore, our central research questions are: How institutional investor's characteristics could affect robo-voting phenomena? and How robo-voting phenomena could favor the creation of new opportunistic behavior, chancing the scope of shareholder engagement?*

Methodology. *Our paper directly addresses these questions by using ANCOVA (Analysis of Covariance) to test the effect of characteristics of institutional investors on the dependent variable under study. We use a manually constructed sample of coverage information at 123 Annual General Meetings held by large Italian companies in the 4-year period 2015 to 2018 and the voting reports of three proxy advisors.*

Findings. *We show that such voting based on robo-voting phenomena is restricted to specific types of institutional investors and it may be highlighted a negative aspects of a duty to "demonstrate" engagement on the part of institutional investors. Specifically, this duty could depend on location, strategy and category of institutional investors.*

Research limits. *We refer only to the Italian market and it may be considered as a peripheral market by investors.*

Practical implications. *We argue that legal enforcement currently sits uncomfortably with the conceptual and operational spectrum of engagement duties, upon institutional investors and proxy advisors.*

Originality of the study. *We think that is important to consider in a European context how to promote shareholder engagement in general and at the same time curb negative activism by some shareholders.*

Key words: *corporate governance*; *shareholder engagement*; *proxy advisor*; *shareholder voting*; *institutional investors*; *robo-voting.*

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1. Introduction

In the recent years, scholars and policy maker are asking for increased shareholder engagement, emphasizing that the overall corporate governance framework must ensure the long-term sustainability of EU companies[1]. The increasing focus on shareholders' engagement and the long-term viability of companies raises questions about the link between shareholder engagement and shareholder accountability (Birkmose, 2018). According to traditional corporate governance theories, shareholders are relied on to monitor and control the boards of investee companies. However, the traditional theories of corporate governance (agency theory and stakeholder theory) do not justify that shareholders should have any duties to play an active role in monitoring and controlling the board of directors. Contrary, Shareholder Rights Directive of 2017 (SRD II) emphasizes that shareholders (and in particular institutional investors) should play a more active role in ensuring that companies are accountable not only to shareholders but also to civil society and it quite clear to institutional shareholders that they are expected to engage. After all, institutional investors are generally fiduciaries for the ultimate economic owners of the assets they are investing, which obligates them to a duty of care and loyalty that includes exercising the voting rights on shares in their portfolios (McNulty and Nordberg, 2016; Larcker *et al.*, 2015). Therefore, the amendments to the SRD II may indicate a paradigm shift (Chiu and Katelouzou, 2017; Sergakis, 2019) where shareholders are given a strengthened role in the corporate governance of investee companies. However, this shift seems to highlight a specific phenomenon, called *robo-voting*: when institutional investors automatically follow the advice of their proxy advisors so that they can prove to have complied with their fiduciary duties (Doyle, 2018; Rose, 2019). This is to support corporations' criticism of the voting process which considers it to be a "box-ticking" and "one-size-fits-all" approach in which investors do not take into account the specific circumstances of the individual companies they hold shares in (Jahnke, 2019).

In our opinion, this phenomena highlights, one hand, a risk of misuse of voting rights by institutional investors under the existing setup possibly hampering engagement required by SRD II, determining an opportunistic behaviour. On the hand, it emphasizes on debate on formalistic vs meaningful compliance for an effective and more ethically driven corporate governance by institutional investors. The international literature on these issues is growing (Sharfman, 2020) but little is known on how institutional investors approach shareholder voting (Boone *et al.*, 2019; Cucari *et al.*, 2019) and whether the increased attention to active and voting from policymakers (legal compliance) has translated into enhanced shareholder engagement efforts by institutional investors (Gomtsian, 2018).

Based on this, we suggest the existence of a heterogeneity across institutional investors in several dimensions related to shareholder voting and to analyse these issues considering also the opportunistic perspective of institutional investors. Therefore, our central research questions are: *How institutional investor's characteristics could affect robo-voting phenomena?* and *How robo-voting phenomena could favor the creation of new opportunistic behavior, chancing the scope of shareholder engagement?*

Our paper directly addresses these questions by using ANCOVA (Analysis of Covariance) to test the effect of characteristics of institutional investors on the dependent variable under study. We use a manually constructed sample of coverage information at 123 Annual General Meetings (AGMs) held by large Italian companies (FTSE MIB index's components) in the 4-year period 2015 to 2018 and the voting reports of three proxy advisors (ISS, Glass Lewis and Frontis Governance).

Our study contributes to the literature in the following ways.

First, the increasing significance of shareholder voting in corporate governance requires better understanding of how institutional investors perform their engagement duties and investment

[1] The EU Commission set out a number of initiatives and most recently the Shareholder Rights Directive was amended (see Directive (EU) 2017/828 of the European Parliament and of the Council of 17 May 2017 amending Directive 2007/36/EC as regards the encouragement of long-term shareholder engagement, hereinafter SRD II).

stewardship role (Gomtsian, 2018). In our opinion, robo-voting phenomenon can alter engagement duties and create some opportunistic behaviour.

Second, this paper extends the growing but US-dominated literature on link between shareholder voting and proxy voting advisory (e.g., Cai *et al.*, 2009; Ertimur *et al.*, 2013; Larcker *et al.*, 2015) and contributes to the current European debate on the power of proxy advisors (Hitz and Lehmann, 2018) and on the heterogeneity of institutional investors strategy.

Third, our findings add to the debate developed by Arjoon (2006), who states that, effective governance means "*adhering to ethical principles, not merely complying with rules*", we argue that legal compliance and rules-based approach, in themselves, are not sufficient to guarantee institutional investors will adhere to their own duties.

Generally, our results show that some characteristics could increase some robo-voting phenomena and this could raise concerns about risks driving both proxy advisors and institutional investors towards an even more formalistic conception of their role. This situation can further exacerbate the communication gap between all market actors by further dissociating these actors.

Our results have important implications for policy makers. We think that is important to consider in a European context how to promote shareholder engagement in general and at the same time curb negative activism by some shareholders. We suggest on the need to shape legal norms so as to enable institutional investors to fulfil their duties in a meaningful and not formalistic way. We argue that a strict enforcement framework impedes such a goal and policy makers need thus to maintain social and not legal enforcement in place when designing the modus operandi of engagement duties so as to maintain the benefits of engagement and business ethics within the investment chain.

The remainder of the paper is structured as follows. Section 2 provides theoretical background and reviews the major related literature. Section 3 explains our research design and method. Section 4 introduces the empirical analysis, Section 5 offers discussion and Section 6 concludes.

2. Theoretical Background, Literature review and Hypotheses development

2.1 Shareholder engagement and opportunistic behaviour of institutional investors

Agency theory traditionally concerns the principal-agent conflicts between shareholders and management that originate from such a separation (Jensen and Meckling, 1976). According to Perrow (1986, p.14), agency theory is extremely biased as principal-agent models almost invariably assume that the agent is opportunistic rather than the principal. Indeed, agency theory has traditionally been biased and opportunism has always been an "agent's thing" (Shapiro, 2005; Dalton *et al.*, 2007; Sobol, 2016). However, agency problems and costs extend beyond manager and shareholders by affecting other stakeholders and the broader society (Zardkoohi *et al.*, 2017).

Only recently, it is proposed to take into account the concept of the opportunistic of principal in order to fully capture the reciprocal nature of the problems arising in agency relationships. For example, Zardkoohi *et al.* (2017) consider opportunistic short-term oriented behavior of shareholders opposite company CEOs.

Here, we argue that also principal - principal conflict that narrate the common argument between the major shareholders and the minority shareholders (Peng *et al.*, 2008; Esposito De Falco, 2017), could create new form of opportunistic behavior.

Opportunism is a way the economic agent operates, according to their own interests, which is not limited to reasons of morals and contradicted interests of other agents (Popov and Simonova, 2006 p. 116). Opportunistic behaviors are considered ethically and economically troublesome since they disrupt otherwise mutually beneficial contractual relationships (Arıka, 2020, p. 573). Our understanding of how a behavior of principal (institutional investors) is opportunistic is very limited. According to Arıka (2020), opportunistic behaviors are objectively and unequivocally defined by the content of contracts and therefore their observation is straightforward. Therefore, an

opportunistic behaviors is a behaviors that violate contracts (formal contracts or relational contracts).

In this paper, we take a step toward filling this gap and examine how some institutional investors arrive at their opportunistic behavior, that is to say how they vote completely in alignment with external recommendation by proxy advisors and not with an internal analysis. This behavior could undertake some concerns which needs to be addressed and could be in contrast with the "law of stewardship" introduced in several jurisdictions to define the institutions' and asset managers' responsibilities towards their investee companies and promote sustainable forms of engagement on the part of institutional investors (Chiu and Katelouzou, 2017).

Although the use of proxy advisors does not necessarily imply that investors take a passive governance role (McCahery *et al.*, 2016), institutional investors might not control the votes associated with all the shares held in their portfolios due to legal and technical problems associated with introducing a full electronic proxy voting system (Mallin, 2001; Belinfanti, 2010) and, more generally, they use analysts' research as an input into their valuation models and investment strategies (Brown *et al.*, 2015; Bilinski *et al.*, 2019).

However, much of the corporate governance literature focuses on the identification and examination of internal (i.e board of directors, incentives) or external mechanisms (i.e market for corporate control) that limit manager opportunism (Barney and Ouchi 1986; Walsh and Seward 1990; Sinha 2006; Dalton *et al.* 2007). Here, we argue that shareholder engagement need to be consider as an instruments to reduce opportunistic behavior by some shareholders to the detriment of others, and in this line, it required, by law, to introduce an engagement policy for all institutional investors and asset managers and a form of disclosure-based regulation of institutional investors' investment policies and strategies, their arrangements with asset managers, and the accountability of asset managers to institutional investors.

Based on this framework, the rights and duties of shareholders have been always included in the academic debate on how to ensure good corporate governance. However, recently, while the Shareholder Rights Directive of 2007 (SRD I) focused on expanding formal rights in the context of an Annual General Meeting, the SRD II, noted also as Directive on Long-term Shareholder Engagement, seized upon the potential of transparency requirements and investor dialogue as transformative corporate governance tools in the hands of engaged investors (Ahern, 2018, p. 89).

Specifically, according to SRD II, effective and sustainable shareholder engagement is one of the cornerstones of the corporate governance model of listed companies, which depends on checks and balances between the different organs and different stakeholders. Greater involvement of shareholders in corporate governance is one of the levers that can help improve the financial and non-financial performance of companies, including as regards environmental, social and governance factors. Consequently, it is important to consider how curb negative activism by some shareholders in order to promote an effective shareholder engagement.

2.2 Legal and ethical compliance of institutional investors and proxy advisors

The influence of proxy advisors have transformed proxy voting by institutional investors and their importance is so flagrant that their activities have attracted the attention of scholars and policy makers[2]. The ongoing debate on the role of proxy advisors and institutional investors voting

[2] In American context, on October 11, 2017, Representative Sean Duffy introduced the Corporate Governance Reform and Transparency Act of 2017, which enhances transparency in the shareholder proxy system by providing for, among other things, the registration of proxy advisory firms with the SEC, disclosure of proxy firms' potential conflicts of interest and codes of ethics, and the disclosure of proxy firms' methodologies for formulating proxy recommendations and analyses. At the same time, the European Commission and the European Securities and Markets Authority (ESMA) have raised concerns about the role and influence of proxy voting advisors at European GSMs. ESMA's recommendation was based on its finding that while there was no clear evidence of market failure in relation to proxy advisors' interaction with investors and issuers, stakeholders raised a number of concerns regarding the independence of proxy advisors and the accuracy and reliability of their advice.

provides an excellent opportunity to study the engagement duties of investors, going beyond legal vs ethical compliance (Arjoon, 2006; Sama and Shoaf, 2005; Fotaki *et al.*, 2019).

Longstaff (1986) argues that an overemphasis on legal, i.e. formalistic, compliance mechanisms could be at the expense of ethical reflection since people may have less reason to form their own opinions and take personal responsibility for the decisions they make. This idea led us to study the *robo-voting* phenomena: when institutional investors automatically follow the advice of their proxy advisors so that they can prove to have complied with their fiduciary duties (Doyle, 2018; Rose, 2019).

As said by Arjoon (2005), distinguishing between legal and ethical compliance can help to explain why legal compliance mechanisms are insufficient and may not be addressing the real and fundamental issues that inspire ethical behaviour. More generally, most authors emphasize that firms need to achieve an optimum mix between adherence to regulatory requirements and ethical principles in order to be able to create and sustain value for their stakeholders in the long run (see for example Sama and Shoaf 2005; Verhezen 2010).

In this framework, soft law norms (disclosure duties based upon the "comply or explain" principle) correspond to the need to focus more on educational efforts to enable proxy advisors and institutional investors to prepare themselves for more meaningful compliance while aiming to understand the benefits of more engagement with other constituencies in the market. At the same time, soft law norms are vital to all recipients of such disclosure so as to clarify the variety of expectations that they should have in respect of the engagement duties, the content of the new requirements, as well as the informational contours of the information disclosed.

Nevertheless, notwithstanding the "comply or explain" flexibility offered to institutional investors and proxy advisors, these disclosure duties operate within a legal framework that can trigger legal enforcement mechanisms if violated. Indeed, we are witnessing a legalization of stewardship via the introduction of a duty to "demonstrate" engagement, which is based on public interests that aim to re-regulate this area (Chiu and Katelouzou, 2017).

This "legalization trend" may have serious consequences upon the efficiency of these duties and the behaviour of the concerned market actors, driving them towards a formalistic compliance and depriving them from the benefits of meaningful engagement and business ethics (Sergakis, 2019).

Consequently, a legal enforcement refers to the administrative measures and sanctions imposed upon proxy advisors and investors for not complying with the engagement duties. Contrary, social enforcement relates to informal enforcement strategies, such as "naming and shaming", via the disclosure not only of the violations themselves (e.g. public warning instead of the imposition of pecuniary sanctions) but also of formal sanctions imposed (e.g. pecuniary sanctions). Legal sanctions that result into penalties belong to the legal enforcement spectrum. Other administrative measures that purport to sanction the concerned persons by disclosing either the penalty itself or a public warning should be seen as social sanctions, since they pay attention to a meta-regulatory function, namely the expected reputational effects of such actions upon the concerned shareholders and their ramifications upon the reaction stemming from market actors.

The crucial question therefore arises in relation to what is the most optimal enforcement framework so as to ensure compliance with these disclosure duties. Most importantly, in our opinion, it is crucial to avoid the creation of a hard and inflexible compliance framework that will drive institutional investors to more "robo-voters".

We argue that this outcome will be very likely since investors will have serious concerns that if they fail to prove the exercise of their fiduciary duty, they will be sanctioned. Robo-voting phenomena will therefore become the preferred way forward that will allow them to demonstrate engagement with proxy advisors and will enable them to avoid sanctions.

2.3 Literature review

Shareholder voting has increased in importance during the last decade, and the ability of proxy advisors to influence investor voting becomes particularly significant as the importance of shareholder voting increases (Choi *et al.*, 2010; Calluzzo and Kedia, 2019).

Although the influence of proxy advisors is difficult to quantify, the literature on these issues is growing (Song, *et al.*, 2020; Sauerwald *et al.*, 2018) and prior studies have investigated the impact of the largest proxy advisor (Bethel and Gillian, 2002), the level of agreement between ISS and GL (Ertimur *et al.*, 2013), the conflicts of interest in the proxy advisor industry (Li, 2016), the difference between local and foreign proxy advisors (Heinen *et al.*, 2018), and the role of proxy advisors in a specific market (Hitz and Lehmann, 2018).

A number of studies find that proxy advisors have a substantial impact on say-on-pay vote outcomes (Larcker *et al.*, 2015; Ertimur *et al.*, 2013) and that some firms change the composition of executive compensation so as to avoid a negative recommendation of proxy advisors (Bethel and Gillan, 2002; Morgan *et al.*, 2006; Malenko and Shen, 2016; Balsam *et al.*, 2016).

For the European context, Hitz and Lehmann (2018) find that the supply of proxy advisory services is incrementally higher in countries with comparatively weak investor protection standards and varies with firm characteristics in a way that suggests that, more specifically, outside ownership drives the demand for proxy advisor services. Based on descriptive analyses, the authors find that proxy advisors' recommendations are associated with voting outcomes and that stock prices react to the publication of negative recommendations, in line with recent US evidence. Heinen *et al.* (2018) find that the three proxy advisors ISS, GL, and IVOX (German-based local proxy advisor) differ significantly in their voting recommendations. In particular, the local proxy advisor stands out, suggesting that the information content provided by local proxy advisors differs from that provided by foreign proxy advisors. In addition, they find that the local proxy advisor has an incremental impact on voting outcomes and, finally, that the impact of proxy advisors is stronger for companies with a larger free float.

Another group of studies has focused on the influence of proxy advisory firms on voting by institutional investors, finding a correlation between these firms' recommendations and the typology of companies and shareholders (Bethel and Gillan, 2002; Ertimur *et al.*, 2010; Iliev and Lowry, 2015). Most research on institutional owners has not differentiated among types of investors (Hoskisson *et al.*, 2002) and the literature on shareholder voting lacks a specific focus on institutional investors' heterogeneity, where often minority shareholders tend to be seen as a unique block (Abdioglu *et al.*, 2015; Çelik and Isakkson, 2014; Webb *et al.*, 2003).

For example, Larcker *et al.* (2015) suggest that non-blockholders and passive institutional investors are particularly likely to follow the advice of proxy advisors. Malenko and Shen (2016) show that the influence of ISS is stronger in firms in which institutional ownership is larger and less concentrated and in which there are more institutions that have high turnover or small positions, consistent with the hypothesis that such shareholders have stronger incentives to rely on ISS instead of performing independent governance research (Iliev and Lowry 2015).

Quite the opposite, Aggarwal *et al.* (2014) show that investor voting has become more independent of ISS recommendations. They find that institutional investors have given more attention to voting, and conduct their own analysis regarding the voting decision on a case-by-case basis. According to these authors, an explanation for this result is that institutional investors increasingly developed their own policies. As reported by Dent (2014), the overall influence of proxy advisors is not significant and the proxy advisors' influence cannot be measured precisely for a different reason, for example it may be largely the result of a self-fulfilling prophecy (Dent, 2014).

In this regard, both voting by institutional investors and recommendations of proxy advisory firms can be influenced by the same factors that they have identified as important (Choi *et al.*, 2010).

In addition, strategic voting with many responsively voting shareholders can lead to the same outcome as vote coordination (Maug and Rydqvist, 2008). It is also interesting how network theory can help in studying institutional investors' voting behaviour. For example, Enriques and Romano (2019) argue that the voting behaviour of institutional investors is affected by their connections with other institutional investors and more generally with the agents that populate their networks (e.g., proxy advisors or portfolio companies' management).

Based on this, an unintended consequence of this attempt to conform to proxy advisory firms' guidelines is that the shareholder value can decrease (Larcker *et al.*, 2015). Therefore, the robo-voting could reduce the impact of economic value creation, and thus institutional shareholders should evaluate the recommendation of proxy advisors in the best long-term interests of each investee company and their clients. For some institutional shareholders, the economic advantages of using a third actor on proxy voting are obvious, because in paying a relatively small fee, they achieve the goal of maximizing the value of their own portfolios rather than incurring the expense of doing in-house research. Indeed, (rational) shareholders will expend the effort to make informed decisions only if the expected benefits outweigh the costs (Mason *et al.*, 2017).

If in recent years the research debate on this topic has considerably grown in the European context, only anecdotal evidence exists in the Italian context. For example, Belcredi *et al.* (2017) analyse how different classes of investors (in particular, institutional investors) voted on say-on-pay and how their vote was related to proxy advisors' recommendations. They find, among other results, that institutional shareholders' vote is strongly correlated with proxy advisors' recommendations; this is particularly true for non-blockholders (holding less than 2% of the share capital), which have lower incentives to carry out autonomous research.

2.4 Hypotheses development

Despite the involvement of institutional investors in the European corporate governance, the academic research on institutional investors and their fiduciary duties (i.e. voting) is relatively unexplored. Given the importance of institutional investors in firm governance, a better understanding of their voting behaviour is needed, especially in the European countries where they have a rising presence and after the new rules on shareholder engagement.

Drawing on prior literature, different types of institutional investors have different investment strategies and supervisory characteristics for corporate governance (Almazán *et al.*, 2005; Shen, 2019). Therefore, we should not consider institutional directors as a monolithic group (Dong and Ozcan, 2008). For example, some authors suggest that institutional investors with multiple blockholdings face time constraints in monitoring their portfolio firms and are thus less likely to perform effective monitoring functions (Kempf *et al.*, 2017; Kang *et al.*, 2018). According to Brickley *et al.*, (1998) it is possible to divide institutional investors into pressure-sensitive institutional investors and pressure-tolerant institutional investors. The first one, pressure-sensitive institutional investors, often have business and investment relationships with corporate management. The second one, the pressure-resisting institutional investors, have no other business links with the company and they can better resist the pressure of management, pay more attention to the long-term value of the company, and can play a certain supervisory role for the management.

In addition, remarkable differences in the institutional business model may induce a different behaviour by institutional investors (Sherman *et al.*, 1998) and different types of institutional investors have heterogeneous preferences (Hoskisson *et al.*, 2002; Chen, 2019). Cox *et al.*, (2004) suggest that long-term institutional investment is positively related to corporate social performance. In other words, the differences across institutional investors are not only legal or regulatory but also vary in terms of investment strategy and their incentives and resources to gather information and to engage in corporate governance (Bennett *et al.* 2003; Cox *et al.* 2004; Elyasiani *et al.* 2010; García-Meca *et al.*, 2017)

Regarding proxy advisor recommendations, Iliev and Lowry (2015) show that mutual funds vary greatly in their voting behaviour and also in their reliance on recommendations. McCahery *et*

al., (2016) show that voice intensity, as reflecting the spectrum of voice actions, is significantly negatively related to institutions' preferences for liquidity, positively related to investors with longer holding periods and not related to size of investors.

Çelik and Isakkson (2014) have identified seven different features that influence how an institution will behave as an owner: i) purpose, ii) liability structure, iii) investment strategy, iv) portfolio structure, v) fee structure, vi) political/social objectives, and vii) regulatory framework. Institutional investors can also be broken down on other dimensions that can affect how they function as shareholders (Coates, 2015): i) size, ii) investment strategy or style, iii) sponsorship or affiliation, iv) level of intermediation, v) nationality, vi) distribution channel, and vii) liquidation method.

Accordingly, in this study, we suppose that some "types" of institutional shareholder are likely biased by robo-voting phenomena. To shed light on the level of fulfilment of their fiduciary duties, we are interested in the extent to which findings vary by specific characteristics of institutional investors and are thus associated with institutional investors' differences. To formalize our idea, we present our hypotheses to be tested:

Hypothesis 1: *Robo-voting phenomena differ across institutional investors based on*:

Hp1a: regulations in their country of residence
Hp1b: investment style
Hp1c: category of institutional investors

In addition, we posit that the robo-voting phenomena may be negatively related to the size of the investor, since smaller investors might be less motivated to embark on big research efforts to make better decisions. To the same token, more experienced investors voters may have developed more functional voting mechanisms and so they might be less affected by proxy recommendations. Given these considerations, the hypotheses will be tested while controlling for the effect investors' size and voting experience

3. Research method

3.1 Sample and Data

Our study analyses shareholders' vote and proxy advisors' recommendations on remuneration policy at 123 AGMs held by large Italian companies (FTSE MIB index's components) in the 4-year period 2015 to 2018.

This analysis focuses on Italian listed companies for two reasons. First, the previous literature has focused on the Anglo-Saxon context and we maintain that the Italian context, representative of continental European models of corporate governance, is also relevant for research for its characteristics (Ciampi, 2015). Second, the Italian context is the only major market where listed companies have to publish the minutes of general shareholder meetings on the corporate website, and the minutes must include details of votes per resolution at asset owners' level.

The analysis exclusively refers to the vote on remuneration policy ("say-on-pay vote"), as it is generally the most controversial resolution in almost every market, and it is the resolution where voting recommendations of proxy advisors differ the most, due to the large variety of aspects to be analysed and differences in voting guidelines. We have analysed the recommendations of the three proxy advisors: ISS, GL, and Frontis Governance, which is the Italian partner of the European network of proxy advisors ECGS. We have analysed 106 institutional investors that voted at least at 3 AGMs every year, or at least at 10 AGMs in any year from 2015 to 2018.

The sample of institutional investors takes into account the general composition of Italian AGMs and the share ownership structure of large Italian companies in terms of number of shareholders, rather than percentage of share capital held. Main sources of information are the

minutes of general shareholder meetings, the websites of listed companies and institutional investors.

Proxy advisors' voting recommendations were provided by the proxy advisors themselves or obtained from market research published by proxy solicitors or other entities active in the proxy voting business.

3.2 Analysis Methods

Based on the nature of our data, we employ the analysis of covariance (ANCOVA) to test the hypotheses. Indeed, what we are interested in assessing differences between groups of investors in the amount of robo-voting, while taking constant the effect of investors' size and voting experience. ANCOVA, belonging to the framework of analysis of variance (ANOVA), is specifically suited to test the magnitude of mean differences on the dependent variable between the levels of the categorical independent factors, by assessing the significance level of the F value.

At the same time though, compared with techniques such ANOVA, ANCOVA allow us to control for the influence of numerical covariates. Indeed, ANCOVA is the generally accepted statistical technique for testing for the existence of significant differences between group means, while assessing the influence of other covariates (Goodwin, 2003).

To store and edit data and to carry out the analysis, we use the SPSS (v. 22) software program as a database management and analysis tool.

3.3 Variables and Measurement

For each institutional investor, we calculate the percentage of times its votes are in line with external recommendations during our period of analysis. This variable, called *robo-voting*, is our dependent variable.

With regards to the independent variables, we consider relevant characteristics of institutional investors, namely: investors' location, main investment strategy adopted and category of institutional investors, These are categorical factors made of discrete levels and represent the predictors which we want to test the effect of. As for the control variables, we include in the model two quantitative variables that is investors' size and voting experience.

Table 1 shows a summary of the measurement of these variables.

Tab. 1: Description of independent variables and measurement

Variable Label	Causal role	Description	Measurement
Location	Independent variable	Location of investor's headquarter or decision-making branch	Continental Europe; Italy; North America; UK & Australia
Strategy	Independent variable	The main strategy according to which the majority of assets are invested	Active, quantitative (or passive) and mixed (for investors equally using both active and quantitative strategies)
Category	Independent variable	Institutional investor type	Alternative investor/hedge fund; Dependent Asset; Independent Asset; Pension and sovereign funds
Size	Control variable	Assets under management (AUM)	Total market value ($) of all the financial assets managed by institutional investors on behalf of their clients and themselves
Experience	Control variable	Voting on AGM	Total number of AGMs that the investor participated in over the 2015-2018 period
Robo-voting	Dependent variable	Amount of voting aligned with proxy recommendations	Percentages of votes aligned with proxy recommendations in all the AGMs held over the 2015-2018 period

Source: our elaboration

4. Results

From descriptive statistics, briefly, we find (Tab. 2) that the voting direction of 30 out of 106 analysed investors (28%) is totally aligned with the recommendations of proxy advisors (29) or with the management's proposal (1[3]).

Tab. 2: Descriptive statistics

	Investors	**%**
"Robo-voters" (100% aligned)	30	28%
Highly dependent (>=95% aligned)	57	54%
Indefinable (85% - 94% aligned)	19	18%
Independent (less than 85% aligned)	30	28%

Source: our elaboration

Out of the 29 institutional investors that voted at all AGMs in line with proxy advisors' recommendations, 23 were totally aligned with ISS, 4 with GL, and 2 with ECGS[4].

Tab. 3: Number of institutional investors voted in line with proxy advisors

	"Robo-voters"	**% of the sample**
ISS	23	22%
Glass Lewis	4	4%
Frontis Governance	2	2%
Management	1	1%

Source: our elaboration

In order to test our HPs, we performed the ANCOVA, with robo-voting as the dependent variable, category of institutional investors, location and strategy as categorical factors, and voting experience and size (assets under management) as covariates. The main results of the ANCOVA are presented in Table 4.

Tab. 4: ANCOVA effects. Dependent variable: Robo-voting

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Intercept	7.732	1	7.732	526.730	.000
Location	.191	3	.064	4.336	.007
Strategy	.097	2	.049	3.307	.042
Category	.132	3	.044	3.002	.035
Size	.119	1	.119	8.137	.006
Experience	.001	1	.001	.052	.821
Category * Location	.289	8	.036	2.465	.019
Strategy * Location	.080	4	.020	1.357	.256
Category * Strategy	.007	4	.002	.120	.975
Error	1.160	79	.015		
Total	**82.588**	**106**			

Source: our elaboration

In general, the coefficient of determination (R^2 =.438) indicates that the model is able to explain almost 44% of the variability of the response variable around its mean.

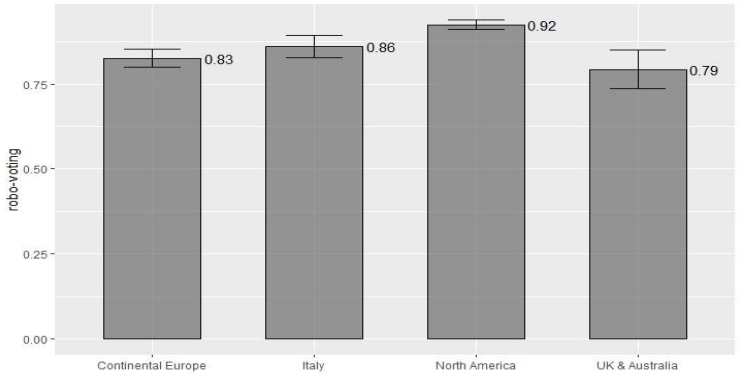
Looking at the influence of the single variables, it turns out that the main effects of the independent factors are all significant, namely location (F=4.336, p<.01), strategy (F=3.307, p<.05) and category (F=3.002, p<.05).

[3] The only investor that voted with management proposals at all GMs is the Italian engineers and architects' superannuation fund Inarcassa.

[4] Including the Swiss foundation of pension funds Ethos, which also offers proxy advisory research and is a partner of the ECGS network.

Indeed, North American investors show, on average, the highest percentage of robo-voting (Fig. 1), while investors in UK and Australia have the lowest one.

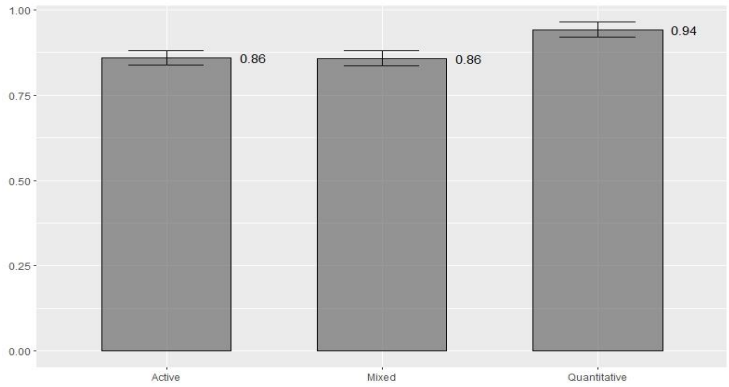
Fig. 1: Comparing means in robo-voting by location



Source: our elaboration

As for the strategy adopted by the institutional investors, we can see that investors using a quantitative strategy are those with the highest mean of robo-voting percentage (Fig. 2).

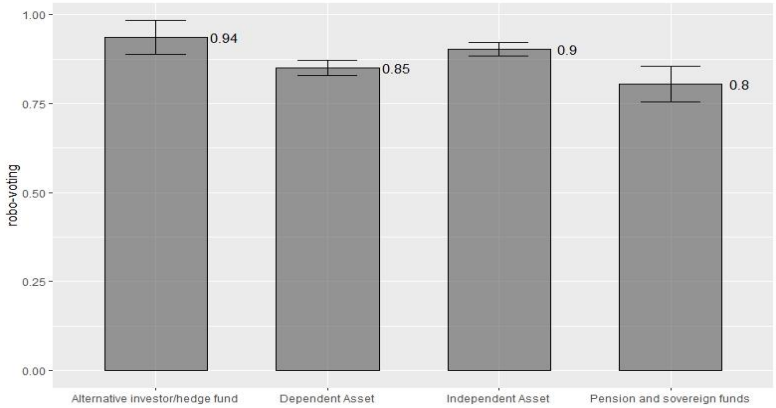
Fig. 2: Comparing means in robo-voting by strategy



Source: our elaboration

Also the category that investors belong to have a significant effect on robo-voting, since it looks like alternative investors and hedges funds have the highest propensity to follow proxy recommendations, while pensions and sovereign funds have the lowest one (Fig. 3).

Fig. 3: Comparing robo-voting means by investors' category



Source: our elaboration

There is also a significant negative effect of Assets Under Management on robo-voting (β= -5.816E-05, t=-2.853, p<.01) so that bigger investors seem to be less likely to blindly follow proxy recommendations. Instead, the other control variable - investors' voting experience - has no significant effect on the dependent variable.

In addition, the interaction term between investors' category and location is significant (F=2.465, p<.05). In order to inspect this interaction more deeply, we look at the estimated marginal means of the combinations of levels of the interacting variables (Tab. 5).

*Tab. 5: Estimated marginal means of LOCATION*CATEGORY on ROBO-VOTING*

LOCATION	CATEGORY	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Continental Europe	Alternative investor/hedge fund	.	.	.	.
	Dependent Asset	.833	.028	.778	.888
	Independent Asset	.803	.056	.692	.914
	Pension and sovereign funds	.797	.047	.705	.890
Italy	Alternative investor/hedge fund	.636	.123	.391	.882
	Dependent Asset	.842	.063	.717	.967
	Independent Asset	.872	.067	.739	1.006
	Pension and sovereign funds	.780	.138	.505	1.056
North America	Alternative investor/hedge fund	.948	.061	.827	1.070
	Dependent Asset	.935	.036	.863	1.007
	Independent Asset	.943	.024	.895	.991
	Pension and sovereign funds	.892	.069	.755	1.030
UK & Australia	Alternative investor/hedge fund	.977	.086	.806	1.148
	Dependent Asset	.734	.061	.613	.856
	Independent Asset	.945	.074	.798	1.092
	Pension and sovereign funds	.280	.137	.008	.552

Source: our elaboration

Specifically, it seems that in countries like United Kingdom, Australia and North America, alternative investors and hedge funds are the category of investors that involve the most in robo-voting. To the contrary, among Italian investors, hedge funds are the least prone to robo-vote.

In summary, the analysis shows that investors' location, strategy and category have an influence on the robo-voting phenomena (Table 6). In addition, the size of the investor negatively affect the propensity to robo-voting, whilst voting experience has no significant effect

Tab. 6: Results of hypotheses testing

Hypothesis	Results
H1a	Supported
H1b	Supported
H1c	Supported

Source: our elaboration

5. Discussion

Many institutional investors use the services of proxy advisors and, specifically, the recommendations on how to vote in general meetings of listed companies. However, the use of proxy advisors should not exempt institutional investors from their fiduciary duty to act in the best interest of their clients, by taking voting decisions in their best interest. Recently, according to Business Roundtable members, the high incidence of voting immediately on the heels of the publication of proxy advisory reports suggests that investors may not be spending sufficient time evaluating proxy advisors' guidance and determining whether it is in the best interests of their clients or, alternatively, that they simply outsource the vote to the proxy advisor. In this perspective, the robo-voting phenomenon highlights a new problem regarding the interpretation of the

relationship within the proprietary system. If, on one hand, the scope of best practice has been to reduce the presence of information asymmetries among the shareholders themselves, favouring the engagement of shareholder minorities and shifting focus from principal-agent relationship to principal-principal relationship (Esposito De Falco, 2017); the phenomenon of robo-voting, on the contrary, seems to shift the focus again on the Principal-Agent relationship where the agent becomes the proxy advisor with the relative consequences that derive from it in the analysis of the different forms of opportunism. In this perspective, we could read the new rules required for Proxy advisors by SRDII in European context and the proposed rules[5], issued by the Securities and Exchange Commission on November 5, 2019 in American context. Both rules will make the proxy voting process significantly more transparent, accurate and effective both for companies and investor.

However, the problem of opportunism is not only related to role of proxy advisor but also the fiduciary role of institutional investors. As suggested by Malenko and Malenko (2019), the market efficiency view does not take into account the collective action problem among shareholders. They show that because shareholders do not internalize the effect of their actions on other shareholders, there may be excessive overreliance on proxy advisors' recommendations and, as a result, excessive conformity in shareholders' votes. Because of the collective action problem, the amount of resources they are willing to spend on the acquiring of information internally or externally in order to be adequately informed on each and every vote is minimal, requiring them to seek the services of a low cost provider of voting recommendations.

In this framework, the meaningful engagement amongst institutional investors and proxy advisors goes hand in hand with an ethical stance that our paper aims to decipher and advance. Based on our results, we identify specific factors (*location, strategy* and *category*) that may influence robo-voting and could be understood as a determinants of opportunism of institutional investors' behaviour.

Regarding location, the result could depend on the fact that US investors are obliged to vote at all general meetings held by investee companies, while other investors (like a French institutional investors) have to adopt a voting policy and annually report on the implementation of their own policy, on a "comply or explain" basis. In this way, the French legislation seems to have supported the development of investors' specific skills, allowing them to consciously exercise voting rights and fulfil fiduciary duties. In this regard, a legal compliance seems to push investors through a "robo-voting" or "just comply" approach, as they are more worried about the mere compliance with the law rather than an informed and aware exercise of active ownership. Therefore, we argue for the maintenance of the same amount of flexibility in enforcement: provisions should not contain legal sanctions against market actors in the area of engagement duties but should leave enforcement to the market at large by focussing on social sanctions only. This stance will be likely to preserve the following benefits: independence of voting, meaningful fulfilment of fiduciary duties, constructive engagement with proxy advisors, avoidance of mindless compliance and ultimately an ethical stance that serves clients' interests and not liability concerns.

Regarding strategy, investors using a quantitative strategy are those with the highest mean of robo-voting percentage. These results are in line with the idea that the rise of passive investing is good news for investors, who benefit from greater diversification and lower costs, but the implications for corporate governance are less positive. As reported by Shapiro Lund (2018, p. 495), "passive fund managers will also be likely to adhere to low-cost voting strategies, such as following a proxy advisor's recommendation or voting "yes" to any shareholder proposal that meets pre-defined qualifications". After all, since the goal of an index fund is to meet, not beat the market, the investors would not derive any competitive benefit from receiving highly informed and precise

[5] Proxy advisors should disclose how they determine that their voting policies and methodologies are consistent with the investor's best interests, including addressing any new or additional empirical studies or evidence on the subject of voting issues and the company's long-term value. Proxy advisors should publish their criteria and requirements for evaluating matters subject to a vote before the fiscal year in which the matters arise.

recommendations and therefore would have no incentive to spend the money that the creation of such recommendations would require.

Regarding category, our result show how only some institutional investors (pensions and sovereign funds) defined pressure-resistant investors (Brickley *et al.*, 1988), are more independent and could be a demonstration of commitment these investors. This is consistent with the idea that pension funds tend to invest for the long-term and monitor management actively relative to other types of institutions (Bushee, 2001).

Taken together these findings suggest that it is inappropriate to attribute the shareholder's voting decision to the "power" of the proxy advisor. As said by Choi *et al.*, (2010), information provided by a proxy advisor affects the shareholder vote; the proxy advisor has some limited influence, but inferring from this correlation that the advisor has power over the shareholder vote is an overstatement. Institutional investors should therefore consider the analysis of proxy advisors as an input into their own decision, based on voting guidelines defined by taking into account the needs of their clients and their investment strategy. The key problem is that institutional shareholders might be paralyzed by rational reticence or rational apathy. Thus, this type of problem might increase the incentives of institutional investors to cast their votes as robo-voting actors.

Therefore, maintaining robo-voting practices will impede institutional investors from fulfilling their duties towards their clients. In this regard, we propose that social enforcement (ethical compliance) mechanisms can be seen as a first (experimental) approach to enforcement strategies in stewardship norms that will allow a gradual and steady transition towards the legal enforcement (legal compliance), once these norms have been interpreted and used consistently at both national and EU levels. For example, the engagement duties could justify the option of social enforcement due to their novel and still relatively unknown character both to national competent authorities and to market actors. Intervening directly with legal enforcement, as it is currently the case with the Shareholder Right Directive II, without passing through this social and ethical compliance (soft law stage) will ultimately impede greater convergence in the understanding, application and optimal use of these duties at the expense of clarity, engagement, stewardship and good governance.

6. Conclusion

In line with the growing academic literature on the role of proxy advisors' recommendations in institutional investors' voting, this paper explores the extent to which proxy advisors' recommendations affect investors' votes, distinguishing between different investor characteristics.

Examining say-on-pay voting practices of 106 institutional investors between 2015 and 2018 at 123 general meetings of large Italian corporations, and compared them to three proxy advisors' recommendations (ISS, GL and ECGS), our paper considers how compliance within a legal enforcement operational spectrum interacts with ethical and meaningful practices that can also have an impact upon proxy voting.

We identify some specific determinants of commitment and opportunism of those institutional investors that strictly vote in alignment with external recommendations (including proxy advisors and issuers' proposals).

We argue that such voting based on *robo-voting phenomena* is restricted to specific types of institutional investors, and, more important, it may be highlighted a negative aspects of a duty to "demonstrate" engagement on the part of institutional investors. Specifically, this duty could depend on location, strategy and category of institutional investors.

Our study contributes to the literature in the following ways.

First, from a policy perspective, we argue that legal enforcement currently sits uncomfortably with the conceptual and operational spectrum of engagement duties, upon institutional investors and proxy advisors. Indeed, social enforcement has significant merits in the area of these engagement duties and should stand as a viable alternative to legal enforcement, at least at the current stage.

We argue that, if imposed, legal enforcement in this area will legitimize investor disengagement and will make shareholder apathy more justified in the eyes of the public because the primary concern will be the avoidance of liability instead of the development of engagement practices[6]. Another major concern about the perils of legal enforcement at this stage, which merits particular attention, is that it does not fit harmoniously with the conceptual premise of the new shareholder duties that relate to the engagement and interaction with other market actors.

We strongly believe that the main benefit of these duties is to trigger further engagement in the markets, increase the educational benefits or disclosure in this area, and gradually fight against shareholder apathy. Imposing legal enforcement thus risks weakening the educational benefits that can derive from increased disclosure in this area. Such stance also risks compromising business ethics that promote engagement and the fulfilment of duties towards the ultimate beneficiaries. We therefore argue in favour of a flexible regulatory stance that incentivises actors to continue engaging and not depending on robo-voting practices that may assist in avoiding liability but ultimately puts in jeopardy business ethics.

Second, to best our knowledge, our paper is the first to study the determinants of opportunism of institutional investor's behavior who can also influence the quality of corporate decision-making.

We provide empirical evidence that the robo-voting behaviour depends on some characteristics of investors. In addition, since the existing literature on these topics is based on data from US firms, and analyses in other contexts such as Europe are infrequent, this study contribute to the European evidence: the robo-voting, the practice of institutions automatically relying on both proxy advisors' recommendations and in-house policies without evaluating the merits of the recommendations or the analysis underpinning them, is also diffused in the Italian context.

As with any study, this one is not without limitations. However, these limitations provide opportunities for further research. First, we refer only to the Italian market and it may be considered as a "peripheral market" by investors (particularly, by North American investors), both in terms of culture/practices and size of investments, and they might be less incentivized than their European colleagues to spend time and resources on in-depth analysis. A more in-depth and precise analysis should compare the behaviour of the investors themselves in different markets. Second, we included some specific characteristics of institutional investors derived from literature and experience. Therefore, future research should consider other characteristics such as investment horizon, liquidity portfolio

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[6] In addition, the wording of Article 14b is very broad and can be interpreted in many different ways, raising concerns about its applicability across the EU and the ensuing consequences for the automatic use of services, as highlighted in our study.

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Appendix

Tab. 1A: Category - Frequency Distribution

	Frequency	Percent	Cumulative Percent
Alternative investor/hedge fund	7	6.6	6.6
Dependent Asset	43	40.6	47.2
Independent Asset	43	40.6	87.7
Pension and sovereign funds	13	12.3	100.0
Total	106	100.0	

Source: our elaboration

Tab. 2A: Location - Frequency Distribution

	Frequency	Percent	Cumulative Percent
Continental Europe	32	30.2	30.2
Italy	11	10.4	40.6
North America	50	47.2	87.7
UK & Australia	13	12.3	100.0
Total	106	100.0	

Source: our elaboration

Tab. 3A: Strategy - Frequency Distribution

	Frequency	Percent	Cumulative Percent
Active	53	50.0	50.0
Mixed	37	34.9	84.9
Quantitative	16	15.1	100.0
Total	106	100.0	

Source: our elaboration

Tab. 4A: Quantitative variables' descriptive statistics

		Experience	Size	Robo-voting
N	Valid	106	106	106
	Missing	0	0	0
Mean		65.26	424.83	.87
Median		64.50	197.41	.90
Mode		123	ND	1.00
Std. Deviation		35.68	735.83	.14
Variance		1273.45	541445.21	.02
Minimum		11	1.540	.39
Maximum		123	5243.220	1.00
a. Multiple modes exist. The smallest value is shown				

Source: our elaboration

Internal audit and risk analysis: the particular case of a public entity in Portugal

MARIA DA CONCEIÇÃO DA COSTA MARQUES*

Abstract

Objectives. *The purpose of this paper is to present the results obtained by an internal audit unit of a large public sector entity, in the area of education, during 2018, which we will call here Entity X and analyze the impact that developed work had in the management decisions of that entity.*

Methodology. *The methodology used in the preparation of the article is the case study, where Cervo, Bervian & Silva (2007: 62) define it as "research on a particular individual, family, group or community that is representative of their universe, to investigate the different aspects of life". The theoretical framework on the theme (secondary sources) was developed from bibliographic and documentary research, which concerns the classification of procedures and are appropriate to the characterization of this study, as an instrument for collecting information on the subject in question (Gil, 2006).*

Findings. *The results obtained are related to the activity of the referred internal audit unit in 2018, which proved to be quite fruitful and which are developed in points 4, 5 and 6 of the paper.*

Research limits. *During the preparation of the study, some limitations were found, related to the fact that it was only possible to analyze the year 2018, thus failing to establish a relationship with the department's activity history.*

Practical implications. *In our opinion, this study is important because it allows other similar entities to verify that it is possible to carry out internal auditing in the public sector (especially in this sector of education), since this practice is not yet disseminated within the area.*

Originality of the study. *This study is original in that it uses real data from an internal audit body.*

Keywords: internal control; audit; accounting; management.

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1. Introduction

In the present economic situation, in which transactions between companies are increasingly significant, there must be a guarantee that the activities carried out occur with integrity, legality and legitimacy between the company and the others with which it relates (André, 2012; Marques, 2014). In global terms, the need for effective security in processes stands out, especially in accounting terms, due to the increasing rate of fraud carried out by employees and / or managers within organizations, regardless of position or scope.

Internal audit is a tool that is being used by managers to prepare organizations for the monitoring of processes, which are increasingly dynamic in all sectors, regardless of size, be it a multinational, a medium-sized company or a small company.

The audit has increasingly aroused the interest of society and other stakeholders, especially with regard to the accuracy of the information generated and is beginning to be used as a tool in the management process by administrators in organizations, who are beginning to show greater concern with the internal control.

In the case of public institutions, internal auditing, even without reaching the degree of interest it has aroused in the private sector, has been receiving increasing attention in the public sector, especially in large entities. The use of auditing techniques is important in order to be able to control public spending.

The present study is based on the need to obtain a greater understanding of how internal auditing is carried out in the control of the activities of a public institution and, consequently, on the results obtained during the course of an economic year, in order to better understand the execution of audits procedures performed at that entity and strive for its improvement.

This article aims to present the results obtained by an internal audit unit of a large public sector entity, in the area of education, during 2018, which we will call here Entity X and analyze the impact that the work developed had in the management decisions of that entity.

The internal audit department of the entity in question, which we will hereafter call DAI, was formally created 14 years ago, has been in operation for 12 years and depends on the highest body of that entity.

2. Literature review

a. Internal Control, Internal Control System and Risk Management

Trends and paradigms related to business models will undoubtedly have an effect on companies' financial reporting and operations. Sustainability, which until recently was considered a rather amorphous concept related to regulatory concerns, is increasingly becoming an important aspect of management decision making. At the same time, with the increasing use of technology in all aspects of business operations, it appears that analysis, especially analytics that allows managers to look ahead, will play an increasing role in an organization's strategic planning.

Auditing and accounting have generally played an important role in the area of business management. Auditors provide reasonable assurance that financial statements issued by organizations are prepared and presented in accordance with generally accepted accounting principles (GAAP) (Berndt *et al.*, 2014; Chen and Lin, 2011).

The COSO (Committee of Sponsoring Organizations of the Treadway Commission) defines internal control as "a process carried out by the Board of Directors, Management and other members of the organization with the aim of providing a reasonable degree of confidence in achieving the following objectives: (a) Effectiveness and efficiency of resources; (b) Reliability of financial information; (c) Compliance with established laws and regulations".

In turn, the Official Accounting Plan for the Education Sector (POC-Educação)[1] notes that the internal control system comprises a set of procedures aimed at ensuring: a) Safeguarding assets; b) The registration and updating of the entity's fixed assets; c) The legality and regularity of transactions; d) The completeness and accuracy of the accounting records; e) The execution of the plans and policies defined above; f) Management effectiveness and information quality; g) The faithful image of the financial statements.

The internal control system should include basic principles that give it consistency, and which are: a) The segregation of functions; b) Control of operations; c) The definition of authority and responsibility; d) The methodical recording of the facts.

b. Audit and Internal Control

In a constantly changing and highly competitive world, internal audit functions are increasingly under pressure to create value in organizations and support effective risk management (Rainer and Jeppesen, 2018). The core of internal auditing and its ability to contribute to the value delivered to shareholders, largely depends on the maturity and robustness of the corporate internal control system. The various levels of maturity place the internal audit in a con that varies between protecting the business value and creating measurable value for the organization (Teixeira, 2020; Sarens *et al.*, 2009).

To create the value of the function, those responsible for internal audit must consider several actions:

- Develop solid basic skills;
- Coordinate with the corporate risk management functions;
- Consider the emerging risks in the internal audit activities;
- Provide a service different from the traditional audit, linked to verification.

A clear understanding of the internal audit mission, associated with robust methods and in line with the International Internal Auditing Standards, allows a conscious response to these challenges and stimuli. Knowledge of the practices established by the standards referred to above and the sharing of knowledge and experiences are indispensable for this answer.

For Teixeira (2020), there are eight attributes that contribute to the effective development of the internal audit activity and to the added value to the organization:

Attributes for the development of the Internal Audit activity

Source: Teixeira (2020)

[1] Currently, entities in the Education sector use the Accounting Standardization System for Public Administrations (SNC-AP), approved by Decree-Law 192/2015, of 11 September.

The audits, both internal and external, use sampling techniques, stratifications and random selections and based on these quantitative methodologies, together with the internal control tests, the monitoring of internal documents and the interviews, the auditors formulate an opinion on the effectiveness of the internal controls and the probability of significant errors (D'Aquila, 2012; Marques, 2014; IIA, 2012). In the light of sustainability and analysis, it is essential to obtain as much quantitative and verifiable information as possible, which is why more and more use is made of analytical software in all organizations. Why do auditors restrict themselves to sample selection when, through specific training and the use of appropriate software, it is possible to test virtually all transactions? Those who make business decisions and external stakeholders, demand and expect information to be available in real time, so it is imperative that the audit profession keep up with market changes.

For this reason, it is important to recognize that the internal audit function is an integral part of the accounting function and that, to produce the quantitative and timely information required by the actors, all employees in this area must be involved (Simpson *et al.*, 2013; Cokins, 2014). Internal auditing requires the creation and tracking of quantitative metrics, and it is consistent to conclude that internal and forensic auditing should play a more active role in making management decisions. Monitoring, developing and updating metrics in real time, is an objective that encompasses areas such as finance, accounting and internal auditing; in addition to carrying out periodic tests of fraud and distortion, it plays an important role in making these tests increasingly easy and reliable.

Internal audit produces and verifies large amounts of quantitative data and delivers it to interested parties. The participation of the internal audit in this process will guarantee a more consistent work, simpler and less controversial external audits and a more dynamic accounting function in general.

Forensic auditing is also committed to the accounting function, which is a clear reflection of market forces, reinforced by existing research and academic literature. There is an increasing risk that the financial statements may contain fraud operations, which strengthens the value that internal audit systems and forensic professionals bring to the organization (Castanheira *et al.*, 2010; Dominic and Nonna, 2011). The role that accounting systems can play in the risk management of shareholders is interestingly recognized. A more strategic accounting function should, as a rule, integrate the needs of internal and external stakeholders, both in periodic reports and in ongoing operations (Nixon and Burns, 2012).

The future of fraud investigation, forensic accounting and the audit team in general should not be limited to investigating only the financial statements after the fact. Opportunities for future growth include the need for standardization and metrics in the growing field of sustainability accounting, using incremental analysis to create and monitor these metrics and managing information to conduct business more efficiently. This convergence provides a clear timetable for how these professionals can promote the organizational value chain.

However, many internal audit functions are still strongly rooted in the past, auditing financial reports and controls, characteristic of the period prior to Sarbanes-Oxley. But things are changing: the category of strategic, commercial and operational risk is among the areas that most grow within the scope of internal audit.

According to PWC's 2019 global risk, internal audit and compliance survey of 2,000 executives (half in risk roles), it shows that as organizations undergo digital transformation, internal audit functions also become more and more effective ways to support stakeholders to make better decisions and take smarter risks. Whenever organizations undergo digital transformations, these habits help to drive internal audit and overall performance in risk management (PWC, 2019).

Composition of audit activities

	%
Financial Activity	57%
	21%
Operational	53%
	34%
Compliance	33%
	30%
Information Technologies	31%
	36%
Strategic / Business	13%
	38%
Consultancy	9%
	28%

Source: Pricewaterhousecoopers (2009: 10)

Composition of audit activities - chart subtitle

	Percentage of internal audit departments that contribute 25% or more of their resources to key risk categories.
	Percentage of internal audit departments that increased coverage in each area during 2008.

Source: Pricewaterhousecoopers (2009: 10)

c. Internal Control System

According to the Audit Guideline (DRA) 410[2] the "internal control system means all policies and procedures (internal controls) adopted by the management of an entity that contribute to the achievement of management objectives to ensure, as far as practicable, the orderly and efficient conduct of your business, including adherence to management policies, the safeguarding of assets, the prevention and detection of fraud and errors, the rigor and completeness of accounting records, compliance with laws and regulations and preparation timely and credible financial information ".

According to the same Guideline, the internal control system comprises five interconnected components, namely:

- Control environment that means the general attitude, the awareness and the actions of the management and the management body regarding the internal control system and its importance within the entity and which emphasizes an organization, influencing the control conscience of your staff. It is the starting point for the other components of internal control, providing discipline and structure.
- Risk assessment is the identification and analysis by the entity of the risks relevant to the achievement of its objectives, forming the basis for determining how risks should be managed.
- Control procedures are policies and procedures that help to ensure that management directives are enforced.
- Information and communication are the identification, collection and exchange of information in order to allow employees to carry out their responsibilities.
- Monitoring is the process that assesses the quality of internal control performance over time.

Still citing the aforementioned guideline, an accounting system is understood as "the series of tasks adopted by the management of an entity through which transactions are processed as a means of maintaining financial records. Such a system identifies, aggregates, analyzes, calculates, classifies, registers, summarizes and reports transactions and other events".

The POC-Education establishes that the accounting entities required to use this plan will adopt an internal control system that includes the internal organization plan, policies, methods, techniques

[2] Diretriz de Revisão/Auditoria.

and control procedures, as well as any others to be defined by the respective management bodies.

The internal control system to be adopted by public entities includes, inter alia, the organization plan, control policies, methods and procedures, as well as all other methods and procedures defined by those responsible for contributing to the development of the activities of orderly and efficient manner, including safeguarding assets, preventing and detecting situations of illegality, fraud and error, the accuracy and integrity of accounting records and the timely preparation of reliable budget and financial information.

The same plan contemplates that the internal control system is based on adequate risk management, information and communication systems, as well as a monitoring process that ensures the respective adequacy and effectiveness in all areas of intervention. The internal control system aims to ensure:

a) Safeguarding the legality and regularity of the preparation, execution and modification of the forecast documents, the preparation of the budgetary and financial statements and the accounting system as a whole;
b) Compliance with the decisions of the bodies and the decisions of the respective holders;
c) Safeguarding the heritage;
d) Approval and control of documents;
e) The accuracy and integrity of the accounting records, as well as the guarantee of the reliability of the information produced;
f) Increasing the efficiency of operations;
g) Adequate use of funds and compliance with legal limits on the assumption of charges;
h) Control of applications and the computing environment;
i) Timely registration of transactions for the correct amount, in appropriate information systems and in the accounting period to which they refer, in accordance with management decisions and in compliance with applicable legal rules;
j) Adequate risk management.

3. Methodology

The scientific methodology comprises a set of well-defined and orderly steps to be carried out in the study of a phenomenon. As for the objectives, the present study is characterized as exploratory and descriptive (Marconi and Lakatos, 2004; Martins and Theófilo, 2009). According to Gil (2006: 43) the exploratory study is used when the topic is little explored, and its main objective is the development of concepts and ideas for the formulation of more precise problems and researchable hypotheses in future studies.

Descriptive research is a characteristic of the approach of the objectives of this study, and can be defined by "describing, narrating, classifying characteristics of a situation and establishing connections between the existing theoretical and conceptual basis or other works already carried out on the subject" (Charoux, 2006).

With regard to the investigation procedures, this work is considered as a case study, where Cervo, Bervian and Silva (2007, p. 62) define it as "research on a specific individual, family, group or community that is representative of their universe, to investigate the different aspects of life".

The theoretical framework on the theme (secondary sources) was developed from bibliographic and documentary research, which concerns the classification of procedures and are appropriate to the characterization of this study, as an instrument for collecting information on the subject in question (Gil, 2006).

The present study follows the case study investigation method, which, according to Yin (2005), in the case studies, the development of theory as part of the initial phase of a project, is fundamental to see if the purpose of the case study is to develop or test the theory.
In this way, it is intended to answer the following questions:

What is the activity developed by the Internal Audit Department of a large entity in the higher education sector during 2018?

What effects did this activity have on the management of the same entity?

In order to give an answer to these questions, data collection was carried out with the aforementioned audit department, which were analyzed from a quantitative perspective, what is concerned with the objective measurement and quantification of results.

After obtaining the necessary data for the preparation of this paper, they were analyzed by the authors taking into account the purpose in view, having reached the results shown in this article.

4. Risk Management

COSO (2004) defines risk as the possibility that an event will occur and negatively affect the achievement of the defined objectives. Events can result from sources internal or external to the organization and can cause positive and / or negative impacts. In this sense, COSO refers that the events that generate negative impact represent risks that can prevent the creation of value or even destroy the existing value. Risks with a positive impact can counterbalance those with a negative impact or can represent opportunities that, in turn, mean the possibility of an event occurring and favorably influence the achievement of objectives.

For the Institute of Internal Auditors (IIA)[3] (2015), risk is the possibility of an event that may have an impact on the achievement of objectives. The risk is measured in terms of impact and probability of occurrence.

Risk management involves a very diverse range of activities and initiatives, ranging from those related to business risks and those related to the risks of the organization's operational processes. Management must be integrated and unifying, since decisions made in one area to reduce risk in that area, can increase or create risks in another area.

Risk management means taking corrective measures to change the likelihood that risks will happen, in order to increase the likelihood of positive results and reduce negative impacts. To achieve this objective, the risk management goals must adopt prevention as decision strategies (Castanheira, 2010).

According to the Council for the Prevention of Corruption (CPC)[4], "risk activities are considered aggravated, namely, those that include acquisitions of goods and services, public works contracts and concessions without tender, exchanges of State properties with private properties, decisions of spatial planning and management, as well as any others that may provide privileged information for acquisitions by the agents that participate in them or their families ".

Entity X prepared its Plan for the prevention of management risks, corruption and related infractions (PPRGCIC), in which risks were considered in the following areas, which in turn are subdivided into sub-areas, namely:

- Financial area;
- Students / Academic Services Area;
- Human Resources Area;
- Projects area.

Within the scope of the audits carried out, the DAI uses a risk matrix that involves the following classification: reduced risk; high risk; very high risk, as shown below:

[3] Institute of Internal Auditors.

[4] The Corruption Prevention Council (CPC) was created by Law, n. 54/2008, of 4 September.

Risk Matrix

Initials	Risk Level
A	Reduced Risk
B	High Risk
C	Very High Risk

Source: Elaborated by the author

5. The DAI's role in assessing Entity X's internal control and risk management system

a. Objectives

The implementation of Entity X's internal control system is the responsibility of the responsible government bodies, and DAI is responsible for assessing legal and regulatory compliance. The DAI depends directly on the top manager, and the service is responsible for the evaluation of the internal control and risk management system, in the accounting, financial, operational and human resources domains, contributing to its continuous improvement, competing in particular:

a) Ensure compliance with rules and processes, through their own routines, and ad-hoc interventions by decision of the Rector or resolution of the Management Council;
b) Develop the annual audit program that makes it possible to assess the degree of efficiency and effectiveness of revenue collection and the efficiency, effectiveness and economy of public expenditure;
c) To prepare an opinion on measures to improve the efficiency of services and modernize their operation;
d) Define standards for carrying out audits of support and information systems and promoting the performance of such audits;
e) Analyze the information and internal control systems associated with expenditure and revenue management and identification of risk areas;
f) Carry out the planned audit actions and other actions that are attributed to it, which allow the assessment of the good management of resources and the level of services provided by the Organic Units, Administration and other Entity Services;
g) To collect and maintain general and internal standards in databases;
h) To monitor external audits, whether promoted by the Governing Bodies, or by the supervisory or supervisory bodies, as well as collaborating with the Statutory Auditor whenever necessary;
i) Coordinate the preparation of contradictory to the external audit reports;
j) To develop awareness actions with the Organic Units, the Administration and the other Entity Services in order to achieve a further improvement of the adopted procedures;
k) Carry out audits and carry out the management control of associations, foundations and companies in which Entity X holds shares.

b. Human Resources

At the head of the DAI is a Director with the post of middle management of second degree and has two senior technicians and an administrative employee.

6. 2018 Activity - Audit Reports / Opinions

In 2018, in compliance with what was defined in the approved Action Plan (AP), the DAI carried out the actions provided for therein in order to fully implement it.

The AP for the year 2018 contemplates the execution of various actions, namely audits of a financial nature, planned audits of general scope to organic units, audits of the procedures to be observed regarding the internal control in the administration of Entity X, targeted audits and follow-up actions recommendations of the DAI. This department also intervenes in other types of actions,

such as analyzing the accounts of associations of public and private law in which Entity X holds stakes in capital and preparing the respective opinion. In some cases, the DAI represents Entity X on the Fiscal Council. The audit actions promoted by DAI, have as main objective the reinforcement of the internal control mechanisms, assuming at the same time a pedagogical component. As mentioned, the activity of this department in 2018 covered several aspects, with audits being its main nucleus. A summary of the activity carried out is shown in the following table.

DAI activity in 2018

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	OBS
Number of scheduled audits	4	3	2	1	10	
No. of Audits performed	2	1	2	4	9	
No. of audit reports delivered	2	1	2	2	7	
No. of opinions issued						
Opinions for the Supervisory Board and assessment of the accounts of Associations / Foundations						
Rules and Regulations				3	3	
Monitoring Reports	4	0	3	0	7	
Other Reports						
Various actions						

Source: Own Elaboration based in Data from entity X (2018)

These actions resulted in a risk matrix with the following composition:

Risk Matrix Composition

Report/Risk	
N.º 1	Academic Management
Reduced Risk	10
High Risk	28
Very High Risk	24
Total	62
N.º 2	Social Action
Reduced Risk	12
High Risk	38
Very High Risk	40
Total	90
N.º 3	Attendance and punctuality
Reduced Risk	
High Risk	
Very High Risk	
Total	
N.º 4	Sport
Reduced Risk	5
High Risk	22
Very High Risk	17
Total	44
N.º 5	Sport - external relations
Reduced Risk	1
High Risk	1
Very High Risk	2
Total	4
N.º 6	Reproduction contracts
Reduced Risk	6
High Risk	25
Very High Risk	8
Total	39
N.º 7	Hotel activities
Reduced Risk	5
High Risk	33
Very High Risk	7
Total	45

Source: Own Elaboration based in Data from entity X (2018)

In summary, the risk matrix for all actions developed is as follows:

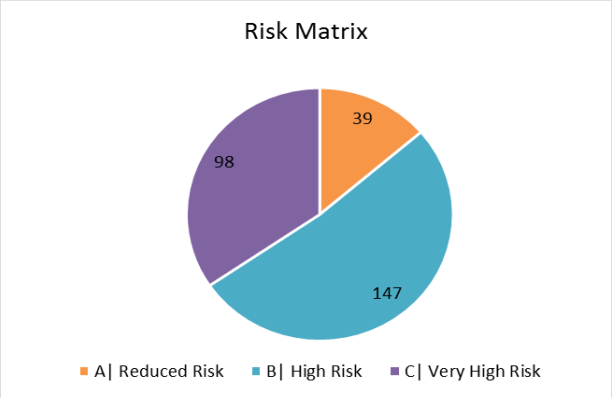
Risk Matrix for All Actions (2018)

A|	Reduced Risk	39
B|	High Risk	147
C|	Very High Risk	98
	Total	284

Source: Own Elaboration based in Data from entity X (2018)

The following graph traces another perspective, in which it can be seen that the actions in which a high risk was detected were the most prevalent (147), followed by those with very high risk (98) and those with reduced risk were in number of 39, compared to a total of 284.

Risk Matrix Graph



Source: Own Elaboration based in Data from entity X (2018)

The risks mentioned above were duly reported to the entities involved and the respective recommendations were formulated.

7. Follow-up Reports

It is part of the activities of the DAI to monitor the recommendations made when delivering the audit reports. In 2018, the responsible parties were asked to report the audit follow-up reports from previous years, involving seven departments: treasury, research, purchasing and logistics, international relations, tourism and building management.

In relation to these requests for reporting on the implementation of the recommendations made by the DAI, it was found that in general the recommendations were met, and the anomalies corrected. However, in some bodies, due treatment was not given, nor was the priority that the same issues deserved. As a consequence, the senior managers were given due note, and new audits were determined for the departments involved.

8. Conclusions

Internal audit is a tool that is increasingly being used by managers in order to prepare organizations for the monitoring of processes, which are increasingly dynamic in all sectors and companies, regardless of their size.

The audit has increasingly aroused the interest of society in general and is beginning to be used as a tool in the management process by the administrators, who show greater concern with internal control.

In 2018, the DAI followed the action plan approved by the superiors. In its interventions, the department analyzed several areas, with a view to assessing the internal control and risk management system and formulated the necessary recommendations in view of the anomalies detected, which were classified according to the risk underlying it.

With regard to the monitoring of the actions of previous years, assessing the degree of compliance with the recommendations made at the date of the audits, it was found that, in general, they were satisfied. From time to time, the directors and officers of the audited departments did not provide the DAI with the necessary clarifications on the implementation of the measures formulated by this Department. However, the entity's top manager and certain new audits were warned.

In addition to the opinions that the DAI regularly issues, in the year under review, the accounts of various Associations and Foundations participated by Entity X were analyzed, with a view to analyzing their compliance with the adopted accounting standards and the regularity of management operations.

The exercise of internal audit in a large entity such as the one we have been analyzing is of great importance, having proved to be an effective mechanism in different aspects of the activity performed by Entity X.

It is desirable that the DAI will be endowed with the resources that are indispensable for the exercise of its activity, namely with the most recent computer tools at the service of the audit.

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Building bridges between universities and primary schools: a powerful collaboration to spread entrepreneurial mindset in pupils♦

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Abstract

Purpose of the paper: *As society is facing epochal challenges, all educational levels are called to contribute to propose new answers and strategies. This paper suggests the collaboration between Universities and Primary Schools as a means to spread the entrepreneurial mindsets in children, to conceive useful answers to social challenges.*

Methodology*: This research is based on an in-depth analysis of an ongoing project that engages a University and three Primary Schools, involving 175 children aged from 6 to 10 years. To evaluate the project efficacy, families and teachers were invited to fill a questionnaire, and a statistical analysis has been done.*

Results*: Findings show the efficacy of the project in terms of the improvement of social orientation, creativity, self-esteem, perseverance, autonomy and proactivity of children. These skills have been registered within the educational context and the social life of children, underlining a positive effect on society.*

Research limitations*: The main limitation regards the evaluation of the efficacy of the project in the short-term. This highlights the need to replicate the analysis also in the long-term.*

Academic and practical implications*: Theoretically, this study contributes to the theory of socio-constructivist and the literature on entrepreneurial education in primary schools by introducing the influential role of University-Primary Schools collaboration. For practitioners, this research offers best practices to inspire other successful cases to spread an early entrepreneurial mindset.*

Originality of the paper*: The study elucidates the relevance of the early entrepreneurial mindset as a means to conceive new answers to the current social challenges.*

Key words*: entrepreneurial mindset; entrepreneurial competencies; entrepreneurial education; university; primary schools*

♦ The paper is the result of the joint effort of the authors. However, sections 1 and 2 are attributable to Michela Floris, and sections 3 and 4 to Angela Dettori

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1. Introduction

Recent changes in political, social, economic, and cultural settings and hyper turbulence (McCann and Selsky, 1984) are concurring to generate epochal challenges for societies (Somprach, Popoonsak, and Sombatteera, 2014). Global trends in the labor market, mobility and migration, gender and sexuality, poverty, different disabilities, also in the learning context, and other dynamics are calling into action institutions and communities. For this reason, changing past mindsets and improving culture can help in facing the new phenomenon, by managing the increasing diversity and by reducing social and economic inequalities (Löw, 2020; Mucci, 2019). Facing these epochal challenges means conferring a new role to those institutions that can effectively contribute to creating the basis for a new culture. These institutions are schools and universities where children, adolescents, and youth can find efficacious strategies for building a better society (Amirkhanyan, Holt, McCrea, and Meier, 2019; Canrinus, Klette, and Hammerness, 2019).

In this sense, teachers are invited to generate a fertile learning environment able to ensure the spread of positive students' outcomes, based on an entrepreneurial mindset, that is the ability to make sense and act under uncertain conditions (McGrath and MacMillan, 2000), guaranteeing equity, non-discriminations, self-efficacy, ethical behaviors and value creation (Floris and Dettori, 2020; Floris and Pillitu, 2019). More in detail, the mentioned challenges are stimulating a renewed way to conceive the role of universities and schools: places in which not only imparting and developing subjects but places in which spurring children, adolescents, and young to be competent adults, able to promote values in their social contexts. Focusing on universities, engaged in their third mission and, recently, in their fourth mission (Cooper, 2009, 2017), the role of scholars are changing towards a social justice orientation, focused on the "transformation of socio-economic-cultural inequalities" (Cooper, 2015, p. 240). This change calls into action academics in a quadruple helix of university-industry-government-civil society (Cooper, 2017), called the fourth dimension that is often described as the end-user, customer or community (Campbell and Carayannis, 2016; Carayannis, Grigoroudis, Campbell, Meissner, and Stamati, 2018). In line with this perspective, the scarcity of theoretical and empirical studies that explore the challenges of the quadruple helix model (Höglund and Linton, 2018) is stimulating. Moreover, it is particularly exciting concerning entrepreneurial education (Rebernik, 2009), as a result of the progressive transformation of societies from managerial to entrepreneurial economies (Audretsch, Grilo, and Thurik, 2007a, 2007b) that need creativity and individual entrepreneurial mindsets as keys of success. Many scholars (Filion, 1994; Gasse, 1985) have highlighted that childhood and adolescence are the ideal stages to construct and enhance an entrepreneurial mindset, particularly useful to create a better society, especially in terms of problem-solving, innovation, and team-building skills (Heinonen, 2007), altruism (Gilder, 1981), perseverance, self-efficacy, social orientation (Farrington *et al.*, 2012), and opportunity recognition (Fisher, Graham, and Compeau, 2008). However, notwithstanding these assumptions, "how" entrepreneurial mindset can be taught remains a significant challenge (Floris and Dettori, 2020; Floris and Pillitu, 2019; Jones, 2019; San Tan and Ng, 2006). Stimulated by this debate, making an articulated reflection on the fourth mission of universities and problematizing these concepts (Alvesson *and* Sandberg, 2011), this paper aims to answer the following question:

"*Can the collaboration between Universities and Primary Schools be a means to construct an early entrepreneurial mindset and conceive effective responses to current social challenges?*"

Building on the socio-constructivist approach (Von Glasersfeld, 2001), and following the assumption of Filion (1994) and Gasse (1985), this study discusses and analyses a project carried out by the collaboration between University and Primary Schools, and investigates the efficacy of the project. Through the calculation of the Index of Efficacy, which was measured thanks to the active participation of teachers and parents to a survey carried out by a questionnaire as the primary data source and semi-structured interviews as secondary sources of information, findings showed exciting insights.

Theoretically, the contribution of this study is quadruple. Firstly, findings contribute to the call for empirical studies about the quadruple helix model (Höglund and Linton, 2018), focusing on

those that concern entrepreneurial education (Rebernik, 2009). Secondly, results contribute to the socio-constructivist theory by focusing on how early entrepreneurial competencies can be built. Thirdly, findings are enlightening for the literature on entrepreneurial education in primary schools by introducing the influential role of University-Primary Schools collaboration. For practitioners, this study suggests best practices to inspire other successful cases to spread an early entrepreneurial mindset. Fourthly, the proposed Index of Efficacy and the Overall Index of Efficacy can be useful tools to evaluate the efficacy of the projects.

However, the main drawbacks that represent a good starting point for further studies are when the project's efficacy evaluation has been done and the fact that findings derive only from one project. Further studies are invited to repeat the assessment of the efficacy of similar projects, also in a long-term perspective.

2. Literature Background

2.1. The socio-constructivist approach

The society is changing its physiognomy. People and communities have to adequate their life to the present and upcoming conditions. In this scenario, schools and universities play a fundamental role in developing knowledge and skills, and promoting socio-cultural changes to respond and anticipate social needs (Palumbo and Manna, 2019; Woods, Jeffrey, Troman, and Boyle, 2019). In this scenario, the entrepreneurial mindset, defined by McGrath and McMillan (2000), like the capability to act and take initiatives under uncertain conditions, sounds able to synthesize the conglomerate of skills that can promise active answers to the changing society.

Nowadays obtaining these skills is more urgent than in the past, due to economic crisis, in which entrepreneurial skills and propensity can create value (Rae, 2010), by encouraging entrepreneurial intentions and activity (Kautonen, van Gelderen, and Fink, 2015; Kibler, Kautonen, and Fink, 2014; Rauch and Hulsink, 2015), and removing entrepreneurial mindset from the constraining business context, involving the entire individual's life (Gibb, 2002). Societies are progressively shifting from managerial to entrepreneurial economies (Audretsch *et al.*, 2007a, 2007b) and require entrepreneurial competencies.

However, it is a little bit curious that while there is a broad agreement about the fact that these specific skills can be taught within schools and universities, and thus spread into societies, the "how" remains a fascinating task that stimulates scholarly interest and debates (Jones, 2019; San Tan *and* Ng, 2006).

In this view, the socio-constructivist approach (Kanselaar, 2002; Piaget, 1975; Lev Vygotsky, 1934) can help achieve this goal (Bell and Liu, 2019). The primary assumption of this perspective is that the heart of the entire learning process is the learner and the learning seems the result of the interaction with a problem context where learners construct their knowledge (Bruner, 1966; Piaget, 1936, 1975, 1976; L. Vygotsky, 1978a, 1978b).

As argued by Glasersfeld (2001), teaching and learning cannot always take place in the same way, and learning follows two different paths: "word for word" learning, and "conceptual learning." The first relates to the ability to repeating some concepts, and it is simple to verify and evaluate. The second "is literally connected with the activity of conceptualization" (Von Glasersfeld, 2001, p. 162) and requires an intellectual effort to construct concepts and confer them specific meanings.

Following the second path -conceptual learning-, learners are stimulated to construct their knowledge that is not transferred passively but is personally constructed and generates failures or success of personal actions. Accordingly, teaching can be considered a social activity, and learning an individual process, stimulated by education. In this scenario, learners are the most active actors for their knowledge and skills construction, and teachers have to adapt their pedagogical approach to stimulate learners' critical thinking (Adey, 2005, 2006; Shayer and Adhami, 2007). The main difficulty in this perspective can be found in the teachers' previous knowledge (McGuinness, 1999)

that can represent contemporarily an obstacle or an incentive towards the construction of new concepts that implies the activation of learners' critical thinking skills.

2.2. Building the entrepreneurial mindset in Primary Schools

Constructing and enhancing entrepreneurial competencies and spreading an entrepreneurial mindset in children implies a complete revision of the traditional pedagogical approaches based on a top-down process characterized by the fact that teacher imparts information and learners have to learn. Revisiting this approach means stimulating learners to construct their knowledge from their reality and contributing to the creation of critical thinking skills that allow them to understand what they live and experience contents and knowledge. Thus, the educational and learning process shifts from a top-down to a bottom-up approach, involving teachers and learners in a circular constructionist relationship. In light of these statements, the development of a productive entrepreneurial mindset is allowable through a socio-constructivist approach that involves teachers and learners in the construction of new skills, embracing the idea of 'doing in order to understand, and understanding in order to do' (Avenier, 2000), by applying constructed knowledge and acquired skills in daily life (Berkovich and Eyal, 2019).

As already underlined, childhood and adolescence can be considered the right stages for constructing an entrepreneurial mindset by fostering positive attitudes toward developing the spirit of initiative and creating social and economic value (Filion, 1994; Gasse, 1985). In line with this, recent European policies have also outlined the relevance of enhancing social competencies, creativity, innovation, and entrepreneurship at all levels of education (Bourgeois, 2011; Bourgeois and Balcon, 2016). The OECD (Lackéus, 2015) and the European Union (Commission, 2006) report the relevance of acquiring an entrepreneurial mindset, conceiving the "sense of initiative and entrepreneurship" as one of the eight key competences of life-long learning strategies (Bacigalupo, Kampylis, Punie, and Van den Brande, 2016).

Specifically, referring to the individual's ability to shape ideas into actions, the European Union sustains the relevance of including entrepreneurship in each nation's education policy (Sánchez, 2013), acquiring entrepreneurial skills like creativity, innovation, social orientation, risk-taking, opportunities identification, ethical values, and others. These skills can help to create social and economic value (Kautonen *et al.*, 2015; Rae, 2010; Rauch and Hulsink, 2015).

However, notwithstanding the relevance of the topic (Moberg, 2014a; Rosendahl Huber, Sloof, and Van Praag, 2014), it lacks the fundamental appeal to the teacher of primary schools to introduce it within curricular activities (Commission, 2006; Lackéus, 2015). In this sense, rather than recognizing its value, teachers often negatively react to the construction of an entrepreneurial mindset, based on entrepreneurial competencies, within their classrooms (Falk-Lundqvist, Hallberg, Leffler, and Svedberg, 2011), underestimating its importance in early education (Floris and Pillitu, 2019). Moreover, constructing an early entrepreneurial mindset is problematic because it needs definitional clarity, specific skills, attitudes, abilities, adequate organizational structures and knowledge, which teachers seldom possess or that curricula and programs do not consider (Johannisson, 2010; Komulainen, Naskali, Korhonen, and Keskitalo-Foley, 2011; Surlemont, 2007). In this regard, primary education deserves particular attention (Gibb, 2008; Handscombe, Rodriguez-Falcon, and Patterson, 2008) to influence educational objectives and methods (Mwasalwiba, 2010) and emphasize cognitive and soft skills earlier than in later education (Cunha and Heckman, 2007; Rosendahl Huber *et al.*, 2014). Obtaining an early entrepreneurial mindset means for children developing vital skills, such as problem-solving, innovation, team-building (Heinonen, 2007), altruism (Gilder, 1981), perseverance, social orientation and self-efficacy (Farrington *et al.*, 2012), and recognition of opportunities (Fisher *et al.*, 2008). With such an entrepreneurial mindset, children can operate under uncertain conditions (Gibb, 2002); affecting positively future labor market (Moberg, 2014a), and creating new enterprises (Hassi, 2016; Obschonka, Silbereisen, Schmitt-Rodermund, and Stuetzer, 2011). Additionally, an early entrepreneurial mindset empowers individuals and organizations to create value and promote future

entrepreneurial ecosystems (Volkmann, Fichter, Klofsten, and Audretsch, 2019) by developing active citizenship, social inclusion, and collective socioeconomic enhancement (Falcone, Silvestri, Cerbaso, Forcina, and Di Bona, 2015). Finally, encompassing the children's life entirely (Bourgeois and Balcon, 2016), an early entrepreneurial mindset spread values and create the conditions for a positive socioeconomic development (Floris and Dettori, 2020; Floris and Pillitu, 2019).

This fascinating challenge and the inherent difficulties lead to a profound analysis to discover how constructing and enhancing entrepreneurial competencies to develop an early entrepreneurial mindset. Consistent with the literature, this paper, following the socio-constructivist approach, tries to identify how an early entrepreneurial mindset can be stimulated.

2.3. The powerful collaboration between University and Primary School

As underlined in the previous section, often teachers of Primary School denote a sort of resistance in acting to develop the entrepreneurial mindset in pupils. This can be due to the resource constraint, to the lack of specific expertise and knowledge, and to the low interest in acquiring adequate knowledge and competence (Floris and Dettori, 2020; Floris and Pillitu, 2019; Johannisson, 2010; Komulainen *et al.*, 2011).

To overcome these difficulties, the European Union (Commission, 2013), and several scholars (Elmore, 1996; Floris and Pillitu, 2019; Gibb, 2008; Lackéus, 2014), have underlined that imparting entrepreneurial competencies in children can be ensured with beneficial collaborations with relevant stakeholders, such as University and, thus, academic researchers. Accordingly, an ideal approach is a collaborative approach with multiple stakeholders, but above all, with Universities and accurately, with scholars of management, and entrepreneurship. A collaborative approach has recently found a full application in education (Eldridge, Larry, Baird, and Kavanamur, 2018; Floris and Dettori, 2020; Floris and Pillitu, 2019; Palmér, Johansson, and Karlsson, 2018), and the stakeholder involvement has allowed to address the crisis of children dropping out of school and to foster students' motivation and competencies (Mulvey, 2016).

In this perspective, Universities are becoming more socially and economically relevant institutions under the lens of the "Third Mission", especially concerning the contribution in building an entrepreneurial architecture (Vorley and Nelles, 2008). The combination of teaching, research, and third stream activities reinforce relationships with other institutions and create a reciprocal development (Vorley and Nelles, 2008). More recently, Universities are evolving toward their "Fourth Mission" (Cooper, 2009, 2017), characterized by the renewed role of scholars, focused on the "transformation of socio-economic-cultural inequalities" (Cooper, 2015, p. 240). This epochal change involves academics in a quadruple helix of university-industry-government-civil society (Cooper, 2017), to contribute to solving social challenges (Campbell and Carayannis, 2016; Carayannis *et al.*, 2018). This is particularly relevant concerning entrepreneurial education (Rebernik, 2009), because of societies need the spread of entrepreneurial mindsets (Audretsch *et al.*, 2007a, 2007b) and architecture that, following Vorley and Nelles (2009, p. 288), consists of "the institutional, communicative, coordinating and cultural elements of an organization oriented towards innovation", and comprises several elements, among which entrepreneurial culture (Burns, 2012). Regarding this, University, in line with its third and fourth mission, can help Primary Schools impart entrepreneurial competencies and help pupils construct their entrepreneurial mindset.

Notwithstanding, some scholars sustain that the entrepreneurial mindset cannot be taught because it depends on genetic factors (Nicolaou and Shane, 2009), others argue that is can be imparted (Kuratko, 2005), through experiential and collaborative approaches (Pittaway and Cope, 2007). Following this perspective, Lackéus (2014) and Lackéus, Lundqvist, and Williams Middleton (2013) underline that the entrepreneurial mindset can be built by imparting entrepreneurial competences through an interactive process that encompasses two entities: the learner and who teaches skills orchestrating personal and collective competencies. In such context, teachers of Primary Schools and Academic researchers of management and entrepreneurship are

invited to invest their effort, by collaborating to ensure children the possibility to construct their entrepreneurial competencies. These involve several dimensions (Oosterbeek, Van Praag, and Ijsselstein, 2010): achievement; autonomy; power; social orientation; self-efficacy; perseverance; risk-taking propensity; creativity; flexibility. Achievement refers to the ability to define and pursue goals. Autonomy is essential to make independent decisions and face difficulties. Power means influencing the behavior of people. Social orientation reflects the need for matching defined goals with social needs and social activities. Self-efficacy refers to the awareness of personal abilities and is fundamental in pursuing desired goals. Perseverance means endurance and durability, with high resistance to stress and tiredness. Risk-taking propensity is the ability to act with uncertainty, accepting the possibility of losing the invested resources. Creativity is the aptitude to see and create something new and turn concerns and difficulties in opportunities. Finally, flexibility reflects the ability to adapt and change the behavior reacting to the environment change.

The mentioned competencies are mainly "non-cognitive" (Johannisson, 2010; Surlemont, 2007) and require learners to actively participate in activities where they have to assume responsibility for the entire process, by exercising direct influence and making decisions (Moberg, 2014b). As Cunha and Heckman (2007) note, non-cognitive skills cannot be ascribed merely to individual abilities, but rather their development depends on the educational context. Fostering these skills requires that teachers be facilitators and mentors to encourage children to leave their comfort zones to pursue their goals and ambitions (Surlemont, 2007). Therefore, teachers have to promote creativity, proactivity, and a sense of initiative-taking (Pepin, 2012), and learning environments need to be funny, authentic, collaborative, lead to self-awareness, and be open to diverse forms of talent (Collins, 1996).

In this scenario, the socio-constructivist approach represents a theoretical perspective in which developing the collaboration between University and Primary Schools to impart and enhance entrepreneurial competencies as the bases to construct an early entrepreneurial mindset.

3. Methodology

3.1 Research design, sample, and data collection

Intending to answer to the following research question: "*Can the collaboration between Universities and Primary Schools be a means to construct an early entrepreneurial mindset and conceive effective responses to current social challenges?*", this study adopts a single case study (Eisenhardt and Graebner, 2007; Yin, 1994) of a pioneering extracurricular project.

The project has involved 175 children of ages 6-10 and was carried out with an active collaboration between a University, in line with its third mission, and represented by two researchers of Management and Entrepreneurship and three Primary Schools, represented by ten teachers.

The research path was divided into two main phases: the first was related to the project delivery, and the second focused on evaluating the project efficacy.

During the first phase, the two academic researchers were involved in 60 hours of direct activities (seminars, laboratories, experiential initiatives) within the classrooms, with the classroom's curricular teachers. The project started in September 2018 and finished in June 2019. The used pedagogical approach can synthesize the main characteristics of the project, that was *learning through creating value for others* (Lackéus, Lundqvist, and Middleton, 2016), able to bridge the 'educational rift by combining standardized subject matter with individual students' needs and abilities' (Lackéus *et al.*, 2016, p. 793). New means as fables, well known in studies on management and entrepreneurship as a useful tool for spreading entrepreneurial competencies (Das, 2014; Drucker, 1963; Smith and Neergaard, 2015), were introduced in the project. The relevance of the approach is generally recognized as a tool to revitalize entrepreneurship education (Beyes, Parker, and Steyaert, 2016; Floris and Dettori, 2020; Floris and Pillitu, 2019; Hjorth, 2017;

Johannisson, 2018), because fables help to 'communicate multidimensional concepts concisely' and allow 'rich lessons' (Short and Ketchen Jr, 2005, pp. 816-817), through which a learner can contextualize new information in a familiar context. Moreover, movies, music, laboratories, workgroups, and other means were used to enhance specific competencies.

The second phase of the research has focused on the evaluation of the project's efficacy, and the data collection was based on a longitudinal study methodology (Langley, 1999; Leonard-Barton, 1990), characterized by the use of multiple sources of data. The primary source was a questionnaire addressed to teachers and a parent for each child, created to highlight the level of increase of the following entrepreneurial skills (Johannisson, 2010; Oosterbeek *et al.*, 2010): self-esteem and self-efficacy, social orientation, perseverance, autonomy, proactivity, and creativity. The questionnaire consisted of two main sections. The first was related to the informants' perception of the project's efficacy. The second was referred to specific items based on a 1-to-5 Likert scale (Allen and Seaman, 2007) to reveal what aspects, such as self-esteem, social orientation, perseverance, autonomy, proactivity, and creativity, were found in children after participating in the project. The questionnaire was pilot tested before the leading survey on 15 parents. Following several modifications to the layout, order, and wording of some items, the questionnaire's internal reliability was 0.78, which was calculated via Cronbach's alpha. The final version of the questionnaire was approved by three academic experts in the field of management, following a content validity method (Churchill Jr, 1979). Then, the questionnaire was sent online from September to December 2019, and the data being collected in January 2020. The sample of respondents was defined following a non-probability procedure and a convenience sampling method, because of their accessibility and proximity to the researchers (Black, 1999) and the size can be considered sufficient for obtaining consistent statistical results (Bentler and Chou, 1987; Hair, Anderson, Tatham, and William, 1998). Especially, respondents (teachers and parents) were selected based on the classrooms where the project was concluded and according to their availability. This allows avoiding the nonresponse bias (Armstrong and Overton, 1977). Ethical aspects were taken into consideration and respected throughout the study's implementation, with the filling of a document for the consent. Moreover, the goal of the research was clearly expressed and presented to the respondents in the introductory part of the questionnaire before proceeding with the filling. Anonymity was guaranteed, and authorization was obtained to gather data and to use the collected information for scientific and academic purposes.

Secondary sources were direct observations of pupils within the classrooms during the project and informal semi-structured interviews with teachers and parents. These qualitative data allowed triangulating information obtained by the analysis of questionnaires and comparing quantitative results with teachers' and parents' perceptions and thoughts and children's behaviors and expectations.

3.2 Findings

Teachers and parents (one for each learner) have been invited to participate voluntarily in the study, for a sum of 185 involved individuals and the 32% agreed. Thus, the online questionnaire was sent to and filled from 59 respondents: 10 teachers and 49 parents that have ensured their availability to participate in the research. The number of participants was considered adequate to guarantee the representativeness and significance of the sample (Bentler and Chou, 1987).

The quantitative analysis was carried out by descriptive statistical analysis, and in a second step, by applying the Index of Efficacy (Ie) to the data collected.

Concerning the descriptive statistical analysis, findings showed that the project had produced positive effects. Expressly, all teachers have stated that the project has generated positive effects on curricular activities. About the overall evaluation of the project in terms of effects realized in pupils' daily lives, 90% of parents have underlined that positive results have been achieved. For the others, the project has produced no effects. Therefore, for 99% of the respondents, the project was useful and has stimulated within children curiosity (40%), interest (30%), reflection (29%), fun and

boredom (1%). None of the respondents has replied that the project has raised difficulties, resistance, and discouragement.

The originality of this study comes from the second step of the analysis, which consists of evaluating the project's efficacy. In this regard, the efficacy has been assessed, by conceiving and then calculating a specific index for each item included in the questionnaire, the Ie, measured applying the following formula:

$$Ie=\{[\sum (X_iF_i)]/n\} - \mu$$

In the formula, $\mathbf{X_i}$ represents the mode of the variable (1; 2; 3; 4; 5), $\mathbf{F_i}$ the absolute frequency, that is the number of responses for each individual, **n** the sample size and **μ** is equal to 3, that is the central value of the scale. The Ie can assume values between - 2 and 2. On one side, if the index registers negative values, it highlights the ineffectiveness of the project for the item analyzed; on the other side, if the index assumes positive values, it highlights the effectiveness of the project for the item analyzed. The latter can be weak, if the values are in the range $0 \leq \mathbf{Ie} \leq 1$, or strong, if the values are in the range $1 < \mathbf{Ie} < 2$. If Ie = 2, there is perfect efficacy of the project.

Table 1 and Table 2 summarize the results of the second part of the questionnaire, where the respondents have answered according to a Likert scale from 1 to 5 (1 = not entirely agree; 5 = completely agree) to evaluate the efficacy of the project. In detail, table 1 presents the Ie for each element of every item, while table 2 indicates the overall Ie (OIe) for each item. The OIe represents the mean of the different Ie, and it was calculated applying the following formula:

$$OIe=\sum Ie/n$$

Tab. 1: Index of efficacy (Ie) for each element

Items				***Ie for each element***				
	(1)	**Ie**	**(2)**	**Ie**	**(3)**	**Ie**	**(4)**	**Ie**
Self-esteem/ Self-efficacy	Confidence	1.07	Acceptance	1.10	Self-awareness	0.74	Strengths and weaknesses	0.98
Social orientation	Relate	1.17	Co-operate	1.35	Listen	1.20	Self-control	0.81
Perseverance	Determination	1.19	Commitment	1.27	Capacity	1.08	Encouragement	1.05
Autonomy	Identify problems	0.80	Select information	1.00	Propose and select solutions	1.10	Identifying solutions	1.51
Proactivity	Plan	0.78	Time use	0.86	Manage change	0.86	Manage events	0.85
Creativity	Generate new ideas	1.22	Thinking outside the box	1.03	Make connections	0.98	Propose innovative solution	1.61

Source: Author's elaboration

As shown in Table 1, concerning the elements identified for each item, the Ie is always positive; therefore, there is consistency with the analyzed elements and the project's effectiveness.

Table 1 shreds of evidence that the highest value of Ie is obtained for "propose innovative solutions" (Ie=1.61), which signifies a substantial enhancement of identifying and proposing innovative answers to real and current problems and difficulties that children have to face. This element nurtures the item "creativity." This result corroborates the direct observations. Stimulated from problem-solving activities, children have improved their abilities to conceive solutions based on the "lateral thinking." These initiatives have generated positive outcomes also in curricular activities, as the following quotes underline:

"*Children have started to apply the lateral thinking principle in our lessons, by developing exciting paths and solutions above all in mathematics and sciences.*" (Teacher)

"*(…) now the motto is thinking differently; thus, my learners are leaving traditional solutions to solve a problem.*" (Teacher)

Regarding daily lives, a parent said:

"*My daughter has started to identify innovative ways to solve her little problems. (…) the most relevant result is, in my opinion, how she has renewed her method to study and do her homework. I'm delighted.*" (Parent)

Particularly relevant also the element "cooperate" (Ie=1.35), included in "social orientation" item. The triangulation of data sources has been particularly helpful to investigate why this element has obtained the highest value. From the semi-structured interviews have emerged that children have understood the importance of co-operating within classrooms and families. The following quotes can help in interpreting the concept:

"*Surprisingly, at the end of the project, children have begun to collaborate within the classroom, losing their individuality in favor of collective activities and results.*" (Teacher)

When the project finished, my son was sad, but I noted a lot of behavioral changes. One in particular: he started to collaborate with me. For example, he started tidying up his room and helping me with the housework. I hope it's an effect that lasts over time (laughter)." (Parent)

On the opposite side, the lowest rate of Ie has been registered for the element "self-awareness" (0.74), included in the item "self-esteem and self-efficacy". This indicates that informants have argued that children have shown a weak enhancement of the level of self-awareness of their abilities. This evidence has emerged from direct observations, above all, concerning children that initially did not trust in their abilities and, at the end of the project, showed an adequate level of confidence. Moreover, the following exciting quotes can further underline this enhancement:

"*Sometimes, children get discouraged and believe that they are not able to overcome the difficulties they face daily at school. The activities proposed during the project undoubtedly shook the children and led them to have greater confidence in their abilities*." (Teacher)

"*My daughter has always doubted her abilities. Following the project, I see her more confident and aware of being able to carry out activities that she previously thought impossible to do.*" (Parent)

From the Ie of each item, it was possible to measure the OIe, in order to frame how self-esteem and self-efficacy, social orientation, perseverance, autonomy, proactivity, and creativity increased because of the project.

Table 2 shows the results obtained.

Tab. 2: Overall Index of Efficacy (OIe)

Items	***Overall Ie***
Self-esteem/Self-efficacy	0,97
Social orientation	1.23
Perseverance	1.15
Autonomy	1.10
Proactivity	0.84
Creativity	1.21

Source: Author's elaboration

Surprisingly, "social orientation" represents the item that has registered the highest value of OIe (1.23), underlining that the project has slowly spread in children's specific abilities. More in detail, children have actively improved the ability to relate to others, to increase the skills to co-operate and work in a team, and to get better the propensity to listen. This improvement in social competencies has also emerged from direct observations. Initially, children have experienced many

difficulties in working together, while, at the end of the project, they have shown their pleasure to relate with the others, by collaborating and reciprocally listening. Therefore, inspiring quotes have also emerged from semi-structured interviews with parents and teachers:

"*We have always found difficulties in engaging children to work in groups because individualism tended to prevail. Now, they have learned that the strength is in the group and, in particular, in everyone's abilities.*" (Teacher)

"*My son has finally learned to collaborate and play with his brother. Furthermore, I realize that it has also improved his interpersonal relationships with other children. It tends to value differences and not to highlight defects. I am delighted.*" (Parent)

From the analysis has emerged how "Proactivity" represents the item with the lowest Ie, notwithstanding the positive value underlined that children had increased their ability to plan and manage time, changes, and events. This result supports direct observations, in particular concerning the planning ability and the time use. Children have demonstrated an increasing ability to plan and to manage time effectively, but the registered results are not in line with the initial expectations. However, OIe is positive, and teachers and parents have elucidated their appreciation for this item.

A teacher has argued that:

"*You probably would have expected a higher result, but I am delighted because I can tell you that they have improved in time management. There is still work to continue, but children have internalized that time is a strategic resource.*" (Teacher)

According, a parent underlined that:

"*Thanks to the project, my daughter spends less time chatting and finally uses it to do what she must. She finally realized that in doing so, she has much time to play and have fun, and, above all, she does not always hear me repeating her to commit herself and to make good use of time and to organize her work efficiently*." (Parent)

Finally, also other items as the increasing of "creativity" (OIe=1.21), "perseverance" (OIe=1.15), and autonomy (OIe=1.10) have received high scores, indicating a strong efficacy of the project in terms of construction of the mentioned entrepreneurial competencies.

3.3 Discussion

This study aimed to answer the following research question: "*Can the collaboration between Universities and Primary Schools be a means to construct an early entrepreneurial mindset and conceive effective responses to current social challenges?*"

Building on the socio-constructivist approach and considering the spread of an early entrepreneurial mindset, an effective means to conceive innovative answers to the current changes in society, this paper focused on a pioneering project that involved University and Primary school, engaging 175 pupils.

From the in-depth analysis of the project, the evaluation of its efficacy was carried out through a questionnaire, direct observations, and semi-structured interviews with parents and teachers. Findings have revealed that the project was firmly efficacious in terms of results produced within curricular activities and children's daily lives. The evaluation stems mainly from the measurement of the OIe, that is the Overall Index of Efficacy, for each item considered.

Findings allowed answering the research question, arguing that the collaboration between Universities and Primary Schools represents a successful means to construct an entrepreneurial mindset in children and concur, in this way, to propose new and effective responses to present and future challenges that society has to face.

The study has several implications and contributions to theory and practice. Concerning theoretical implications, this research contributes to the literature in at least four ways.

Firstly, this study has contributed to the call for empirical studies about the quadruple helix model (Höglund and Linton, 2018), focusing on those that concern entrepreneurial education

(Rebernik, 2009). The analyzed project represents an experiential learning activity that calls into action Universities to generate positive outcomes into societies. In particular, that contributes to changing the past culture into a new one, based on the construction of an effective entrepreneurial mindset since childhood.

Secondly, results contribute to the socio-constructivist theory by focusing on how early entrepreneurial competencies can be built. Therefore, the adopted theoretical perspective in the broad topic of entrepreneurial competencies and entrepreneurial mindset building in children is quite new. Few studies have followed this direction, focusing mainly on a high school level and avoiding primary education. This study, following Filion (1994) and Gasse (1985), has sustained that childhood and adolescence are the ideal stages to construct and enhance an entrepreneurial mindset, and using the socio-constructivist theory has explicated how this can happen. Contemporarily, also the mentioned theory is extended by this study because it has shown the efficacy of projects based on the socio-constructivist approach also in a specific field that is currently still understudied and undervalued.

Thirdly, this study contributes to the literature on early entrepreneurship education, focusing on this stream of research that is in its initial stage and deserves more attention (Gibb, 2008; Handscombe *et al.*, 2008) from scholars in light of its relevance (Moberg, 2014a; Rosendahl Huber *et al.*, 2014). More in detail, this study proposes to fill the gap underlined by previous studies (Falk-Lundqvist *et al.*, 2011; Jones, 2019; San Tan and Ng, 2006) by proposing the collaboration of Universities and Primary Schools as a successful way able to overcome the importance underestimation by teachers, due in particular of their lack of specific skills, knowledge, attitudes, and abilities. Moreover, this study has obtained results that contrast with other studies that sustain that the entrepreneurial mindset cannot be taught because it depends on genetic factors (Nicolaou and Shane, 2009). Here, findings have shown that specific activities sustain children in constructing their entrepreneurial mindset and, thus, spread the positive outcomes stemmed from the proposed activities into school and daily lives.

Fourthly, the proposed Index of Efficacy and the Overall Index of Efficacy can be useful tools to evaluate the efficacy of the projects. Correctly, this study has shown that the most relevant enhancement has registered from "social orientation" skills. This means that children, thanks to the proposed activities included in the project, have improved their abilities in appreciating diversity, working in a team, relating and collaborating with others, active listening and managing their self-control, avoiding potentially violent actions dictated by bad anger management that is often experienced in social contexts and, therefore, also within schools.

As far as the practical implications are concerned, this study has shown how the main problems of building an entrepreneurial mentality in children can be overcome with extracurricular projects involving adequate and prepared stakeholders. Accurately, the collaboration between universities and primary schools can represent a valid tool to transfer the knowledge and skills of scholars to management and entrepreneurship in contexts other than university classrooms, thus fulfilling the third mission that sees universities' protagonists of social and economic change.

Finally, yet importantly, the main contribution is dictated by the demonstration of the efficacy of a pioneering project, especially in terms of the construction of social skills. These competencies, above all currently, seem to be fundamental to respond to the challenges of today's changing society and to formulate adequate answers to these same challenges. Stimulating children to create a proper social skills system and a broader entrepreneurial mentality that involves the whole sphere of a person's social and economic life can contribute to the creation of a better society. For this reason, the most relevant expectation is that other similar projects will be proposed to spread the positive effects in other areas, in particular in those that suffer socioeconomic concerns, to build a substantial opportunity for socio-economic development.

The present study is not without limitations. The most relevant is linked to the moment in which the measurements for measuring the effectiveness were performed. The questionnaire and semi-structured interviews were conducted shortly after the closure of the project and. Therefore, the effects could be different in a medium-long term vision. However, this does not affect the

validity of the study and, on the contrary, suggests the study's replication at different times to have monitored over time the project's effectiveness. Another limitation refers to the fact that this study is based on one single project, and to generalize findings, it is necessary to replicate the analysis in other projects or other editions of the same project. Furthermore, further studies could include other elements to be evaluated and devise a tool capable of also assessing the efficiency in terms of "ecosystem", going to verify the impact even in the social fabric of the community in which the project was provided.

4. Conclusion

This study has found that the collaboration between Universities and Primary schools represent an effective means to construct and develop an early entrepreneurial mindset in children to conceive and propose new answers to the current and upcoming social challenges. The analyzed and discussed pioneering project had produced reliable positive results in school and daily lives of children. Findings have contributed to theory and practice, and drawbacks represent good starting points for future research. The expectation is the replication of the project in other settings and, in a different period, to construct and spread an entrepreneurial mindset in children, and adolescents, to have adults more able to solve social challenges.

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Longevità, sensibilità al rischio e familiness nelle imprese familiari: una cluster analysis♦

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Abstract

Obiettivi: *Il presente lavoro si focalizza sulla longevità delle imprese familiari, individuando nella sensibilità al rischio e nella sensibilità alla familiness, due fattori chiave per la loro sopravvivenza.*

Attraverso l'analisi di un campione di imprese familiari longeve, il lavoro dimostra che in queste imprese la sensibilità al rischio aumenta in relazione ai passaggi generazionali; al pari la sensibilità alla familiness è un fattore tendenzialmente endogeno.

Metodologia: *È stata condotta un'indagine sia quantitativa che qualitativa. Inizialmente è stata svolta un'analisi bibliometrica, successivamente, attraverso l'utilizzo del software LIWC, sono state analizzate le imprese centenarie. Infine, attraverso l'elaborazione dei risultati sono state validate le ipotesi di ricerca attraverso un ACP ed una Cluster analysis.*

Risultati: *L'elaborazione statistica ha individuato quattro cluster di imprese, ognuno dei quali raggruppa imprese che hanno diversi orientamenti, sia per quanto concerne la sensibilità al rischio che la sensibilità alla familiness, a dimostrazione del fatto che la longevità delle imprese familiari è funzione di entrambi i valori.*

Limiti della ricerca: *Il campione di imprese familiari appartenenti all'associazione "I Centenari" è stato ridotto da 35 a 25 imprese; inoltre tutte le imprese esaminate sono radicate in una specifica zona geografica.*

Implicazioni pratiche: *Il lavoro vuole dare un contributo alla letteratura riguardante le imprese familiari, individuando le best practices che permettono alle imprese familiari di restare solide e competitive nel tempo.*

Originalità del lavoro: *Questo lavoro si pone l'obiettivo di colmare il gap esistente nell'individuazione delle dinamiche che assicurano la sopravvivenza delle imprese familiari, attraverso l'utilizzo di un mix di strumenti di ricerca.*

Parole chiave: *Longevità; Imprese Familiari; Sensibilità al rischio; Familiness; Passaggio generazionale.*

Objects: *This work is focused on the longevity of family businesses, identifying both risk sensitivity and sensitivity to family, as two key factors for their survival. Through the analysis of a sample of long-lived family businesses, the work shows that for this type of firms the sensitivity to risk increases in relation to generational transitions; likewise, sensitivity to familiness is a tendentially endogenous factor.*

Methodology: *A quantitative and qualitative survey was conducted. In addition, a bibliometric analysis initially was carried out; subsequently, through the use of the LIWC the centenarian firms were analyzed. Finally, through the processing of the results, the research hypotheses was validated through an ACP and a Cluster analysis.*

Findings*: The statistical processing led to the identification of four clusters of companies, each of them gather together companies that have different orientations, both as regards risk sensitivity and sensitivity to familiness, demonstrating the fact that longevity of family businesses is an aspect of both values.*

Research limits: *The sample of family businesses belonging to the "I Centenari" association was reduced from 35 to 25 businesses; in addition, all the companies examined are rooted in a specific geographical area.*

Practical implications: *This study aims to provide a contribution to the literature concerning family businesses, identifying those best practices that allowed the family businesses to remain solid and competitive over time.*

Originality of the study: *This study attempts to bridge the gap between identifying the dynamics that ensure the survival of family businesses, through the use of a research tools mix.*

Key words: *Longevity; Family Business; Risk sensitivity; Familiness; Corporate Governance; Generational shift.*

♦ Sebbene il lavoro sia frutto di una riflessione comune, a Esposito De Falco è da attribuire il par. 4; a Mirone i par. 1, 2, 3 e 3.1; a Esposito i par. 3.2, 3.2.1 e 5; a Sardanelli il par. 3.2.2.

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1. Il fenomeno della longevità delle imprese familiari: una introduzione

Le imprese familiari sono sempre più al centro dei sistemi economici in cui operano, in Europa come nel resto del mondo. In Italia questo trend è confermato dalle statistiche[1] che dimostrano come, da anni ormai, la motrice del sistema produttivo italiano sia rappresentata delle piccole e medie imprese (costituiscono il 76% del totale nazionale); di queste, ben l'85% sono imprese familiari, le quali assorbono più del 70% dell'occupazione complessiva del Paese.

In questo contesto risulta di particolare importanza analizzare come le imprese familiari riescano ad innovare senza perdere competitività nel lungo periodo oltre ad individuare i differenti modelli di governance utilizzati[2]; a tale scopo è stato analizzato il rapporto tra impresa familiare e longevità, individuando l'orientamento strategico come chiave di lettura della capacità di sopravvivenza dell'impresa, a fronte dell'intensa competizione e dei rapidi cambiamenti in atto (Napolitano *et al.* 2014).

Tale rapporto costituisce uno dei fattori determinanti della Stewardship theory (Davis, Shoorman e Donaldson, 1997); alcuni autori hanno sviluppato interessanti studi sull'impresa familiare partendo dai principi posti a base della Stewardship theory (Corbetta e Salvato, 2004; Zellweger *et al.,* 2012), in base ai quali il founder di un'impresa familiare, in quanto emotivamente legato alla stessa (Bubolz, 2001), è intrinsecamente motivato da bisogni di ordine non solo economico, che lo spingono a perseguire il bene dell'impresa nel lungo periodo (Miller e Le Breton-Miller, 2006). Tutto ciò avviene poiché i leader delle imprese familiari, nonché leader delle famiglie proprietarie, si pongono come obiettivo l'immedesimazione tra impresa e famiglia, rincorrendo il successo dell'organizzazione come principale motivo di soddisfazione (Corbetta e Salvato, 2004), investendo in essa tutto ciò che possiedono, e legandovi indissolubilmente le proprie fortune, ma soprattutto la reputazione propria e della famiglia (Ward, 2004).

In quest'ottica assume notevole importanza l'analisi del passaggio generazionale quale peculiarità del rapporto tra impresa familiare e longevità (Bonti e Cori, 2011). Questi non consiste nel solo subentro della nuova generazione alla precedente, ma si caratterizza per un trasferimento di conoscenze, routine e competenze aziendali sedimentate in anni di esperienza (Esposito De Falco, 2014; Esposito De Falco e Vollero, 2015; Lank, 2001).

Parte della letteratura ha esaminato gli aspetti strutturali delle imprese familiari, con riferimento ai rapporti tra sistema della famiglia, del management e della proprietà (Tagiuri e Davis,1982). In particolare, alcuni studi hanno analizzato l'impatto dei valori familiari sul comportamento imprenditoriale (Schillaci e Faraci 2001; Singer 2005; Asakawa 2001), così come la trasmissione di questi valori che, assorbiti di generazione in generazione, consolidano norme di comportamento tra i membri della famiglia che, importate nell'organizzazione imprenditoriale, influenzano il *set* di capacità di base dell'impresa (Corbetta e Attanzio 2005; Montemerlo *et al.,* 2004; Chua *et al.,* 1999).

In questo scenario va contestualizzato il difficile equilibrio tra sistema impresa e sistema familiare (Esposito De Falco, Vagnani, 2008), entrambi espressione di una comunione d'interessi in cui gli affetti si sommano agli affari (Singer, 2005). In questa prospettiva, le imprese familiari si distinguono per l'accento posto sull'impresa o sulla famiglia proprietaria. Quando prevalgono valori incentrati sulla famiglia, l'impresa familiare è vista come mezzo di sostentamento per i membri della stessa (Tagiuri e Davis, 1992), a prescindere dalle loro competenze o abilità, per cui gli interessi familiari si impongono su quelli imprenditoriali (Dunn, 1995; Lee e Rogoff, 1996). Laddove prevalgono valori incentrati sull'impresa, gli obiettivi ai quali si allinea il processo decisionale sono la quota di mercato, la crescita dell'impresa e la redditività (File, Prince e Rankin, 1994).

Ciò premesso, la longevità rappresenta una delle principali sfide da affrontare per un'impresa familiare, considerati i tassi medi di sopravvivenza delle aziende nel passaggio dalla prima fino alla

[1] Fonte AIDAF (Associazione Italiana delle Imprese Familiari), 2017.
[2] Sulla evoluzione della corporate governance in Italia si veda Zattoni A., 2019.

terza generazione (Jivraj e Woods, 2002; Ward, 2004). È chiaro che il legame tra famiglia ed impresa condiziona la stabilità e longevità di quest'ultima; la letteratura, però, non si è sufficientemente soffermata sui fattori in grado di interpretare questa relazione.

L'obiettivo di questo lavoro, pertanto, è di approfondire quale sia i tratti distintivi e le caratteristiche peculiari del rapporto tra longevità e impresa familiare. Da ciò discende la seguente *research question*: *quali sono gli effetti della longevità sulle imprese familiari?*

Per rispondere a ciò si è condotta un'indagine (quantitativa e qualitativa) su un campione specifico di imprese familiari longeve. Si è dapprima svolta un'analisi bibliometrica per l'elaborazione delle ipotesi di ricerca. Successivamente, attraverso un campione di imprese familiari longeve, sono state validate le ipotesi di ricerca attraverso un ACP ed una *Cluster analysis.*

2. Analisi della letteratura ed ipotesi di ricerca

L'analisi prende le mosse da studio bibliometrico sulle riviste più significative rispetto ai temi della ricerca[3]; sono state selezionate 20 riviste internazionali specializzate sui temi della ricerca e con più alto IF. L'identificazione delle riviste si è basata su una *review* avente ad oggetto specifiche parole chiave oggetto della ricerca Cfr. Tav.1

Tab. 1: Risultati analisi bibliometrica

CAMPIONE: 2010-2019

ANALISI BIBLIOMETRICA

KEYWORDS: LONGEVITY - FAMILY BUSINESS

RIVISTA	IMPACT FACTOR	ARTICOLI	SELEZIONATI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1. Family Business Review	6.18	44	5	4	9	1	9	2	2	4	4	9	3
2. Corporate Governance: An International Review	3.39	6	1	0	2	0	1	1	1	0	0	1	0
3. Entrepreneurship Theory and Practice	6.19	43	1	1	5	0	4	6	7	7	4	7	2
4. Journal of Management Studies	5.8	13	1	1	3	1	1	0	1	3	2	0	1
5. Journal of Business Venturing	6.3	3		0	0	1	0	1	0	0	0	0	1
6. Journal of Small Business Management	3.12	14	1	1	1	2	2	2	1	0	2	2	1
7. Journal of family business strategy	3.22	27	2	7	3	2	3	4	1	1	1	3	2
8. Organization Science	3.25	32		2	1	4	4	4	3	5	4	5	0
9. Strategic Management Journal	5.57	13		1	2	0	2	3	0	0	1	0	3
10. Academy of Management Journal	7.1	46	3	1	6	4	7	4	7	7	1	5	4
11. International Journal of Management Reviews	7.6	8	1	3	2	0	0	0	0	0	0	2	1
12. Journal of World Business	5.78	12		2	0	0	0	1	2	2	2	2	1
13. Strategic Entrepreneurship Journal	2.95	4	1	0	1	1	0	0	0	1	0	0	1
14. Administrative Science Quarterly	8.0	8		0	1	1	0	1	0	0	2	3	0
15. Academy of Management Review	10.6	5	3	0	0	1	1	0	1	1	0	0	1
16. Journal of Management	9.5	7	1	1	2	0	0	1	2	1	0	0	0
17. Leadership Quarterly	5.6	7		0	0	0	0	0	1	0	2	2	2
18. Academy of Management Annals	12	6		1	2	0	0	0	0	2	0	1	0
19. Journal of Organizational Behavior	5	7		3	1	0	0	1	0	0	0	1	1
20. Management Science	4.2	7		0	0	0	2	2	0	0	1	2	0
TOTALE ARTICOLI		312	20										

Fonte: ns. elaborazione

[3] La metodologia di analisi utilizzata ha riguardato tecniche matematiche e statistiche per analizzare i modelli di distribuzione delle pubblicazioni scientifiche e verificarne il loro impatto all'interno delle comunità scientifiche (De Bellis, 2014).

Le riviste sono state ordinate per *impact factor* ed è stata effettuata una ricerca avanzata nei database di ciascuna rivista, per il periodo 2010-2019 ed utilizzando i termini "*longevity*" e "*family business*" come *keywords.*

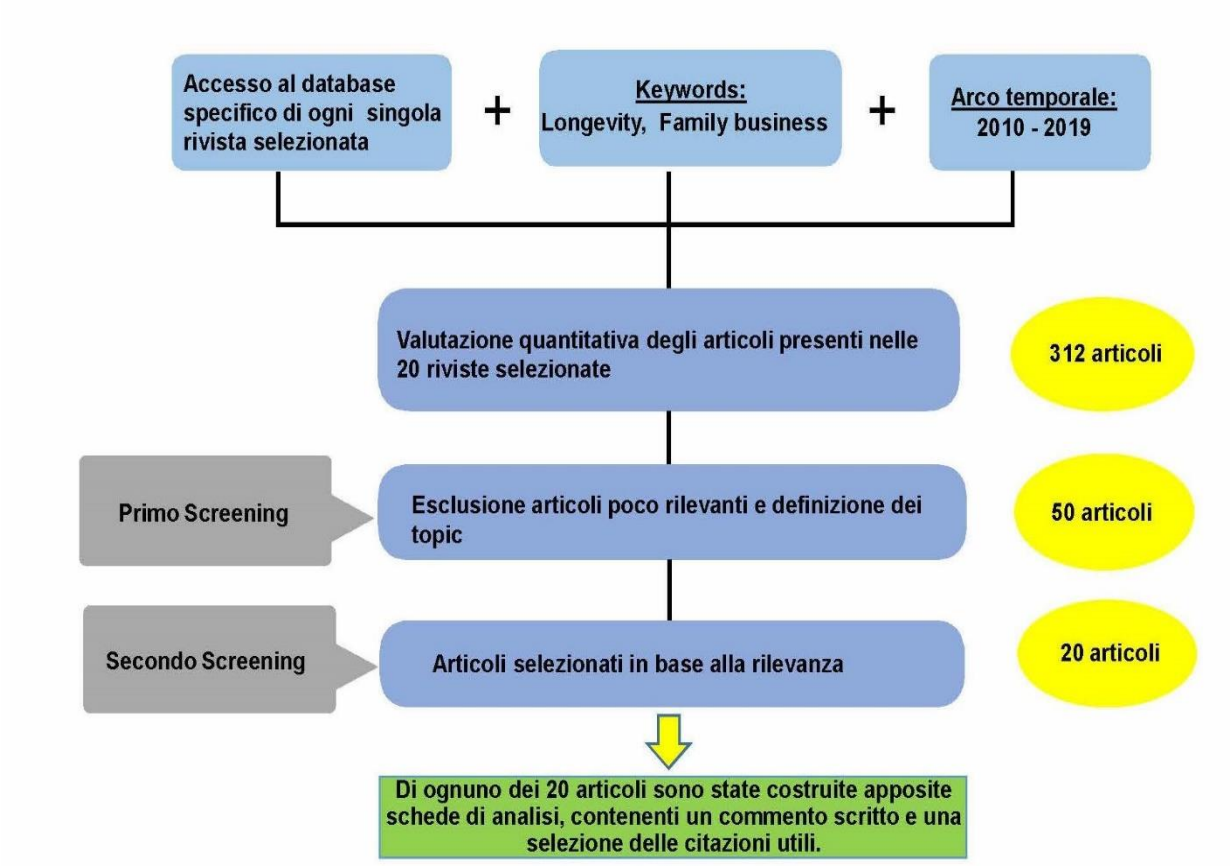
L'arco temporale prescelto è stato selezionato per due motivi: l'attualità (ci si è focalizzati sull'ultimo decennio per quadro più contemporaneo possibile) e la rilevanza con le tematiche oggetto del nostro lavoro (più concentrate in questo periodo temporale) (Fletcher *et al.*, 2015).

La valutazione quantitativa degli articoli, corrispondenti ai criteri selezionati e presenti in ciascun database, ha consentito l'estrazione di 312 lavori; su questi è stato operato un primo *screening*, consistito nella lettura degli articoli e/o abstract, che ha successivamente portato alla selezione di 50 articoli.

Successivamente questi 50 articoli sono stati sottoposti ad un'accurata valutazione e, dopo aver scartato quelli poco rilevanti e non coincidenti con l'obiettivo del lavoro, sono stati scelti 20 articoli su cui si è svolta la successiva *review* della letteratura.

Di seguito si riporta uno schema esemplificativo della metodologia bibliometrica utilizzata (Tab. 2).

Tab. 2: Fasi dell'analisi bibliometrica



Fonte: ns. elaborazione

I 20 articoli selezionati sono i seguenti:

Tab. 3: Elenco articoli selezionati[4]

TITOLO LAVORO	AUTORE/I	RIVISTA
"*From Longevity of Firms to Transgenerational Entrepreneurship of Families: Introducing Family Entrepreneurial Orientation*"	T. Zellweger, R. Nason, M. Nordqvist	Family Business Review, vol. 25, 2: pp. 136-155 Published: November,2011
"*Developing Positivity in Family Business Leaders*"	D.Caspersz, J.Thomas	Family Business Review, vol. 28, 1: pp. 60-75 Published:October, 2013
"*Strategic entrepreneurship in family business*"	G.T. Lumpkin, L.Steier, M. Wright	Strategic Entrepreneurship Journal, Volume 5, Issue 4 Published:December, 2011
"*Socially Responsible Processes of Small Family Business Owners: Exploratory Evidence from the National Family Business Survey*"	M. Fitzgerald, G. Haynes, H. Schrank, S. Danes	Journal of Small Business Management, Volume 48, Issue 4 Published: September, 2010
"*The effect of industry characteristics on the control longevity of founding-family firms*"	R. King, W. Peng	Journal of Family Business Strategy, Volume 4, Pages 281-295 Published: December, 2013
"*Family business best practices: Where from and where to?*"	L.Dana, K. Smyrnios	Journal of Family Business Strategy, Volume 1, Published: March, 2010
"*The Relevance of a Whole-Person Learning Approach to Family Business Education: Concepts, Evidence, and Implications*"	F. Barbera, F. Bernhard, J. Nacht, G. McCann	Academy of Management Learning &EducationVolume 14, Published: July, 2015
"*The Family Innovator's Dilemma: How Family Influence Affects the Adoption of Discontinuous Technologies by Incumbent Firms*"	A. Konig, N. Kammerlander, A. Enders	Academy of Management Review Volume 38, Issue 301 Published: July, 2013
"*An Empirical Investigation of Factors Contributing to Longevity of Small Family Firms*"	A. Ibrahim, J. McGuire, K. Soufani	Global Economy & Finance Journal, vol. 2, n. 2 Published: September, 2009.
"*Dead Money:Inheritance Law and the Longevity of Family Firms*"	M. Carney, E.Gedajlovic, V. Strike	Entrepreneurship Theory and Practice Published: 2014
"*Does family involvement increase business performance? Family-longevity goals'moderating role in Chinese family firms*"	Y. Kim, F.Y. Gao	Journal of Business Research Published: 2012
"*Determinants of Longevity and Success in Lebanese Family Businesses: An Exploratory Study*"	J. Fahed-Sreih, S. Djoundourian	Family business review, vol. XIX, n. 3 Published: September, 2006
"*Family ownership and acquisition behavior in publicly-traded companies*"	D. Miller, R. Lester	Strategic Management Journal Published: July, 2009
"*Entrepreneurial Orientation, Risk Taking, and Performance in Family Firms*"	L. Naldi, M. Nordqvist, K. Sjoberg, J. Wiklund	Family business Review Published: March, 2007
"*Factors Preventing Intra-Family Succession*"	A. De Massis, J. Chua, J. Chrisman	Family Business Review, Published: June, 2008
"*Goal Setting in Family Firms: Goal Diversity, Social Interactions, and Collective Commitment to Family-CenteredGoals*"	J. Kotlar, A. De Massis	Entrepreneurship theory and practice Published: November, 2013
"*Dead Money: Inheritance Law and the Longevity of Family Firms*"	M. Carney, E. Gedajlovic, V. Strike	Entrepreneurship theory and practice Published: November, 2014
"*In search of an integrated framework of business longevity*"	M. Napolitano, V. Marino, J. Ojala	Family Business Review Published: January, 2015
"*Family Control and Family Firm Valuation by Family CEOs: The Importance of Intentions for Transgenerational Control*"	T. Zellweger, F. Kellermanns, J. Chrisman	Organization Science Published: July, 2011
"*A Review of Theory in Family Business Research: The Implications for Corporate Governance*"	J. Siebels	International Journal of Management Reviews, vol. 14 Published: January, 2012

Fonte: ns. elaborazione

[4] I lavori riportati in tabella, pur non essendo riportati in bibliografia, sono stati consultati ai fini del presente lavoro.

Dall'analisi della letteratura è emerso che la sensibilità al rischio e la *familiness* costituiscono due elementi fortemente caratterizzanti le imprese familiari longeve.

In particolare, è emerso che la gestione di un'impresa familiare è come una vocazione, perché il compito del *founder* (che in genere è leader anche della famiglia proprietaria), va al di là di qualsiasi ricompensa materiale (Caspersz e Thomas, 2015). Approcciarsi alla leadership di un'impresa familiare, infatti, è come "ricevere la chiamata" (Avolio *et al.*, 2004).

Per questo motivo assumono rilevante importanza i suoi comportamenti e la sua visione, ma soprattutto la sua capacità di leadership, tanto in azienda, quanto in famiglia (Barnes e Hershon, 1976; Lansberg, 1983; Sharma *et al.*, 1997; Esposito De Falco e Vagnani, 2010).

Sul punto, Ward, nel 1997, ha individuato le principali *best practice* delle imprese familiari di successo, a loro volta fondate sulla motivazione dei leader familiari a seguire tali *best practice* e sull'impegno della famiglia proprietaria a sostenere i sacrifici necessari per la crescita dell'impresa (Ward, 1997).

Tra i compiti e le responsabilità del leader di una impresa familiare vi è sicuramente quello di decidere le *policy* di governo dell'impresa; tale facoltà si estrinseca nel prendere quelle decisioni strategiche che determinano gli orientamenti di fondo della vita di un'impresa quali, in particolare, quelle attinenti alle modalità di approccio al rischio aziendale (Esposito De Falco, 2014).

Ciò è confermato dalla *review* degli articoli selezionati, da cui emerge come un elemento significativo del rapporto longevità-imprese familiari sia proprio la forte sensibilità al rischio sia del sistema proprietario/imprenditoriale, sia del management. La sensibilità al rischio è una delle principali caratteristiche che accomuna le imprese familiari longeve, sia nella dimensione della avversione al rischio, che della propensione.

L'approccio al rischio nelle imprese familiari, d'altra parte, è oggetto di numerosi studi.

I sostenitori della Teoria dell'agenzia, ad esempio, affermano che la proprietà concentrata in una sola persona, oppure in un nucleo familiare, scoraggia gli investimenti e, di conseguenza, penalizza gli azionisti[5], provocando possibili *subperformance* (Fama e Jensen, 1983).

Secondo altri sostenitori della Teoria dell'Agenzia, occorre invece sottolineare la relazione inversamente proporzionale tra l'investimento in acquisizioni, in termini finanziari, e la concentrazione della proprietà (Amihud e Lev, 1981; Shleifer e Vishny, 1997). In un'ottica di analisi tra investimenti alternativi, una parte della letteratura afferma che le acquisizioni costituiscono, in alcuni casi, un beneficio dei soli gestori, a spese dei proprietari e degli shareholder (Berger e Ofek, 1995; Lang e Stulz, 1994).

Miller *et al.* (2010) ritengono che non è la concentrazione della proprietà a influenzare l'avversione al rischio, bensì le priorità e le preferenze di chi ha il controllo dell'impresa, in particolare nell'ottica del passaggio generazionale e della sostenibilità del business nel lungo termine. Sull'argomento, c'è una letteratura in crescita secondo la quale una delle preoccupazioni della famiglia proprietaria è quella di mantenere il controllo dell'azienda il più a lungo possibile, per trasmetterlo alle generazioni successive (Arregle *et al.*, 2007; Gomez-Mejia *et al.*, 2007); si afferma, così, strategie che perseguono la continuità aziendale evitando acquisizioni potenzialmente destabilizzanti, oppure caratterizzate da un elevato tasso di rischio (Miller *et al.*, 2010; Miller e Le Breton-Miller, 2006; Miller *et al.*, 2008). In altre parole, anche il rischio di perdere la ricchezza familiare accumulata può "frenare" le imprese familiari al momento di effettuare investimenti in altri settori o in acquisizioni di altre aziende (Sharma *et al.*,1997).

Tuttavia, dalla letteratura si evincono anche casi in cui le imprese familiare preservano la loro capacità imprenditoriale pur impegnandosi in progetti ed iniziative rischiose (Aldrich e Cliff, 2003; Rogoff e Heck, 2003; Zahra *et al.*, 2004). Recenti ricerche hanno dimostrato che l'assunzione del rischio d'impresa in tutti i suoi aspetti è una caratteristica comune a molte aziende familiari (ad es. Steier *et al.*, 2004; Zahra, 2005).

Pur trattandosi di una considerazione largamente condivisa, in ambito accademico è ancora

[5] Sui rapporti di potere tra proprietà minoranze azionarie nelle imprese a proprietà familiare concentrata, si veda Esposito De Falco S., 2017.

controversa la questione riguardante la differente propensione al rischio tra imprese familiari ed imprese non familiari. Infatti, da sempre, alle imprese familiari viene riconosciuta una scarsa propensione al rischio, in considerazione della necessità di preservare la loro longevità.

Meyer e Zucker (1989), ad esempio, sostengono che le imprese familiari soffrono d'inerzia strategica, che le rende avverse al rischio. Altri sottolineano come, nelle imprese familiari, la maggior parte delle disponibilità economiche della famiglia sia investita nell'azienda e quindi è naturale che vi sia una maggiore cautela, per evitare investimenti fallimentari che produrrebbero effetti negativi anche sulla famiglia (Gedajlovic *et al.,* 2004). Di conseguenza, decisioni strategiche rischiose come l'espansione internazionale, il lancio di un nuovo prodotto, o l'impegno di risorse nella "ricerca e sviluppo", sono generalmente rinviate oppure ridotte, preferendo salvaguardare il patrimonio familiare (Schulze *et al.,* 2002).

La gestione dei rischi da parte dei membri della famiglia impegnati nella *governance* aziendale è affrontata con la consapevolezza che il patrimonio aziendale coincide con quello familiare, ed il benessere finanziario e sociale delle generazioni future dipende dall'esito di queste decisioni (Schulze *et al.*, 2002).

Infine, vi sono anche elementi immateriali ma ugualmente condizionanti, quali la reputazione della famiglia, preservata di generazione in generazione, e che potrebbe essere irreparabilmente compromessa da scelte rischiose (Bartholomeusz e Tanewski, 2006).

Pertanto, sulla base di quanto emerso dalla *review*, si sviluppa la seguente ipotesi di ricerca:

Hp.1: *Le imprese familiari longeve manifestano una elevata sensibilità al rischio anche per la sovrapposizione tra patrimonio aziendale e quello familiare*

La conferma di tale ipotesi consegue alla verifica delle seguenti *assumptions*:

Hp.1.1: *L'elevata sensibilità al rischio delle imprese familiari longeve è funzione dei passaggi generazionali;*

Hp.1.2: *L'elevata sensibilità al rischio delle imprese familiari longeve è legata anche ad aspetti emozionali connessi al sistema familiare ed imprenditoriale;*

La *review* evidenzia, altresì, ulteriori aspetti connessi al concetto di *familiness.* Tale concetto fu introdotto da Habbershon e Williams nel 1999, per riferirsi al nucleo di risorse e competenze accumulate dall'impresa familiare e derivanti dall'interazione dei suoi subsistemi: famiglia, suoi componenti e impresa. Emerge, in particolare, che famiglia e impresa appaiono strettamente correlate, arricchendosi a vicenda nel condividere risorse e competenze uniche ed inseparabili (Chrisman *et al.,* 2005).

Il rapporto tra famiglia ed impresa si caratterizza, dunque, per le continue interazioni, che si verificano sui seguenti 3 livelli (Habbershon *et al.,* 2003):

1. Unità familiare, quale livello rappresentativo dei valori, della storia e delle tradizioni radicate all'interno della famiglia;
2. impresa come entità di business, quale livello rappresentativo delle scelte attraverso cui essa stessa è in grado di generare valore e ricchezza per i suoi proprietari;
3. membri che compongono la famiglia, quale livello rappresentativo delle capacità dei singoli soggetti, delle rispettive competenze e interessi.

Queste interazioni possono, nella maggior parte dei casi, rappresentare un vantaggio competitivo, oltreché un vero e proprio punto di forza (Frank *et al.,*, 2010). Alla base di tale vantaggio vi è l'influsso positivo ed il particolare coinvolgimento che apportano i familiari all'interno dell'impresa: tale peculiarità permette, all'impresa familiare, di accumulare un vantaggio competitivo fatto di risorse e capacità uniche, nonché durature nel tempo (Chrisman *et al.,* 2005).

Pearson, Carr e Shaw (2008) hanno evidenziato questi aspetti peculiari, sociali e comportamentali, delle imprese familiari, distinguendoli in strutturali, cognitivi e relazionali.

L'aspetto strutturale si sostanzia nelle interazioni sociali e nella forza dei legami che intercorrono tra i membri della famiglia: un network relazionale che è proprio e distintivo della famiglia.

L'aspetto cognitivo concerne la visione condivisa dei membri della famiglia, riguardante obiettivi, intenti e finalità comuni. Valori, tradizioni e comportamenti, infatti, costituiscono il

background genetico di una famiglia, da tramandare di generazione in generazione, tanto in famiglia quanto nell'impresa, così da creare un'identità unica fondata su valori appresi e tramandati nel tempo e che accomunano i membri di tutte le generazioni, sia per storia, sia per cultura (Gersick *et al.,* 1999; Esposito De Falco 2012).

L'aspetto relazionale riguarda l'insieme di risorse che l'impresa è in grado di creare grazie ai rapporti che si instaurano tra i membri della famiglia operanti all'interno dell'impresa. Tali relazioni influenzano significativamente la vita ed il rendimento dell'impresa, per cui una perfetta integrazione tra vita familiare e dell'impresa rende unica l'impresa familiare, distinguendola da ogni altra forma d'impresa (Habbershon e Williams, 1999).

Il concetto di *familiness*, dunque, è quanto mai centrale nella trattazione della longevità nell'impresa familiare. In letteratura è dimostrato che quanto più la famiglia e l'impresa interagiscono, si allineano e creano un'unica identità, tanto più crescono le performance ed il vantaggio competitivo dell'impresa familiare, permettendole di restare solida, longeva e performante nel tempo.

In tal modo la *familiness* è un veicolo fondamentale di trasmissione della storia, dei valori e delle tradizioni della famiglia nell'impresa. Il plus che la *familiness* apporta all'impresa familiare costituisce così un vantaggio unico e non replicabile, consistente in un patrimonio non economico ma socio-emozionale, garante della continuità aziendale e della longevità imprenditoriale attraverso la trasmissione dei valori e delle tradizioni familiari.

Sulla base di quanto emerso dalla letteratura, quindi, è possibile formulare la seguente ipotesi di ricerca:

Hp. 2: *Le imprese familiari che manifestano una sensibilità alla familiness mostrano una elevata propensione alla longevità.*

La conferma di tale ipotesi è data dalla verifica delle seguenti *assumptions*:

Hp. 2.1:*La sensibilità alla familiness è un fattore endogeno delle imprese familiari;*

Hp. 2.2:*Il passaggio generazionale non impatta sui valori di familiness dell'impresa familiare.*

Di seguito si riporta una tavola riepilogativa sulla costruzione delle ipotesi alla base del presente lavoro.

Tab.4: Riepilogo costruzione ipotesi

Topics emergenti dalla review	Contributi presenti in letteratura	Ipotesi di ricerca
Sensibilità al rischio	Gedajlovic, Lubatkin, Schulze, 2004; Meyer, Zucker, 1989; Shleifer e Vishny, 1997; Zhang, 2005.	**Hp. 1:** Le imprese familiari longeve manifestano una elevata sensibilità al rischio anche per la sovrapposizione tra patrimonio aziendale e quello familiare
	Bartholomeusz,Tanewski, 2006; Arregle *et al.,* 2007; Casson, 1999; Fiss e Zajac, 2004; Gomez-Mejia *et al.,* 2007; Palmer *et al.,* 1987.	**Hp. 1.1:** L'elevata sensibilità al rischio delle imprese longeve è funzione dei passaggi generazionali
	Miller *et al.,* 2009; Mllier e Le Breton-Miller, 2005; Miller, Le Breton Miller e Scholnick, 2008.	**Hp. 1.2:** L'elevata sensibilità al rischio delle imprese longeve è legata anche ad aspetti emozionali connessi al sistema familiare ed imprenditoriale
Sensibilità alla *familiness*	Habbershon e Williams, 1999; Caspersz e Thomas, 2015; Frank, Lueger, Nosé e Suchy, 2010; Zellweger, Eddleston e Kellermanns, 2010.	**Hp.2:** Le imprese familiari che manifestano una sensibilità alla familiness mostrano una elevata propensione alla longevità
	Chrisman, Chua e Sharma, 2005;Pearson, Carr e Shaw, 2008; Habbershon, Williams e MacMillan, 2003.	**Hp. 2.1:** La sensibilità alla familiness è un fattore endogeno delle imprese familiari
	Gersick *et al.* 1997; Esposito De Falco, 2012.	**Hp. 2.2:** Il passaggio generazionale non impatta sui valori di familiness dell'impresa familiare

Fonte: ns. elaborazione

3. La metodologia di analisi

3.1 Le caratteristiche del campione esaminato

Per poter testare le ipotesi formulate sulla base di una analisi sistematica della letteratura si è utilizzato un campione di imprese longeve. La scelta si è focalizzata sulle imprese iscritte all'Associazione I Centenari. Associazione di Aziende Storiche Familiari, "I Centenari" è stata fondata a Napoli, nel 2001, da Pina Amarelli e Martino Cilento.

Inizialmente costituta, solo ed esclusivamente, da imprese familiari campane e con almeno 100 anni di età, nel 2018, forte dei suoi successi, ha allargato i propri orizzonti consentendo l'adesione ad imprese centenarie provenienti da tutta Italia.

Costituita attualmente da 34 imprese associate, tra cui le più longeve sono proprio quelle dei due fondatori, rispettivamente nate nel 1731 e nel 1780, I Centenari è stata selezionata come campione di imprese per le sue specifiche caratteristiche di omogeneità, in quanto tutte imprese familiari longeve. Le fonti utilizzate sono state le seguenti:

- sito web dell'associazione;
- volume antologico "I Centenari", scritto da M.R. Napolitano e V. Marino, edito da Area blu Edizioni nel 2014;
- documenti ufficiali dell'associazione.

Si sono inoltre considerati i risultati della ricerca condotta da Napolitano, Marino, Riviezzo, Garofano (2014), focalizzata sul rapporto tra l'orientamento strategico delle imprese familiari e la loro longevità, scaturente da una serie di interviste realizzate ad alcuni associati ai Centenari. Dalle interviste sono emersi trend significativi che hanno direttamente o indirettamente favorito la longevità della loro impresa.

"I Centenari", d'altra parte, annoverano tra le proprie fila brand famosi in tutto il mondo, imprenditori di successo che hanno condiviso destini, responsabilità, onori, ma anche disciplina e rigore, in famiglia come nell'impresa.

Presupposto fondamentale è l'indissolubile legame con il territorio, infatti nessuno di loro pensa di seguire i venti della globalizzazione o di spostarsi e di delocalizzare la produzione in paesi dove i fattori di base hanno un costo più basso: la loro attività risiede nel continuo e reciproco scambio tra impresa e territorio, finalizzato all'adempimento del ruolo sociale che l'impresa deve ricoprire nel territorio in cui opera.

Il radicamento territoriale, infatti, è uno dei fattori determinanti per la longevità dell'impresa.

La conoscenza del mercato in cui si opera e di tutti gli stakeholder, il legame indissolubile che si crea tra famiglia, impresa e territorio, la reputazione e la storia tanto del brand quanto della famiglia, sono i segreti di un successo duraturo che permettono alle imprese familiari di mantenere la propria posizione competitiva sul mercato, attraverso il mantenimento di solide radici nel territorio di appartenenza.

Altro elemento tipico è quello relativo all'imprenditorialità familiare. Le imprese associate hanno tutte affrontato, con successo, almeno tre passaggi generazionali. Tale dato dimostra come il continuo apporto di nuove competenze e conoscenze donato all'impresa dall'ingresso delle nuove generazioni sia un altro dei segreti della longevità di tali imprese, le quali beneficiando ciclicamente di un processo intrinseco di innovazione e di modernizzazione, sopravvivono e prosperano nel tempo. C'è poi l'aspetto emozionale, fondamentale in un'impresa a conduzione familiare: i Centenari amano definirsi "Guardiani delle tradizioni", con una *mission* chiara e precisa: tramandare alle nuove generazioni "geni autoctoni di imprenditorialità" fondati su valori umani prima che imprenditoriali, schierati a difesa dell'essenza stessa della manifattura italiana e di un "made in Italy" fatto di assoluta eccellenza ed artigianalità. Per quanto riguarda la tipologia delle imprese associate, invece, è quanto mai eterogenea per quanto concerne settore di appartenenza, dimensioni e fatturati ma assolutamente omogenea per quanto attiene ai punti di contatto tra le varie imprese associate: la longevità ed un obiettivo comune.

La longevità si sostanzia in un dato oggettivo: sono tutte aziende appartenenti alla stessa famiglia da almeno tre generazioni in linea diretta, in buona salute economico-finanziaria e leader nel settore di appartenenza. L'obiettivo comune, invece, è quello posto alla base dell'idea che ha dato vita all'associazione agli inizi del nuovo millennio: promuovere lo sviluppo delle imprese a conduzione familiare di più antica tradizione operanti in un territorio tanto difficile quanto ricco di valori e tradizioni come quello della regione Campania allo scopo di preservare, valorizzare, tramandare e comunicare questi valori attraverso un ristretto gruppo di imprenditori capaci di intraprendere un cammino comune. Pertanto, le imprese associate negli anni hanno creato un network basato su scambio reciproco di esperienze, best practice e know-how utile sia ad affrontare le problematiche attuali, ma soprattutto a salvaguardare la "diffusione della cultura della longevità".

A tale scopo l'associazione in collaborazione con il Dipartimento di Scienze Aziendali dell'Università degli Studi di Salerno ha creato il "Longevity Business Lab" che si pone come obiettivo la diffusione della cultura d'impresa attraverso l'identità distintiva della longevità, caratterizzata dal patrimonio di competenze, conoscenze e valori delle imprese longeve.

In un'era il cui il mondo dell'imprenditoria è quanto mai competitivo e selettivo, una strategia aziendale finalizzata allo sviluppo, alla condivisione ed alla comunicazione fortemente orientate alla valorizzazione della longevità, intesa come un'identità forte e peculiare, può differenziare l'impresa impresa familiare da tutte le altre, accrescendone la competitività.

Proprio in quest'ottica le attività del Longevity Business Lab sono dirette a valorizzare le imprese attraverso una Heritage Strategy che aggrega prodotti, comunicazione, prezzo e distribuzione.

3.2 Le fasi di analisi

3.2.1 Il software LIWC

Per l'analisi del contenuto dei siti web aziendali delle imprese del campione è stato utilizzato il software Linguistic Inquiry and Word Count (LIWC) (Pennebaker *et al.,* 2007), che esamina in maniera automatizzata i testi e le business history. Si tratta di uno strumento ampiamente utilizzato, nelle scienze sociali, per rilevare i tratti della personalità, il comportamento, le dinamiche sociali, ma anche testi (o parti di testo) il cui contenuto rappresenta in modo distorto, ingannevole, un evento al solo fine di attrarre il consenso del lettore.

Il software LIWC determina le frequenze delle parole in una vasta gamma di testi (e-mail, discorsi, poesie, lettere, comunicati, ect.) e le confronta con dizionari specifici, associandole a categorie psicologicamente rilevanti, riflettenti le diverse emozioni dell'autore. Gli autori del software (J.W. Pennebaker, R.J. Booth, e M.E. Francis), basandosi su un approccio "psicometrico", ipotizzano che dall'analisi delle parole si possano trarre indicazioni su aspetti cognitivi ed emozionali di colui che le ha utilizzate.

I lessici di riferimento per misurare gli aspetti cognitivi, emozionali e comportamentali sono costruiti utilizzando diverse fonti, per un totale di 168 milioni di parole e 24.000 scriventi/parlanti. Il software LIWC è in grado di classificare le parole dei testi sottoposti ad analisi in 80 dimensioni psicologicamente significative (anche se, nell'analisi condotta, si è deciso di utilizzare solo 28 dimensioni significative, per evitare un'eccessiva ridondanza dei risultati). Tali dimensioni sono state raggruppate, dai ricercatori della Cornell University, in quattro macro categorie:

1. Processi linguistici: in cui rientrano gli aspetti funzionali del testo (ad esempio, il numero medio di parole per frase, il tono e l'uso dei pronomi personali e impersonali);
2. Processi affettivi e sociali: include tutte le parole che fanno parte della sfera emotiva e sociale;
3. Processi cognitivi e percettivi: riguardano le interazioni con l'ambiente esterno, l'apprendimento per esperienza e di tutto ciò che viene rilevato dai sensi;
4. Processi relativi a tempo, spazio e driver del comportamento.

L'analisi di LIWC è stata svolta sulle sezioni storiche dei siti delle imprese campione (escluse le 10 che non avevano un sito internet) nel periodo dal 1 maggio al 30 giugno del 2019. Si è

verificata quindi la coerenza dei siti con la cultura, i valori e la visione delle imprese analizzate[6]. Cosicché sono stati analizzati i processi linguistici (percentuale di uso dei pronomi personali e impersonali), emotivi (emozioni positive e negative) e cognitivi.

Riguardo al concetto di *familiness*, anche in questo caso LIWC consente di verificare se vi è una leadership forte e accentratrice oppure debole (che tende a condividere e coinvolgere altri nelle decisioni). Nel primo caso, si registra un maggior uso della prima persona plurale e della seconda persona singolare (Pennebaker *et al.*)[7].

Per quanto riguarda il comportamento dei founder, l'attitudine al comando e l'avversione/propensione al rischio (secondo Hillert *et al.*, 2016) sono testimoniati da uno stile di scrittura personale ed informale, con l'uso soprattutto della prima persona singolare e plurale; infatti l'uso di parole semplici ed uno stile di scrittura informale indicano una buona gestione dell'impresa ed una maggiore audacia negli investimenti. L'uso di un tono distaccato, invece, è indicativo di risultati gestionali negativi.

Ciò premesso, il software LIWC ha dei limiti di cui occorre tenere conto nell'interpretazione dei risultati. Innanzitutto, non è in grado di riconoscere il tono ironico o sarcastico, ossia il contesto. Le parole possono essere ricomprese in una o più categorie e ciò comporta un aumento della percentuale di utilizzo. Inoltre, poiché la LIWC fornisce la percentuale di presenza di una parola in un testo, quanto più breve è il testo, tanto maggiore risulterà la frequenza di una parola.

Tenuto conto che, nel presente studio, si assume, come variabile indipendente, la longevità delle imprese familiari e, come variabili indipendenti, la leadership, il rapporto con il territorio, la sensibilità al rischio imprenditoriale (altro carattere tipico delle imprese familiari) e la *familiness*, l'interpretazione psicosometrica e semantica delle variabili dipendenti assume che queste possano essere esplicitate dalle categorie di LIWC nel seguente modo:

- Leadership: Uso dei pronomi (processi linguistici); Potere (Power) e Rischio (Risk) per Drivers e processi cognitivi;
- Rapporto con il territorio: Sociale (Social) e Amicizia (Friendship) per i processi sociali, Ricompensa (Reward) per la categoria Drivers e processi cognitivi;
- Sensibilità al rischio: Risk per i processi percettivi; Visione temporale (Focus past Focus present e Focus future) per i processi temporali;
- Coinvolgimento familiare: Uso dei pronomi (processi linguistici), Potere (Power) e Rischio (Risk) per i processi percettivi, Ricompensa (Reward) per la categoria Drivers, Sociale (Social), Maschile (Male) e Femminile (Female) per i processi sociali e la Visione temporale.

Si precisa, inoltre, che, da una prima scrematura dei dati, per la scarsa significatività del legame tra alcune variabili dipendenti e la variabile indipendente, dei 28 dati forniti da LIWC ne sono stati

[6] Secondo Newman *et al.* (2003), quando si narra qualcosa di non corrispondente alla realtà, si utilizza un linguaggio poco articolato e totalmente diverso da quello usuale. In genere il narratore, o lo scrittore, non parla mai in prima persona né usa pronomi personali, quasi a volersi dissociare dalle proprie affermazioni. Inoltre, il sentirsi in colpa per la "falsità" del racconto comporta l'uso di parole riconducibili ad emozioni negative, costruzioni linguistiche poco complesse, parole e verbi semplici, poiché le risorse cognitive sono tutte impiegate nel nascondere la verità e creare una storia parallela che possa apparire verosimile.

[7] Sono state studiate le interazioni, scritte e parlate, all'interno di 5 gruppi diversi: nell'esperimento 1, un gruppo di quattro persone faceva parte di una squadra di decision-making con il ruolo di leader assegnato casualmente. Negli studi 2 e 3, due gruppi di due persone hanno colloquiato tramite una *chat* in modo informale al solo fine di conoscersi meglio in uno, e lavorato ad compito comune nell'altro. Lo studio 4 è stato basato su uno scambio di e-mail tra 9 partecipanti, che reciprocamente condividevano informazioni sulle rispettive vite. L'ultimo studio ha esaminato 40 lettere scritte da soldati iracheni durante il regime di Saddam Hussein. Nonostante le diversità sociali, di genere o professionali trai gruppi, i risultati sono stati sorprendentemente simili. Sebbene ci fossero diverse tipologie di leadership, quella casuale, indotta, auto attribuita ed oggettiva come quella militare, il collegamento con i pronomi utilizzati è stato sintomatico. La scoperta più significativa è stata l'associazione tra l'uso del pronome singolare in prima persona e gli individui appartenenti a classi di livello inferiore. In tutti e cinque gli studi questo è apparso in maniera schiacciante. Come l'uso della prima persona plurale da parte dei leader. Solo nello studio riguardante le mail, l'uso della prima persona plurale è bilanciato. Inoltre lo studio ha dimostrato chiaramente come le classi gerarchicamente inferiori usino moltissimo termini dubitativi come "forse, magari, chissà, se" rispetto ai leader che tendono ad essere più sicuri e perentori. Infine è stato appurato come le categorie gerarchiche superiori usino maggiormente la seconda persona singolare rispetto agli altri. Cfr. Kacewicz *et al.*, 2014, 125-143.

presi in considerazione solo 10 (family, friend, female, male, power, reward, risk, focus past, focus present e focus future) e le variabili dipendenti analizzate sono state il rischio e la *familiness*.

3.2.2 L'analisi delle componenti principali

Da una prima analisi del campione, si evidenzia che i testi hanno una lunghezza media di 1015 parole, con due esemplari estremi di 319 e 2229 parole. Si tratta dunque di testi piuttosto brevi, finalizzati alla mera divulgazione della storia di ciascuna azienda.

Attraverso l'utilizzo del software LIWC (Tausczik e Pennebaker, 2010) sono state selezionate variabili ritenute più rappresentative dei caratteri tipici delle imprese longeve. In particolare, ci si è concentrati sulle variabili attinenti all'area della *familiness* e dei legami sociali, e su quelle relative alla gestione del potere e del rischio (Cfr. Tav. 5).

Tab. 5: Variabili testuali rilevate tramite LIWC 2015

indicatore	definizione
FAMILY	% delle parole del testo che fanno riferimento alla famiglia e alla parentela
FRIEND	% delle parole del testo associate semanticamente all'amicizia o alla contiguità relazionale
FEMALE	% delle parole del testo relative a individui femminili
MALE	% delle parole del testo relative a individui maschili
POWER	% delle parole del testo con riferimento al potere
REWARD	% delle parole del testo facenti riferimento agli incentivi
RISK	% delle parole del testo facenti riferimento al rischio
FOCUSPAST	% delle parole del testo che evidenziano un orientamento al passato
FOCUSPRESENT	% delle parole del testo che evidenziano un orientamento al presente
FOCUSFUTURE	% delle parole del testo che evidenziano un orientamento al futuro

Fonte: ns. elaborazione

Le variabili FAMILY, FRIEND, FEMALE E MALE offrono un quadro esaustivo del tipo di socialità che interessa le imprese familiari longeve, sia per quanto riguarda il tipo di legami sociali enfatizzati (legami parentali e/o legami amicali), sia il genere (maschile e/o femminile) dei soggetti con cui ci si relaziona.

Il secondo gruppo di indicatori (POWER, REWARD, RISK, FOCUSPAST, FOCUSPRESENT e FOCUSFUTURE) rileva i diversi aspetti in cui può esprimersi la leadership, quali l'esercizio del potere, l'impiego della forza motivante degli incentivi, l'importanza del rischio e l'orientamento nei confronti del tempo (scomposto nel focus sul passato, il focus sul presente e il focus sul futuro).

Le informazioni veicolate dalle variabili testuali sono state sintetizzate attraverso l'analisi delle componenti principali (ACP). L'estrazione delle componenti principali, con rotazione Varimax, ha consentito di isolare due dimensioni, ciascuna in grado di spiegare circa il 18% della varianza complessiva (Tab. 6).

Tab. 6: Analisi delle componenti principali - varianza totale spiegata

Componente	Autovalori iniziali			Somma dei loading quadrati		
	Totale	% divarianza	% cumulativa	Totale	% divarianza	% cumulativa
1	2.326	23.263	23.263	1.817	18.170	18.170
2	1.744	17.442	40.705	1.800	17.997	36.167
3	1.411	14.107	54.813	1.390	13.900	50.067
4	1.097	10.966	65.778	1.390	13.895	63.962
5	1.030	10.303	76.082	1.212	12.119	76.082
6	.769	7.688	83.770			
7	.677	6.771	90.541			
8	.511	5.107	95.648			
9	.305	3.046	98.694			
10	.131	1.306	100.000			

Fonte: ns. elaborazione

La tabella 7, invece, raggruppa le variabili FAMILY, FEMALE e MALE e afferisce all'area dei legami familiari e sociali. Si noti però che il *factor loading* di FRIEND su questa componente è prossimo allo zero, indicando uno scarso contributo dell'area semantica dell'amicizia alla dimensione sociale nei testi di presentazione delle imprese familiari centenarie.

L'emergere di questo fattore latente, come si dirà in seguito, testimonia il fatto che la prospettiva della *familiness* sia connaturata alle imprese familiari centenarie, a conferma dell'ipotesi 2.1.

Tab. 7: Matrice delle componenti ruotate

	Componente				
	1	**2**	**3**	**4**	**5**
FAMILY	.863	.162	-.232	-.190	.203
FRIEND	.007	-.033	-.119	-.802	.182
FEMALE	.740	-.055	.217	.048	-.001
MALE	.649	-.259	-.455	-.002	.021
POWER	-.068	.075	.875	.024	.046
REWARD	.175	-.039	.116	-.088	.905
RISK	.069	.614	.436	.122	.185
FOCUSPAST	.175	-.764	.183	.363	.019
FOCUSPRESENT	.025	.853	.167	.287	-. 0
FOCUSFUTURE	-.183	.084	-.196	.686	.517

Fonte: ns. elaborazione

Sulla seconda componente risultano presenti invece le variabili RISK, FOCUSPAST (con *factor loading* negativo) e FOCUSPRESENT. Questo fattore potrebbe sottendere la sensibilità al rischio. Ancora una volta va sottolineato lo scarso contributo di variabili, quantomeno semanticamente, associate con questo fattore (come POWER e REWARD), a testimonianza ulteriore del fatto che il fattore in questione è probabilmente legato esclusivamente alla dimensione del rischio puro, senza legami con i richiami al potere o agli incentivi.

Inoltre non deve sorprendere che anche la variabile FOCUSFUTURE non carichi su questa componente, dal momento che da più parti si è sottolineato che la sensibilità al rischio è in qualche modo legata alla sottovalutazione o alla scarsa considerazione delle conseguenze future delle proprie azioni (Epper e Fehr-Duda, 2018).

Allo stesso tempo, l'alto *factor loading* negativo di FOCUSPAST sulla dimensione della sensibilità al rischio testimonia la reciproca rivalità tra rischio e focus sul passato e, dunque, sulla serie degli *outcome* già verificatisi.

Utilizzando solo gli indicatori con *factor loading* rilevanti, sono stati costruiti due indici fattoriali assegnando dei *factor score* a ciascun caso del campione. L'indice di sensibilità alla *familiness* rappresenta il grado di rilevanza attribuita ai valori familiari e sociali, ad esclusione di quelli inerenti i contatti amicali. L'indice di sensibilità al rischio rappresenta invece il grado di rilevanza attribuita all'incertezza degli esiti nel presente, senza considerare il futuro e con dispregio del passato. Le imprese centenarie che sono state interessate da più passaggi generazionali (almeno quattro) nella dirigenza appaiono essere molto concentrate sul rischio e poco sulla *familiness*, mentre quelle con non più di tre passaggi generazionali mostrano un posizionamento mediamente basso in termini di sensibilità al rischio e più vario per quanto riguarda la sensibilità alla *familiness* (Tab.8*)*.

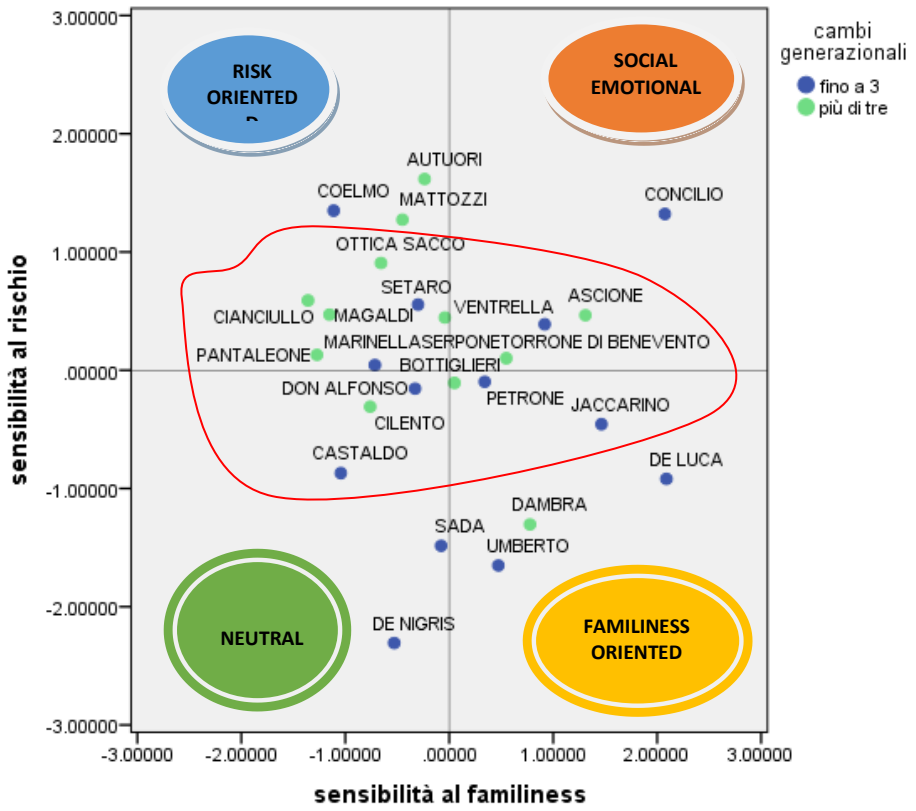
4. Un'interpretazione dei risultati

L'analisi del posizionamento dei Centenari rispetto a sensibilità al rischio e *familiness* individua quattro cluster di imprese:

1. Le imprese *familiness oriented*, sono quelle focalizzate prevalentemente sui valori e sui legami della famiglia. Esse si distinguono per un'elevata sensibilità alla *familiness* ed una bassa sensibilità al rischio. Quest'ultimo aspetto rileva comportamenti e atteggiamenti poco inclini a considerare il rischio come elemento in grado di pregiudicare gli stessi rapporti familiari. Molte delle imprese del campione pianificano il passaggio generazionale basandosi sulla consapevolezza di legami familiari forti, in grado di neutralizzare i fattori di rischio;
2. Le imprese social *emotional oriented*, sono quelle attente sia al rischio, sia ai valori della famiglia. Questo cluster di imprese fa, quindi, leva sui valori della famiglia non trascurando però i fattori di rischio che, in ogni caso, appaiono mitigati dagli elevati legami familiari. In tal senso tali imprese interpretano la *familiness* quale veicolo fondamentale di trasmissione della storia, dei valori e delle tradizioni della famiglia nell'impresa. L'elevato grado di *familiness*, nell'ottica delineata, costituisce un vantaggio unico e non replicabile, consistente in un patrimonio non economico ma socio-emozionale, garante della continuità aziendale e della longevità imprenditoriale attraverso la trasmissione dei valori e delle tradizioni familiari;
3. Le imprese *risk oriented* sono quelle che pianificano nel dettaglio i fattori di rischio, come è dato evidenziare dalla prevalenza di imprese del cluster che hanno superato il terzo passaggio generazionale. I legami familiari appaiono secondari a quelli di rischio. Le imprese sono più vicine a fenomeni di managerializzazione che, in qualche modo, consentono una gestione indipendente dai legami familiari. Al pari queste imprese manifestano l'esigenza di mantenere il controllo dell'azienda il più a lungo possibile, per trasmetterlo alle generazioni successive (Arregle *et al.*, 2007; Fiss e Zajac, 2004; Gomez-Mejia *et al.*, 2007). In sostanza la gestione dei rischi è affrontata con la consapevolezza che il patrimonio aziendale coincide con quello familiare, ed il benessere finanziario e sociale delle generazioni future dipende dall'esito di queste decisioni (Schulze *et al.*, 2002);
4. Le imprese *neutral oriented*, sono quelle che presentano moderati valori di sensibilità sia al rischio, sia alla *familiness*. Il loro comportamento sembra far emergere forme di equilibrio tra le due componenti oggetto dell'analisi, per cui non si riscontrano, in questo cluster di imprese, orientamenti verso valori estremi di rischio o di *familiness*.

Pur riconoscendo la validità dei quattro cluster, che delineano specifiche tendenze con riferimento alle due dimensioni d'analisi identificate, va rilevato che la maggior parte delle imprese si addensa attorno a valori medi; ciò a dimostrazione del fatto che la longevità delle imprese è funzione di entrambi i valori. Le imprese del campione esaminato, infatti, mostrano una sensibilità al rischio che, indipendentemente dal comportamento di avversità o propensione al rischio, è funzione dei valori di *familiness* endogeni all'impresa familiare; al pari, i valori di *familiness* sono fortemente correlati alla sensibilità al rischio che assume dimensioni correlate al rischio di perdita di legami familiari e di ricchezza del patrimonio familiare. In definitiva, la longevità delle imprese trova espressione attraverso due dimensioni entrambe speculari alle caratteristiche intrinseche dell'impresa familiare: i legami sociali e la propensione al rischio. La sopravvivenza delle aziende centenarie è quindi, legata a doppio filo con il sistema valoriale proprio della famiglia dei fondatori e di tutti i legami sociali che da questa si dipanano (Tàpies, Moya, 2012).

Tab. 8: Posizionamento dei Centenari rispetto a sensibilità al rischio e familiness



Fonte: ns. elaborazione

L'analisi dimostra, inoltre, che le imprese familiari longeve tendono a dare un'idea di sé caratterizzata da una certa e consolidata riluttanza, tanto al rischio, quanto alle avversità; tendendo, invece, a far risaltare che la propria longevità è tale perché alimentata da una lunga serie di successi, travagliati ma conquistati nel tempo.

Con riferimento alle ipotesi elaborate sulla base della letteratura consultata, è possibile sostenere la conferma di quasi tutte le ipotesi. In particolare, *l'ipotesi 1.1* è confermata in quanto si riscontrano valori di elevata sensibilità al rischio al crescere dei passaggi generazionali; la maggior parte delle imprese che hanno superato il terzo passaggio generazionale sono collocate nel primo quadrante a sinistra della matrice.

L'ipotesi 1.2 non è confermata in quanto solo il 16% del campione (4 su 25) riporta elevati livelli di sensibilità al rischio, cui corrispondono elevati valori di social emotional.

L'ipotesi 2.1, invece, *è confermata*, in quanto l'emergere del *fattore latente* FRIEND testimonia che la prospettiva della *familiness* sia connaturata alle imprese familiari centenarie. Infine, i risultati evidenziano che le imprese con non più di tre passaggi generazionali mostrano un posizionamento mediamente basso in termini di sensibilità al rischio e più vario per quanto riguarda la sensibilità alla *familiness* (Tab.8*)*. Ciò *valida l'ipotesi 2.2* (concernente la bassa influenza dei passaggi generazionali sulla *familiness* all'interno delle imprese familiari). Un'eccezione è rappresentata da Concilio, azienda attiva dal 1911 nel campo della sartoria maschile e che presenta un profilo di alta sensibilità sia al rischio, sia alla *familiness*. Quest'azienda riesce a coniugare due esigenze che spesso si contrastano, quella di incorporare i valori familiari e le istanze sociali con il saper fronteggiare eventi imprevisti con risolutezza e talvolta contro il volere della famiglia. Sul versante opposto, aziende centenarie quali De Nigris e Castaldo mostrano una scarsa *familiness* accoppiata ad una minima sensibilità al rischio. Se si esaminano i profili di queste due aziende, si scopre che sia De Nigris, sia Castaldo, sono carenti soprattutto nella rappresentazione dei valori familiari (in particolare quelli legati alla componente femminile), e allo stesso tempo sono del tutto indifferenti alla tematica del rischio.

Tab. 9: Verifica delle ipotesi

Ipotesi formulate	Validazione
Hp. 1.1 *L'elevata sensibilità al rischio delle imprese familari longeve è funzione dei passaggi generazionali*	**SI**
Hp. 1.2 *L'elevata sensibilità al rischio delle imprese familiari longeve è legata anche ad aspetti emozionali connessi al sistema familiare ed imprenditoriale*	**NO**
Hp. 2.1 *La sensibilità alla familiness è un fattore endogeno delle imprese familiari*	**SI**
Hp. 2.2 *Il passaggio generazionale non impatta sui valori di familiness dell'impresa familiare*	**SI**

Fonte: ns. elaborazione

5. Limiti e sviluppi futuri

Ciò premesso, il lavoro non è privo di limiti concettuali. Sebbene il campione d'imprese studiato presenti una certa varietà, tale da attenuare il rischio di distorsioni prodotte dall'appartenenza ad un unico settore e/o classe dimensionale, l'estensione dell'indagine non costituisce un mezzo sufficiente per poter ritenere generalizzabili i risultati della ricerca.

Il campione analizzato, infatti, è costituito da sole imprese familiari e ciò impedisce di trarre conclusioni sulla differente fisiologia delle cause e degli effetti della longevità rispetto alle imprese non familiari.

Inoltre, il campione potenziale di imprese familiari appartenenti alla associazione storica "I Centenari" si è ridotto da 34 a 25 imprese, poiché sono state escluse dall'analisi le imprese prive di un proprio sito web.

Inoltre, le imprese analizzate sono tutte radicate in Regione Campania, area condizionata da persistenti condizioni che pregiudicano la longevità aziendale[8]; se da un lato ciò rende il campione omogeneo, dall'altro è un limite, per l'assenza di un confronto con imprese familiari operanti in altre regioni italiane oppure in altre nazioni.

Un ampliamento del campione tale da ricomprendere le imprese familiari storiche appartenenti ad altre associazioni d'imprese storiche (ad es. *Les Henokien Club* e l'italiana Unione Imprese Centenarie Italiane) potrebbe essere una soluzione che non introdurrebbe elementi eccessivamente distorsivi.

Un'ulteriore riflessione riguarda la possibilità di estendere l'acquisizione dei dati alla generalità delle imprese familiari. A livello teorico le considerazioni svolte possono essere valide anche a livelli dimensionali maggiori, ma la verifica "sul campo" consentirà di dare maggior peso e oggettività a questa affermazione.

Per quanto riguarda l'analisi testuale, le fonti utilizzate sono state le sezioni storiche dei siti web e le interviste riportate nel libro "I Centenari - Una raccolta di storie". Non è stato utilizzato altro tipo di documenti (es. interviste, articoli, newsletter e così via). Sempre riguardo il contenuto, occorre considerare che le pagine web sono state realizzate con l'obiettivo di attrarre l'attenzione e il giudizio positivo del lettore. Tuttavia, va anche rilevato che il software LIWC ha consentito di ridurre al massimo gli effetti distorsivi, enucleandone le specificità riconducibili ai comportamenti latenti degli autori dei testi.

In futuro per rafforzare l'analisi il gruppo di lavoro ha già avviato una indagine tramite questionario sui proprietari delle imprese del campione.

Per migliorare i risultati conseguiti e rafforzare le conclusioni cui si è giunti sarebbe, inoltre, opportuno implementare un'analisi comparativa tra imprese operanti in contesti normativi diversi

[8] Sulle condizioni strategie di crescita e sulle logiche di intervento a sostegno delle imprese meridionali, si veda tra l'altro Fimmanò F., 2019.

oppure modificare il campione, considerando, ad es., imprese longeve che operano in settori economici caratterizzati da elevata instabilità, forti pressioni concorrenziali e domanda fortemente elastica e rapidamente mutevole.

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