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RELATIONSHIP BETWEEN CHANGES IN THE FIRMS' DEGREE OF
INTERNATIONALIZATION AND TMT'S DIVERSITY:
an empirical analysis on UK-based firms

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ABSTRACT

Adopting the microfoundations approach and leaning on the Upper Echelons (UE) theory, the aim of this research is to study the relationship between changes in the firms' internationalization and changes in TMTs' diversity. The study relies on top management teams, firm financial and internationalization-related data about 144 UK-based firms with 50 to 2000 employees over 11 years (from 2008 to 2018). Unlike most of the literature in this field investigating the determinants of internationalization strategies, we conduct our research taking into consideration how DOI affects TMT's composition. Moreover, the novelty of our research lies in the possibility to consider the contribution of each facet of multinationality separately. To accomplish this task, we use multiple single-item variables, each focusing on a specific aspect. This helps us to avoid some limitations of previous researches arising from the adoption of aggregated indices or single-item measures. We analysed three dependent variables at TMT level: industry experience diversity, international experience diversity and total diversity. Our explanatory variables, instead, are the following ones: intensity of foreign activities (foreign sales to total sales), firm's geographic extension by country (count of countries), firm's geographic extension by continent (count of continents) and geographic dispersion by cultural cluster (distribution of the subsidiaries among the eleven cultural zones of the world). In order to track changes, a 2-year delta for all the above-mentioned variables is computed in respect to the dependent variable(s). Finally, a fractional logit model on STATA is implemented to test twelve models, obtained during our analyses. Our research has found interesting relationships between DOI change and TMT heterogeneity change. Specifically, changes in TMT diversity are noticeably influenced by variations in the dispersion of firm's foreign operations among different cultural clusters. In addition, the changes in geographic extension by country and continent are positively correlated with international experience diversity and total diversity. However, an increase in the firm's involvement in international operations is not associated to a correspondent increase in TMT diversity.

Keywords: Microfoundations, Top management team, Degree of internationalization, UK, Diversity, International experience, Industry related experience

ABSTRACT (ITALIAN VERSION)

Lo scopo di questa ricerca è investigare la relazione tra cambiamenti nel grado di internazionalizzazione di un'azienda e variazioni nel livello di diversità del Top Management Team (TMT), adottando un approccio di microfondazione e attingendo dalla teoria degli Upper Echelons. Lo studio si basa su dati finanziari e inerenti all'internazionalizzazione di 144 aziende con sede nel Regno Unito e con un numero di dipendenti tra 50 e 2000, che fanno riferimento ad un periodo di undici anni (dal 2008 al 2018). A differenza della maggior parte della letteratura in questo campo riguardante le cause di strategie di espansione, abbiamo deciso di considerare la relazione opposta: l'impatto dell'internazionalizzazione sulla composizione del TMT. Inoltre, la novità della nostra ricerca risiede nell'esaminare l'effetto di diversi aspetti dell'internazionalizzazione separatamente. Nel fare ciò, utilizziamo molteplici variabili, ognuna delle quali si focalizza su un singolo elemento. Questo ci permette di evitare alcune limitazioni, riscontrate in studi precedenti, che derivano dall'adozione di indici aggregati o misurazioni di un solo aspetto dell'internazionalizzazione. Abbiamo analizzato tre variabili dipendenti a livello di TMT: la diversità riguardante esperienze lavorative in altri settori, la diversità nelle esperienze lavorative internazionali, e il grado di diversità complessivo. Mentre le variabili esplicative sono le seguenti: l'intensità delle attività internazionali (percentuale di vendite all'estero), l'estensione geografica dell'azienda per nazione (numero di Paesi), l'estensione geografica dell'azienda per continente (numero di continenti) e la dispersione geografica per raggruppamento culturale (distribuzione delle filiali tra le undici diverse zone culturali presenti nel mondo). Per tenere traccia dei cambiamenti, un delta di due anni è stato calcolato per tutte le variabili citate in precedenza in rispetto alle variabili dipendenti. Infine, un modello fractional logit è stato implementato in STATA per testare i dodici modelli sviluppati nel corso delle nostre analisi. La nostra ricerca ha riscontrato la presenza di relazioni interessanti tra il grado di internazionalizzazione dell'azienda e l'eterogeneità del TMT. In particolare, cambiamenti nel livello di diversità del TMT vengono fortemente influenzati da variazioni nella dispersione delle operazioni estere tra raggruppamenti culturali diversi. Inoltre, cambiamenti nell'estensione geografica sia a livello di nazione che di continente sono correlati positivamente con la diversità nell'esperienza lavorativa internazionale e la diversità totale. Tuttavia, l'incremento del coinvolgimento di un'azienda in operations internazionali non è associato ad un corrispondete aumento nel grado di diversità del TMT.

Parole chiave: Microfoundations, Top management team, Grado di internazionalizzazione, Regno Unito, Diversità, Esperienza lavorativa internazionale, Esperienza lavorativa in settori industriali

EXECUTIVE SUMMARY

For a long time, the contribution of individuals to firms' performance and strategic outcomes has been under evaluated or was not considered at all. It was due to the application of a macro or meso perspective that looks at country-, industry-, or firm-level. Recently, the situation has changed thanks to the microfoundations approach, which studies phenomena by looking for their causes at a lower level of analysis, i.e. employing team- or individual-variables. In this context, the role of decision-makers becomes a key aspect in the investigation and analysis of the firms' outcomes.

While the majority of works in microfoundations focus on resource-based theory and specifically on routines and capabilities in general, other theoretical lenses have also been adopted during past decades. For instance, studies have drawn on psychological and cognitive aspects, dynamic capabilities and human capital. Another important research stream focuses its attention on how leaders can influence firm's strategic decisions and outcomes. This last one has been referred as the Upper echelon (UE) theory and was developed by Hambrick and Mason in 1984; this theoretical framework examines top managers' characteristics in order to explain firm-level outcomes and performance.

During past years, this framework has generated a great contribution to the strategic management research, by providing large evidence on the connection between TMT characteristics and firm performances and strategies. The benefits of adopting a UE perspective are quite obvious: it allows to predict organizational outcomes and provides useful insights on the composition of management teams. Moreover, it can help predict moves and reactions of competitors based on the characteristics of their executives.

However, scholars have not fully employed UE theory to study International Business (IB) outcomes. When companies expand their activities beyond the domestic market, they face very complex and uncertain process of internationalization. Their TMTs are required to make decisions without having a definite view of the situation, and top managers' characteristics are likely to affect managerial decision-making and, in turn, firm organisational outcomes. Thus, there is a two-way relationship between IB phenomena and the composition of the firm top management teams; on the one hand, characteristics of top managers can be the drivers of firm internationalization strategic decisions while, on the other hand, internationalization strategies can shape TMT composition and influences the appointment of certain executives' profiles. As for the last relationship, the

characteristics and experiences of top managers are considered to be of crucial importance for a company's ability to cope with the complexity arising from enlarging the company's global posture.

In our thesis, we adopt microfoundations approach to infer that the information-processing demand, required to overcome liabilities of foreignness in the internationalization process, can be fulfilled by the knowledge and the experience embedded in heterogeneous TMTs. In this way, we contribute to IB literature and to the understanding of the effects of changes in a degree of internationalization (DOI) on firms' TMT composition diversity.

So far DOI has been described as ratios like foreign sales to total sales, foreign assets to total assets, foreign employees to total employees, or it was considered as a dispersion of foreign subsidiaries in the different countries or as a count of the markets where the company operates. As regards to our measures of DOI, they do not aim to be as comprehensive as possible as previous measures of the degree of internationalization, but attempt to capture the level of complexity that firms must face whenever they operate in multiple countries, continents or cultural clusters. To do that, we have generated multiple single-item variables that consider all the various aspects separately. Specifically, we have considered international intensity, geographic extension by country, geographic extension by continent and geographic dispersion by cultural cluster. The first one is measured as a proportion of foreign sales to total sales, the second and third variables are respectively a count of countries and continents in which a firm has direct investments, and the last one is measured using the Blau (1977)'s index and calibrating the dispersion of the subsidiaries among the eleven cultural clusters identified by Ronen and Shenkar (2013) across the world. The novelty of our research lies also here. The computation of multiple single-item variables allowed us to overcome the limitations of the adoption of a single-item measure or aggregated indices. In addition, it helped us to consider the contribution of each facet of multinationality on the TMT composition diversity. Specifically, for the purpose of our study, we have developed different dependent variables that separate distinct aspects of TMT's diversity such as international experience diversity and industry experience diversity. We further extended this research by adopting another dependent variable, representing the total diversity, which was computed combining the first two types of diversity.

To study the effects of degree of firms' internationalization changes on the change in TMTs' diversity, we have merged two datasets; one of them contains information about the internationalization process of the firm, another gathers data about the composition of TMT and individual characteristics of the TMT members. As a result, we obtained a dataset with comprehensive team-level information needed for the creation of variables for testing our hypotheses. We have

collected all the information about 144 firms along 11 years (from 2008 to 2018), that resulted in 1560 top management teams with 4530 executives and 4944 non-executives (if to consider unique members, they are 847 and 902 respectively).

We have empirically tested our hypotheses regarding the influence of change in the degree of internationalization, i.e. ***intensity of foreign activities, firm geographic extension by country, firm geographic extension by continent*** and ***geographic dispersion by cultural cluster***, on the change of TMT industry experience diversity, TMT international experience diversity and total TMT diversity. In order to track changes, we did not simply consider yearly data, but we have computed 2-year delta for both dependent and explanatory variables.

The hypotheses are:

HP 1: A positive change in the ***intensity of foreign activities*** is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

HP 2: A positive change in the ***firm geographic extension by country*** is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

HP 3: A positive change in the ***firm geographic extension by continent*** is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

HP 4: A positive change in the ***geographic dispersion by cultural cluster*** is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

Hypothesis 1 considers the influence of the ***intensity of foreign activities,*** which is the first facet of internationalization investigated in our research, on the TMT diversity. According to this, a rise in the level of foreign sales can be considered as an increase of complexity, and in order to deal with that, a firm seeks for the appropriate set of knowledge, competences, and experience embedded in the TMT, that leads to an increase of TMT's heterogeneity.

Hypothesis 2 considers the influence of the ***firm geographic extension by country*** on the TMT diversity. In line with this hypothesis, opening a subsidiary in a foreign country requires an establishment of a network with local stakeholders and wider variety of the information that

executives must process. In this case TMT industry-related experience and international experience diversity of executives may be beneficial.

Hypothesis 3 considers the influence of the *firm geographic extension by continent* on the TMT diversity. Since opening a subsidiary in a new continent does not imply the same level of complexity as additional entries in a familiar continent, firms, if decide to capture a brand-new geographical area, adjust TMT composition to avoid higher transaction costs due to information costs and try to compensate the lack of personal contacts needed to effectively transfer skills and competences.

Hypothesis 4 considers the influence of the *geographic dispersion by cultural cluster* on the TMT diversity. Indeed, the level of complexity depends not only on geographical and political aspects but also on culture. In order to deal with the tough challenge as differences in religion, race, social norms, and language, firms experience the need for additional knowledge during the internationalization process and TMTs are more likely to become more heterogeneous.

All the hypotheses have been tested with different aspects of TMT diversity. We have tested the three dependent variables with the four explanatory variables, obtaining twelve models. A fractional logit model on STATA, a statistical software, has been chosen in order to run our tests. To control for industry-level, firm/team-level and individual-level effects, we have used the following control variables: Firm profitability, Sales, Number of employees, Current ratio, TMT Size, TMT tenure diversity, TMT age diversity, Board gender diversity, Board nationality diversity, Board independence, CEO duality, CEO career variety, CEO founder, CEO newness, Industry munificence and Industry dynamism. Moreover, Industry and Time dummies were included in our models.

Our empirical analyses have confirmed hypothesis 4 entirely, hypotheses 2 and 3 were confirmed partially, and hypothesis 1 was not supported. We have obtained positive and significant results for models used in hypothesis 4, thus according to our results changes in TMT diversity are noticeably influenced by variations in the dispersion of firm's foreign operations among different cultural clusters. Indeed, firms need additional capabilities to cope with complexity arising from spreading their activities to different cultural clusters, i.e. they have to fulfil the greater demand of information and deal effectively with the greater cultural and institutional distance between headquarters and foreign subsidiaries. As regards the changes in geographic extension by country and continent, they are positively correlated with TMT diversity. However, the significance was revealed only in case of international experience diversity and total diversity. Thus, we cannot state that an increase or decrease in the geographic extension of a firm leads to change the level of industry

experience diversity in the TMT. Hypothesis 1 is not confirmed, moreover, the result is negative and significant in case of international experience diversity. It demonstrates that changes in the firm's involvement in international operations are not positively associated to changes in TMT diversity. However, it should be noted that in our study the intensity of foreign activities was measured as proportion of foreign sales to total sales that is a measure of the lowest level of complexity arising from internationalization. Indeed, a company can increase its level of exports without necessarily increasing its team heterogeneity and this is because of the limited efforts and complexity associated with export activities. Moreover, once the initial barrier related to serving a new foreign country has been overcome simply decide to increase its investment in a given country and this does not imply a great amount of information-processing demand.

In light of these results, our research confirms the usefulness of the microfoundations approach in order to explore the relationship between top managers' characteristics and firm-level phenomena/strategies such as the degree of internationalization. It shows that the reverse causality should not be ignored between firm strategies and TMT composition should not be ignored. Firms could adjust their TMTs to match their internationalization strategies. Higher information-processing demand associate with greater human and social capital embedded in its executives will help firms to exploit foreign markets and may accelerate its internationalisation process (Hambrick, 2007). Therefore, more research is needed. We suggest enlarging our research by considering and further analysing the impact of internationalization on TMT composition. It might be interesting to include non-executive members and investigate the effects of the same facets of internationalization on Board background diversity (i.e. industry experience and international experience). Moreover, future research could also examine the adoption of specific entry mode strategies (e.g. shared versus wholly owned subsidiaries or acquisition versus greenfield) as antecedents of TMT diversity. Indeed, they might imply different levels of complexity according to the risk and the involvement of the company in the foreign markets. In order to avoid some limitations that our study has encountered, we would suggest using a larger dataset and also to consider bigger international firms (e.g. MNEs) to generalize our results. Moreover, an implementation of direct interviews with managers would help get insights on the relationship between firm internationalisation strategies and the TMT composition. Future studies could adopt a multidisciplinary approach combining UE theory insights with psychology literature, as the study of teams and individual may involve a greater complexity and examined in a more clinical manner.

Finally, our research has relevant managerial implications. In fact, it can contribute to the creation of TMTs, by helping firms to build the most appropriate decision-making team according to their internationalisation strategy. Our empirical results show that executives' diversity in terms of industry and international work experience are essential instruments for companies in order to deal with the complexity of overseas expansion and in order to exploit the benefits and opportunities that foreign markets have to offer.

1 LITERATURE REVIEW

In answering the question "Why do organizations act as they do?" theorists typically tried to explain organizational moves at macro-level, focusing only on technological and economic factors. However, recently some authors emphasised the importance of the individual level in order to understand collective strategic issues and organizational outcomes (Molina-Azorín, 2014). Microfoundations argues that the explanation of a phenomenon at lower levels of analysis yields remarkable results. Indeed, the combination of distinct levels of analysis and the integration of micro and macro factors may provide a better understanding of strategic issues and unsolved questions.

In this chapter, we will first discuss the origins, interpretations, and criticisms of microfoundations. This will allow us to briefly overview the theory and understand its fundamentals. Then, we will review microfoundations studies applied to strategic management, focusing on findings concerning routines and capabilities and Upper Echelons Theory. In particular, the latter examines the relationship between top managers' characteristics and experiences and organizational outcomes. In this regard, scholars analysed TMTs in relation to different aspects such as firm performance, innovativeness, power dynamics and interfirm rivalry. Finally, we will investigate microfoundations research in International Business, adopting TMT as unit of analysis. In our literature review, we discuss three main streams of research: international diversification, entry mode choice and the influence of the firm strategy and the contingent environment on TMT composition.

1.1 ORIGIN OF MICROFOUNDATIONS AND MAIN CRITIQUES

Microfoundations is not properly a theory but an approach that has spread across a wide range of macro theories. Indeed, the idea of microfoundations originates from the historical tensions between micro and macro disciplines in the social sciences about the level of explanation of individual and collective or societal outcomes (Felin, et al., 2015; Udehn, 2001). Specifically, micro explanation focuses on individual characteristics, actions, and interactions. For instance, Barnard (1938, p.139) strongly claims the role of an individual as "the basic strategic factor of organization". Likewise, individual decision-making and motivation are linked with the performance of a firm in Simon's early work on *Administrative behaviour*. Although methodological individualism has been developed in different forms across social sciences, the basic claim is always the same: the explanation of any macro phenomenon inevitably requires at least some reference to individual actions and interactions (Coleman, 1990).

Overtime the emphasis on micro factors has been lost, leaving the room to the study of macro factors in strategic management and organizational theory. Nelson and Winter (1982) identify the explanatory variables of performance heterogeneity in routines, competencies and practices, arguing that the possession of technical knowledge is an attribute of the firm as whole and that cannot be reduced at the individual level. When adopting this kind of approach (also known as methodological collectivism), three are the key assumptions: 1) individuals are homogeneous and randomly distributed into organizations (Felin & Hesterly, 2007), 2) organizations exist prior to individual actions and 3) individuals are extraneous and highly malleable by the context (Molina-Azorín, 2014).

As a reaction to this over-emphasis on macro-factors along with the disregard for the individual level and social interactions, the attention for microfoundations considerably increased in the mid-2000s. Starting from the desire of avoiding black boxes, collective constructs like organizational outcomes or firm strategies can be decomposed to understand the underlying constituents at their basis (Felin, et al., 2015). Moreover, to investigate the effect of individual actions, interactions, and values at organizational level, microfoundations research relies also on other related streams like behavioural theory and human capital.

Despite the success and strong contribution in strategy and organization theory, microfoundations has received critiques especially from macro scholars. Some of them argue that microfoundations is merely a "mirage" (Hodgson & Knudsen, 2010) since outcomes are more likely to be influenced by collective factors (Winter, 2011). Pentland (2011), instead, does not question the

relevance of microfoundations but only its nature. Indeed, also the criticism is divided; some authors doubt the entire microfoundations approach, other simply do not agree with some specific aspects. Barney and Felin (2013) manage to further analyse critiques organizing them under four categories:

1) Microfoundations is merely an attempt to link organizational behaviour and other micro disciplines to strategy;

2) Microfoundations simply applies concepts borrowed from other disciplines or fields to the macro level;

3) Microfoundations leads to an infinite regress (e.g. if superior performance is the result of a certain organizational structure, where do structures come from?);

4) Microfoundations emphasizes individual-level factors and interactions, denying the role collective factors may have.

Nevertheless, Barney and Felin (2013) dismiss these critiques arguing that are "half-truths" or misconceptions. Although microfoundations borrows from other micro-disciplines like organizational behaviour or psychology, it extends these concepts in new domains rather than only restate or repackage. Indeed, the integration of complementary streams allows to develop new insights (Felin, et al., 2015). Moreover, microfoundations does not imply that macro-variable cannot have place for the explanation (Little, 1991). For instance, the most proper level of analysis for strategic constructs, such as value creation and competitive advantage, is the firm-level.

All in all, it would be better not to oppose the micro- and macro-approach one against the other but rather integrate them. In fact, microfoundations not only can improve theoretical and empirical research in macro-management, but also provides more stable, fundamental and general explanations (Coleman, 1990).

1.2 DEFINITION OF MICROFOUNDATIONS

Microfoundations has two distinct interpretations: "microfoundations as levels" and "microfoundations call for explanatory primacy of individuals". Nevertheless, the latter can be seen as a special case of the former because it is more specific.

"Microfoundations as levels" draws from the concept of genealogical hierarchy, where each level mechanism or entity influences superior analytical levels in time. Felin et al. (2012, p.1353) define it as "a theoretical explanation, supported by empirical examination, of a phenomenon located

Relationship between changes in the firms' degree of internationalization and TMT's diversity at analytical level N at time t (N_t). In the simplest sense, a baseline micro-foundation for level N_t lies at level $N-1$ at time $t-1$, where the time dimension reflects a temporal ordering of relationships with phenomena at level $N-1$ predating phenomena at level N." The definition does not allude to the presence of individuals at level $N-1$, but it does assert that higher levels phenomena derive from lower ones. For instance, Teece (2007) emphasizes the microfoundations of dynamic capabilities that underpin enterprise-level sensing, seizing, and reconfiguring capacities. However, Coleman (1990) also recognizes that higher level phenomena may have a casual influence somehow on lower levels.

On the other side, "microfoundations call for explanatory primacy of individuals" deepens this argument under the assumption that locating proximate causes of a phenomenon at lower levels of analysis has explanatory supremacy. This latter interpretation was highly debated and questioned in literature. According to this view, the analysis of more micro factors can result in a more effective explanation of macro-level phenomena. Moreover, Abell et al. (2014) argue that even weak forms of microfoundations cannot be satisfied by an explanation that focuses only on macro factors.

To better understand the meaning of microfoundations Felin et al. (2015) rely on the sociological model known as Coleman "bathtub" or "boat".
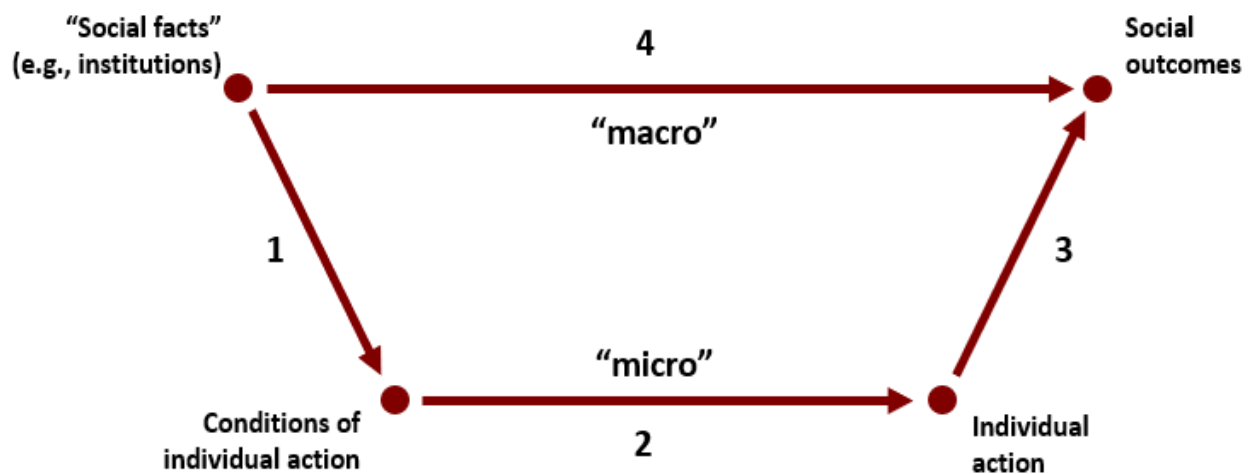
Figure 1.1 A General Model of Social Science Explanation (Source: Felin et al., 2015)

As showed in Figure 1.1, there is a clear distinction between the micro level and the macro level that represent the individual level and the organizational level, respectively. Nevertheless, four connections link together the two levels (arrow 1 and 3) as well as entities within the same level (arrow 2 and 4). In addition, the direction of these arrows distinguishes what needs to be explained (i.e. the *explanandum*) and its explanation (i.e. the *explanans*).

According to Coleman diagram, different combinations arise from the causal mechanism represented in the Figure by the arrows: A [3], B [3,2], C [1,2,3] and D [4]. Among these, only the first three combinations are related to microfoundations, reinforcing the "microfoundations as levels" argument described previously. Indeed, the level N – 1 consists in the micro explanations and operates through arrow 3, while the element t – 1 is given by the order of the arrows.

1.3 MICROFOUNDATIONS OF STRATEGIC MANAGEMENT

Strategic management is normally considered to be within the macro level domain. Specifically, the two main research lines focus on the firm, industry and corporate effects as determinants of firm performance or on the impact of specific resources on performance (Molina-Azorín, 2014). Similarly, diversification patterns, vertical integration, competitive rivalry are not studied at the individual level. This is in line with the conceptualization of organizations as "repositories of organizational routines, firm capabilities and organizational knowledge" (Molina-Azorín, 2014, p. 103) necessary to create a competitive advantage and enhance financial performance and innovation.

However, Foss (2010) states that the processes of creating, integrating, and sharing knowledge depend on the characteristics of individuals in response to rapidly changing contingencies. Indeed, organizations are made up of individual and to fully understand organizational outcomes, the first step is understanding the individuals that compose the whole (Felin & Foss, 2005). This microfoundations interest in strategy has expanded in the early and mid-2000s, as a reaction to the emphasis on macro level. In particular, the focus is on those areas of macro management stressing "knowledge-based" assets, for example routines, capabilities, competences, absorptive capacity, human capital resources, etc (Felin, et al., 2015).

In this direction, Felin et al. (2012) suggest that routines and capabilities can be clustered in three categories embedded in a nested and temporal hierarchy: 1) individuals, 2) processes and interactions, and 3) structure. In order to better understand this concept, we briefly explain the impact of each category on routines and capabilities.

According to the behavioural theory, individuals are boundedly rational and their choices may be affected by different beliefs, goals, and interests. Moreover, heterogeneity lies in human capital (e.g. knowledge, skills, or abilities), characteristics (e.g. gender, IQ) and experiences (e.g. education level, job tenure) that individuals bring to the organization. Hence, changes in these dimensions may

affect routines and capabilities at higher levels (Felin, et al., 2012). Regarding processes and interactions, routines may vary based on the type of process. For instance, rigidly designed processes may imply limited variation at organizational level (Felin, et al., 2012). At the same time, actions are influenced by formal (rules and procedures) and informal (experience, norms and values) coordination mechanisms (Becker, 2004). Finally, different types of structures may have a positive or negative impact on the action and on the information processing according to the degree of complexity (Felin, et al., 2012). For instance, in flat structures there is a high level of autonomy and information shared among members, but coordination problems are likely to emerge (Foss, 2003).

While the majority of works in microfoundations focus on resource-based theory and specifically on routines and capabilities in general, it is worth mentioning also other explored areas. Some studies analysed psychological and cognitive aspects. Powell and Lovallo (2011) suggest that behavioural strategy can be seen as the merge of behavioural theory and strategic management. Also, Gavetti (2005) examines how cognitive characteristics of individuals may influence firm capabilities. Another topic is related to dynamic capabilities. Teece (2007) identifies those dynamic capabilities crucial for the creation and sustainability of superior performance in fast-moving business environments.

Microfoundations studies put also emphasis on the role of human capital. Coff and Kryscynski (2011) recognize in the interaction between individual and firm-level components a guarantee of attracting, retaining and motivating human capital. Ployhart and Moliterno (2011) connect micro, meso and macrolevels underlying the emergence of human capital. In fact, individuals embed cognitive (skills, experience, knowledge) and non-cognitive (interests, personality) characteristics. Once these characteristics combine at group level and team level, human capital arises and becomes a firm collective resource.

Finally, another important stream pays attention on how leaders (especially strategic leaders) can influence strategic decisions and firm's outcomes. Upper echelon theory developed by Hambrick and Mason (1984) deepens this aspect by investigating how TMT characteristics with respect to organizational variables.

1.4 UPPER ECHELONS THEORY

In this section we will briefly review Hambrick and Mason (1984)'s framework and see how Upper Echelons (UE) theory contributed to strategic management research. Specifically, we identify three main insights stemming from the UE perspective. First, it helps predicting organizational outcomes. A second advantage lies in the executives' hiring process, as it provides useful recommendations on the composition of management teams and why certain characteristics tend to prevail or may lead to certain strategic outcomes. Third, it can help firms and their executives to foresee their competitors' strategic moves and reactions by investigating competitors executives' characteristics, experiences altogether with other organisational and macro-factors.

At the beginning of 1960, theorists of the Carnegie School argued that complex decisions are the result of behavioural factors rather than a mechanical quest for economic optimization (Cyert & March, 1963; March & Simon, 1958). Specifically, this is true for strategic choices since behavioural theory can be better applicable when the level of complexity is high (Hambrick & Mason, 1984).

Each decision-maker has his/her own set of "givens" (knowledge about future events, alternatives and consequences attached to alternatives) and these "givens" filter and distort the decision maker's perception of what is happening and what should be done (March & Simon, 1958; Hambrick & Mason, 1984). Drawing from Hambrick and Snow (1977), Hambrick and Mason (1984) conceptualize this perceptual process that can be described as a funnel (see Figure 1.2). Since managers cannot scan every aspect of the organization or the environment, attention gradually shrinks until the selected information is interpreted through a cognitive base and values.
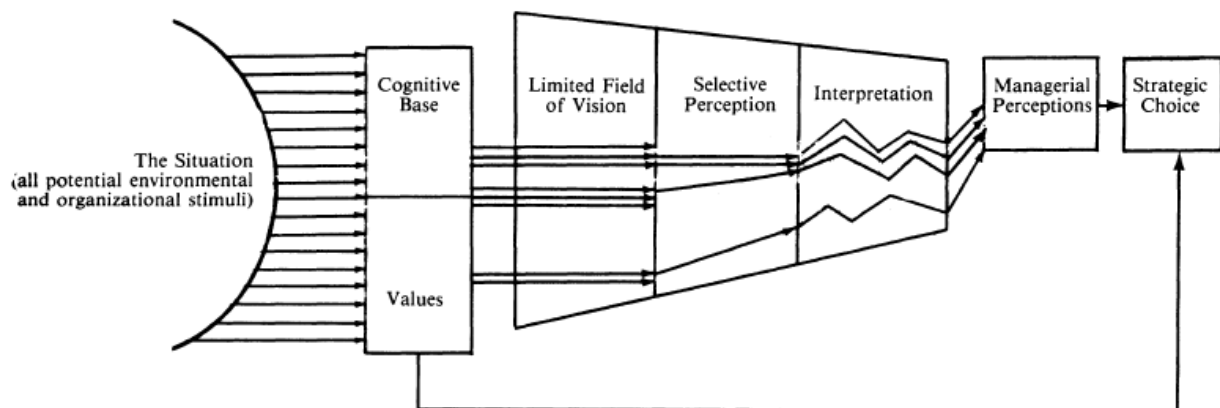
Figure 1.2 Strategic Choice Under Conditions of Bounded Rationality (Source: Hambrick & Mason, 1984)

Relationship between changes in the firms' degree of internationalization and TMT's diversity

The UE framework developed by Hambrick and Mason (1984) is still based on this logic. Nevertheless, the emphasis shifts to observable managerial characteristics like age, organizational tenure, functional and educational background, socioeconomic roots, and financial position. This decision can be driven by the difficulty in measuring executives' cognitions, values, and perceptions. Indeed, observable characteristics are taken as proxy of unobservable psychological constructs that "shape the team's interpretation of internal and external situations and facilitate the formulation of appropriate strategic alternatives" (Carpenter, et al., 2004, p. 750).
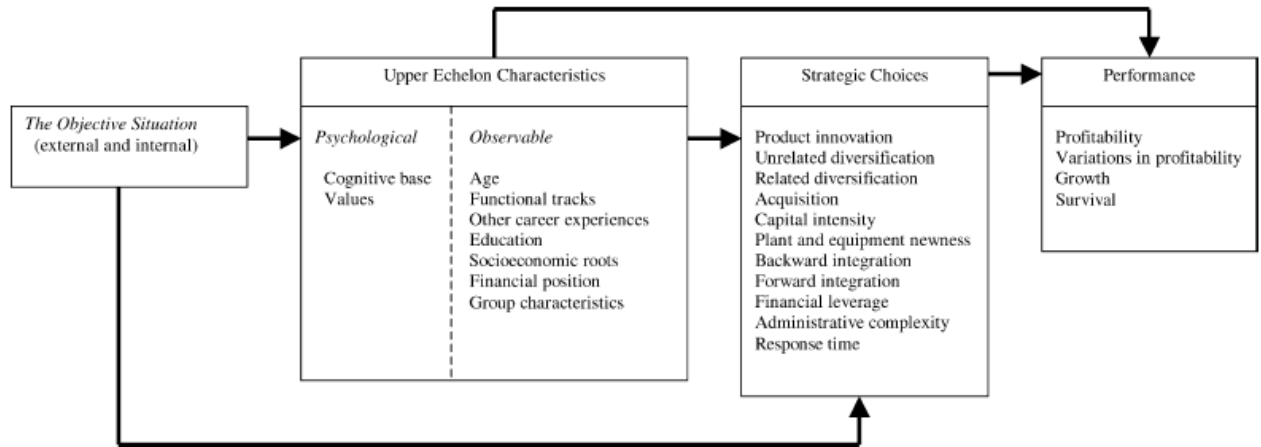
Figure 1.3 A UE perspective of organizations (Source: Hambrick & Mason, 1984)

Finally, strategic choices reflecting managers characteristics interact to determine organizational outcomes. For example, young managers tend to be less risk-averse and thus, pursue strategies that involve a higher degree of risk, e.g. unrelated diversification, product innovation and financial leverage. In the same way, the predominance of a certain type of function (e.g. output- or throughput-function) may influence the strategy adopted (Hambrick & Mason, 1984).

1.4.1 TMT perspective

In their work, Hambrick and Mason (1984) carefully explain the choice of the level of analysis under the leadership of the CEO. Thus, studying the entire team increases "the potential strength of the theory to predict, because the chief executive shares tasks, and to some extent, power with other team members" (Hambrick & Mason, 1984, p. 196).

In most studies, the definition of TMT is based on the concept of dominant coalitions (Cyert & March, 1963) or inner circles (Thompson, 1967) to describe a group of individuals at the apex of strategic decisions. Nevertheless, the criteria used to assess TMT are still debated and the ways in which TMT are measured vary considerably.

Many scholars have used title or position to identify the team members (Carpenter, et al., 2004), while others used broader measures that include the board of directors or consider all the levels above the vice-president (Finkelstein & Hambrick, 1990; Haleblian & Finkelstein, 1993; Norburn, 1989). A few studies define TMTs according to the availability of compensation data, typically related to the top five highest paid executives (Carpenter & Fredrickson, 2001; Carpenter, et al., 2003). Finally, another approach suggested by Pettigrew (1992) and Jackson (1992) consists in asking the CEO to identify those players involved in the processing of strategic issues.

As the variety in TMT measurement may be the source of inconsistent findings, further studies about TMT definition along with the development of a unique measure may strengthen TMT research even more.

1.4.2 Recent upper echelons research

Hundreds of studies inspired by Hambrick and Mason (1984)'s work started investigating a range of topics related to the composition and processes of TMTs, executives' compensation, selection, tenure, leadership, conflict and decision making, and a host of other related outcomes (Stewart & Amason, 2017). Among these studies, a stream of research focused on TMT diversity.

Heterogeneity in TMT composition has been associated with larger selection of options, ability to manage complexity (Stewart & Amason, 2017), financial firm performance (Carpenter & Fredrickson, 2001), enhanced creativity (Wiersema & Bantel, 1992) and international and globalization strategies (Carpenter & Fredrickson, 2001; Carpenter, et al., 2003; Tihanyi, et al., 2000).

Delving deeper in the analysis of the effect of TMT diversity on the organizational outcome, Carpenter (2002) shows that the positive relationships between TMT educational, functional, and tenure heterogeneity and performance are contingent on complexity and stronger in short-tenured TMTs. Nielsen and Nielsen (2013) find empirical evidence that nationality diversity is positively related to performance and that this effect is stronger in longer tenured teams, highly internationalized firms, and munificent environments. Moreover, Díaz-Fernández et al. (2015) investigate the moderating effect of TMT human capital diversity on the relationship between diversification strategies and firm performance. According to results, product diversification and international diversification strategies need higher heterogeneity in demographic characteristics and managerial experience. This brings to the firm human and social capital which in turn exert a positive influence on corporate performance.

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TMT research also placed emphasis on power dynamics, since Finkelstein (1992) empirically demonstrate that power is not equally distributed among members. TMT heterogeneity influences the outcomes only if the CEO welcomes TMT strategic inputs, otherwise the effect will be nullified (Pitcher & Smith, 2001).

Talke et al. (2010) analyse the effects of corporate governance arrangements in the context of innovation management. Empirically, they show that idiosyncrasies of top managers, measured by task-related TMT diversity, have a strong impact on strategic choices of companies to focus on innovation fields. Such focus then drives new product portfolio innovativeness and firm performance.

Focusing on interfirm rivalry, Ferrier (2001) investigate the impact of the TMT on competitive dynamics. In particular, he reports that diverse TMTs are more likely to initiate short and complex competitive attacks leading to subsequent gains in market share.

Despite these benefits, diversity may imply higher TMT turnover (Jackson, et al., 1991; Wagner, et al., 1984) and greater levels of conflict that can hamper consensus building and strategy implementation (Amason, 1996; Amason & Sapienza, 1997). In this regard, teams that interact more and are situated near each other, in collocated offices, experience better decision making and enhanced relationship between TMT heterogeneity and firm performance (Carmeli & Schaubroeck, 2006; Cannella, et al., 2008).

1.5 MICROFOUNDATIONS IN INTERNATIONAL BUSINESS

As explained previously, in the last 30 years UE research provided evidence for a connection between TMT characteristics and firm performances and strategies. However, the interest of the effects of TMT composition on international business outcomes such internationalisation and entry mode choices is relatively more recent (Mohr & Batsakis, 2019; Pisani, et al., 2018; Li, 2018). The reason can be ascribed to the dramatic increase in globalization. Indeed, organizations are now encouraged to develop a leading international presence to survive and maintain long-term success.

Many benefits can be associated to international diversification. Among these there are economies of scale, scope and experience, location advantages and possibility to leverage market power to reduce input costs and control output markets (Kogut, 1995; Gomes & Ramaswamy, 1999; Tallman & Li, 1996). At the same time, firms expanding beyond domestic borders face significant challenges related to environmental uncertainty, including changing in political risk and exchange rate

risk, and lack of information about the local context (Herrmann & Datta, 2005; Nielsen, 2010). Indeed, managers must deal with unknown cultures, new customers and competitors and a different set of regulations (Porter, 1986; Sambharya, 1996).

It is precisely in such a complex context where UE theory is more applicable and the effect of TMT characteristics stronger (Hambrick & Mason, 1984; Finkelstein & Hambrick, 1996). The level uncertainty and complexity associated to internationalization makes it germane to study TMT demographic and experiences effects and assess the moderating role of uncertainty (Carpenter & Fredrickson, 2001).

Similarly, in the Uppsala internationalization process model experiential learning is considered a critical source of knowledge and expertise to face the uncertainty of entering in new geographical markets (Eriksson, et al., 1997). In particular, it argues that only when firms have accumulated enough experience in operating abroad, then they can go one step forward and address geographically distant markets (Nielsen, 2010) .

In line with both logics, UE theory and Uppsala model, TMT background and experience are expected to influence strategic decisions related to foreign market entry and then on firm performance. The experience of the managers living and working abroad may have a two-fold effect. On one hand, it allows to envision and assess new profitable international investments opportunities (Tan & Meyer, 2010) and helps firms investing in more distance and complex countries. On the other hand, top managers have greater confidence and ability in handling the complexity of the firm international structure (Nielsen & Nielsen, 2011).

 In the following section, we will review deeper those works that examine the relationship between TMT and internationalization.

1.5.1 TMT and internationalization in literature

Drawing from previous researchers that analysed how TMTs affect organizational outcomes, some studies try to apply the UE theory in International Business focusing on international diversification, entry mode or internationalization strategies as antecedents of TMT composition.

Carpenter and Fredrickson (2001, p. 534) provide a significant contribution examining the relationship between TMT characteristics and the firm global strategic posture (GSP) defined as "the degree to which a company depends on foreign markets for customers and factors of production, along with the geographical dispersion of these markets and factors". Taking a sample of US-based firms,

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results show that TMT international experience, educational heterogeneity, and tenure heterogeneity are positively related to firms' global strategic posture. Furthermore, they demonstrate that the relationship between TMT characteristics and GSP is even stronger in uncertain environments, in line with UE predictions (Hambrick & Mason, 1984).

Sambharya (1996), Tihanyi et al., (2000) and Herrmann & Datta (2005) conduct similar studies analysing international diversification. Sambharya (1996) finds that TMTs with higher average years, heterogeneity of foreign experience and higher proportion of managers with international experience are associated with the firm's international involvement. Tihanyi et al. (2000) extend previous research by considering other demographic characteristics like age, tenure and education. Specifically, younger managers with higher average tenure, elite education and abundant international experience are positively associated with the firm level of international diversification. These findings are coherent with the outcomes of studies conducted within a domestic context. First, young executives are more likely to affect strategic changes (Wiersema & Bantel, 1992) and are more likely to take risky, but potentially rewarding decisions (Hambrick & Mason, 1984). Second, the level of communication and shared cognitive schemas required when entering new markets tend to be present in longer tenured teams (Michel & Hambrick, 1992). Third, elite education provides managers with a broader world view than others (Domhoff, 1983). It is also worth noting that similar results but with limited supported has been found for heterogeneity of these demographic characteristics. However, this may due to the type of industry selected for this study (i.e. the electronics industry in the 1980s). Finally, Herrmann and Datta (2005) introduce an additional element arguing that the relationship between TMT characteristics and international diversification may be stronger in case of high performing firms.

Other microfoundations studies have investigated another specific aspect of firm internationalization, i.e. the entry mode choice. Nielsen (2010) discusses the relationship between TMT internationalization and firm subsequent foreign market entries, which in turn lead to superior firm performances. The novelty lies in considering the bundled effect of international and nationality diversity in forming the ability of TMT to deal with challenges of foreign expansion. On the one hand, foreign nationality provides knowledge about how doing business abroad, and diversity in TMT national backgrounds may help interpret the complexity of the firm′s international environment. On the other hand, international experience is a valuable resource that increases firm's competitive advantage. It contributes to higher international orientation of the executives and it takes into account the exposure of an individual to various cultural environments, rather than capturing the impact of a

single country/culture as nationality. In a later study, Nielsen and Nielsen (2011) further examine this relationship, specifying that the two constructs lead to different entry modes. While TMTs with international experience are more inclined to choose full-control entry modes, nationally diverse TMTs are more likely to opt for shared-control entry modes. Piaskowska and Trojanowski (2014) argue that internationally oriented TMTs are better able in managing cross cultural distance and thus, may choose higher acquisition stakes in similar locations. Here, international orientation includes the percentage of TMT member with foreign experience in their formative years and in their working career, and the percentage of foreign members among the executives.

Another stream of research that it is important to mention addresses the relationship between TMTs and internationalization taking into consideration the opposite relationship. For instance, it could be also true that the global strategic posture is a predictor of TMT composition. Sanders and Carpenter (1998) support this perspective claiming that higher, longer-term CEO pay, larger TMT and the separation of chairperson and CEO allow firms to cope with the information-processing demand and the complexity arising from internationalization. Athanassiou and Nigh (1999) investigated the effect of internationalization in a multinational company (MNC) on the behaviour of the TMTs. According to results, MNC's extent of international involvement and its reliance on an internal mode of involvement (e.g. wholly owned subsidiaries) have a positive impact on the TMT's acquisition of first-hand experience through the time personally spent in other countries where the MNC is present. Likewise, MNC's international involvement and interdependence of both upstream and downstream activities are supposed to positively affect TMT's meeting face-to-face to discuss IB issues. In a subsequent study, Athanassiou and Nigh (2002) showed that not only the relationship between firm internationalization and TMT international experience is positive, but it also intensifies whenever top managers are weighted by their TMT centrality. More recently, Greve et al. (2009) have studied the impact of different degrees of internationalization on TMT configuration. Specifically, changes in the geographical and cultural posture (i.e. entry in new markets and in diverse cultural clusters) are associated with higher levels of international capacity in terms of degree of nationality and international diversity of TMT. Instead, changes in workforce internationalization are not associated with the degree of nationality and experiential diversity. Kaczmarek and Ruigrok (2013) obtained similar results suggesting that companies have to be strongly committed to foreign markets so that the benefits of the TMT nationality diversity can materialize. Moreover, they found that Dutch and Swiss companies are more pressed to introduce foreign managers than the UK firms. Since Denmark and Switzerland are small economies, foreign operations allow them to overcome the limited demand and

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factor conditions and improve firm rivalry in their countries. Finally, Ng and Sears (2017) investigated organisational determinants of women's presence in the firm management. Foreign operations and foreign ownership of firms are negatively associated with the representation of women in management since gender-stereotype and excessive focus on profit maximization may reduce women promotions into management.

The conceptual argument that unites all these studies in this research niche is the assumption that firms will be "matching managers to strategies". According to Thomas and Ramaswami (1996), previously implemented entrepreneurial and engineering decisions influence the selection of leaders with attributes in line with firm core strategy. Similarly, Szilagyi and Schweiger (1984) present a suggested framework for matching strategic job requirements and managerial skills and behaviours. This approach still needs to be further explored but focusing on both the antecedents and consequences of TMT composition will provide a more complete overview and advance the understanding of the relationship between TMTs and organizations (Hambrick, 2007).

2 DEGREE OF INTERNATIONALIZATION

One of the most important challenges that firms face is the expansion in international markets. While scholars have extensively studied various aspects of international operations such as entry mode, ownership mode, collaboration and competition, relatively little research has investigated the role of Top Management Teams in the firm internationalization process (Tihanyi, et al., 2000). In addition, the debates related to the definition and measurement of the degree of internationalization resulted in the presence of conflicting findings in literature. Thus, to provide a comprehensive and accurate understanding of this relationship, in our study we will address the effects of different facets of multinationality separately. This will allow us to overcome the drawbacks related to the adoption of single-item measures or composite ones.

In this chapter, we will describe the internationalization phenomenon starting with the multiple interpretations present in literature. Then, we will go through the benefits and costs arising from this process, especially reviewing the mixed findings related to the impact on organizational performance. The second section will provide an explanation of the resource-based view; this will help us to prove that the human and social capital embedded in the TMTs is a source of competitive advantage that a firm cannot neglect when dealing with international complexity. Finally, we will describe the different measures adopted in the literature, also summarizing their main critiques. In particular, their categorization in three classes (i.e. single-item measures of a single dimension, aggregated measures of multiple dimensions and disaggregated measures of multiple dimensions) will allow us to better capture their differences.

2.1 INTERNATIONALIZATION PHENOMENON

In the past two decades, the international business environment has seen an unprecedented increase in the globalization of industries. This led firms to consider international diversification as a strategic choice to obtain sustained competitive advantage (Herrmann & Datta, 2005; Hitt, et al., 2006). According to the World Investment Report (UNCTAD, 2019), global top 100 multinational enterprises in 2018 on average ran with more than 50% of assets, sales and employees outside their domestic countries. This phenomenon increased also the interest in international diversification research to further investigate the relationship with firm performance, the motivations behind firm decision to expand internationally and the consequences on organizational structure (i.e. how organizations change to deal with internationalization).

Despite the number of studies in this field, there is not a universally accepted definition of internationalization, but several interpretations may be found in the literature (Annavarjula & Beldona, 2000; Coviello & McAuley, 1999). Hennart (2007, p. 424) defines international diversification as "the extent to which it [the firm] undertakes value-adding activities in many different foreign markets". Another view considers internationalization as the pattern of investment beyond national borders to achieve ownership, location and internalization advantages (Dunning, 1988). Johnson and Vahlne (1977) instead, argue that internationalization is a dynamic process in which firms gradually increase their international involvement as function of the increased knowledge and market commitment. Still others simply emphasize foreign customers without considering if they are served by foreign subsidiaries or exports. Similarly, authors tend to use different labels such as internationalization (Miller, et al., 2016), degree of internationalization (Sullivan, 1994), multinationality (Annavarjula & Beldona, 2000), geographic diversification and globalization, even if they refer to the same strategic construct. Among all these different interpretations, we will adopt Hitt et al. (2006, p. 832)'s definition of internationalization that is the "strategy through which a firm expands the sales of its goods or services across the borders of global regions and countries into different geographic locations or markets".

An extensive body of research suggests that significant benefits are related to internationalization. Among these we find economies of scale, access to better and more flexible resources, knowledge acquisition (Hennart, 2007; Hitt, et al., 2006). Kim et al. (1993) also add opportunities to use market power, spread risk and seek lees expensive inputs and less price-sensitive markets. Nevertheless, international diversification is a more complex process that can imply exposure

to uncertainty and challenges. Misunderstanding customer preferences, regulations, local competition or industry dynamics and access to distribution may turn out to be a severe damage for the firm (Mitchell, et al., 1992). All these impediments are captured by the concept of liabilities of foreignness, which is the cost of unfamiliarity and discrimination stemming from cross-national and cultural differences (Miller, et al., 2016). Similarly, increased internationalization may lead to organizational issues. For instance, increasing the number of subsidiaries abroad may imply higher coordination and monitoring costs (Geringer, et al., 1989). In this complex environment, firm to succeed require not only additional skills but also integrating foreign operations, adopting new technologies, introducing control systems, and ensuring effective coordination (Porter, 1986).

Delving deeper in the relationship between internationalization and firm performance, the variety of results suggests that we are far from developing a single theory that is able to predict the implications of the internationalization strategy on firm's performance profitability (Hennart, 2007). Hitt et al. (1997) suggest an inverted U-shaped relationship: the effect is positive up to a certain point, the "internationalization threshold", where coordination costs outweigh the benefits and the slope becomes negative. Other authors argue that there is a U-shaped relationship due to the interaction between initial governance effects and learning effects that overtime increase performance (Lu & Beamish, 2001; Ruigrok & Wagner, 2003). Still, Contractor et al. (2003) supported also by Lu and Beamish (2004) find a sigmoid- or S-shaped relationship where the international diversification–performance relationship is negative at low and high levels of international diversification, but positive at intermediate levels. Finally, Elango and Sethi (2007) show that the internationalization-performance relationship is influenced by MNC's home country. Specifically, the relationship is positive and linear in countries with relatively small economies and which have extensive trade in their economy, while it is inverted U-shaped in countries with larger economies. Despite these conflicting results, scholars seem to agree that strategies aimed to expand operations internationally may have an impact on firm performance (Tihanyi, et al., 2000).

Finally, it is important to mention that the Top Management Team plays a key role in the internationalization process. Indeed, its structure has an influence on the internationalization strategy. Prahalad and Bettis (1986) maintain that the prime motivator of firm's diversification is the 'dominant logic'. Especially, they define "dominant logic" as TMTs attitudes, beliefs and mindset that shape the personality of an organization. However, research also demonstrates that firms adapt their organizational structure according to their degree of internationalization, in order to better deal with

Relationship between changes in the firms' degree of internationalization and TMT's diversity complexity and uncertainty (Sanders & Carpenter, 1998; Michel & Hambrick, 1992; Greve, et al., 2009).

2.2 RESOURCE-BASED VIEW AND INTERNATIONALIZATION

The resource-based view conceptualizes a firm as a unique bundle of idiosyncratic resources (Hutzschenreuter & Horskotte, 2012; Grant, 1996). However, not all firm resources are able to develop a sustained competitive advantage. In order to accomplish this task, resources should have the following attributes: 1) valuable (i.e. they enable firms to improve its efficiency and effectiveness), 2) rare among existing and potential competitors, 3) imperfectly imitable and 4) imperfectly substitutable with other valuable resources that are neither rare or inimitable (Barney, 1991). In particular, a resource can be imperfectly imitable for one or a combination of these reasons: presence of unique historical conditions, social complexity (e.g. interpersonal relationship among managers, culture and reputation), and causal ambiguity of the relationship resource-sustained competitive advantage (Dierickx & Cool, 1989).

In this regard, Grant (1996) and Penrose (1959) argue that managers play a leading role in the definition of a firm's path and in the deployment of existing resources and capabilities, while creating the future organizational resource base. Under the dramatical increase in globalization, firms need to be prepared and respond to international complexity through their governmental bodies (Sanders & Carpenter, 1998). Indeed, the board role is not only to provide legitimacy, administrative advice and counselling, but also facilitate the access to other important constituents outside the firm, acting as a link with stakeholders or other important bodies and aid in the strategy formulation (Barroso, et al., 2011; Pfeffer & Salancik, 1978).

Moreover, managerial social and human capital can be considered as strategic resource for the firm per se (Barroso, et al., 2011). The former stands for the set of learned skills and knowledge that individuals develop through their prior experience and education (Becker, 1964). The latter, instead, is the sum of resources that derives from the network of formal and informal relationships that individuals have with others (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). Managerial resources do represent a source of competitive advantage as they satisfy the four attributes mentioned previously. Since strategy is a continuing search for rent (i.e. return in excess of a resource owner's opportunity costs), firm's strategic capability to coordinate human effort and the ability to evaluate effectively its strengths and weaknesses are crucial (Mahoney & Pandian, 1992). Thus, TMTs can be a valuable and also rare resource if they have greater skills and managerial talent compared with

competitors (Castanias & Helfat, 2001). Regarding inimitability and non-substitutability, Kor and Mahoney (2005) assert that managers' firm specific experience involves tacit knowledge and learning-by-doing and allows them to take more decisions that are unique for each firm.

For all these reasons, when firms decide to expand beyond national borders, they cannot disregard the human and social capital embedded in their top management team, a critical factor to deal with complexity and uncertainty. The level of open-mindedness, perseverance, communication skills and vision along with the breadth of knowledge, expertise and social networks set the limits for how well the team, and consequently the company can operate. Moreover, since the executives play a key role in the decision-making process of an organization, they can determine the success or failure of a certain internationalization strategy.

2.3 MEASURE OF THE DEGREE OF INTERNATIONALIZATION

Given the different perspectives used to study the internationalization phenomenon, highly debated are also its fundamental characteristics and measurement (Annavarjula & Beldona, 2000; Coviello & McAuley, 1999). In this regard, Thomas and Eden (2004) argue that this may be an important reason behind the presence of mixed results in literature. In the following paragraph, we will review the different methods used in literature categorizing them in three categories: single-item measures of a single dimension, aggregated measures of multiple dimensions and disaggregated measures of multiple dimensions.

2.3.1 Single-item measures of a single dimension

Most of the research in the field of International Business tried to measure the degree of internationalization employing only one criterion. Specifically, these single-item measures can be further divided in two subgroups according to the specific facet of multinationality analysed.

The first one captures the international orientation or involvement in foreign activities of a firm. In this class, we find the proportion of foreign sales to total sales (FSTS) that indicates the firm's relative dependence on foreign versus domestic markets and it is widely used in empirical studies, according to Bowen (2007). Different versions of this indicator are present in literature. While some authors consider only the sales derived from operations outside the home country (Geringer, et al., 1989; Grant, et al., 1988), others opt to include also exports highlighting the importance of selling goods and services abroad irrespective of whether the firm is physically present beyond domestic borders (Hitt, et al., 2011). In this regard, Tallman and Li (1996) argue that the former cannot be

considered an absolute measure of foreign to domestic operations since it does not control for the resale of intermediate goods (i.e. those goods that are exported from the home country and resold by foreign affiliates). Other measures of these type are the proportion of foreign assets to total assets (FATA), foreign employment to total employment (FETE) and the number of foreign subsidiaries (Bowen, 2007; Ramaswamy, 1993). These can be seen as a proxy of the resources employed abroad. However, all these measured received also criticism due to the failure in grasping the heterogeneity of international diversification (Vachani, 1991) and in reflecting the breadth and the depth of internationalization simultaneously (Hitt, et al., 1997).

Hence, the second subgroup include indicators that measure the diversity of firm's international involvement. The most common ones address the dispersion of sales, assets or employees across different countries or geographic regions using the entropy index and the Herfindahl index (Herrmann & Datta, 2005; Hitt, et al., 1997). For instance, if S_i is the share of sales in the country i, entropy will be computed as $E = -\sum_{i=1}^{N} S_i \ln(S_i)$ and the Herfindahl index as $H = \sum_{i=1}^{N}(S_i^2)$. In both cases, greater similarity across share values is a signal of greater diversity. Hitt et al. (2006) use an entropy measure based on the number of foreign offices and the number of employees working in each office to assess the relative importance of each market. Other scholars, in turn, decide to capture the scope of internationalization simply considering the number of countries in which the firm established subsidiaries (Barkema & Vermeulen, 1998).

Although single-item measures might facilitate the replication, they lead to spurious conclusions for various reasons (Sullivan, 1994). Using a single-item indicator does not allow to consider measurement errors and thus, there is the risk that the measure will be confounded by existing methodological biases (Nunnally, 1978). Moreover, the variety of measures to assess multinationality indicates that researchers haven't reached consensus on which measure to use yet (Annavarjula & Beldona, 2000). Sullivan (1994) notes that single items tend to misrepresent the construct since they consider only a limited part of the construct's domain. Finally, he adds that considering a single side of a multi-attribute domain causes that "any unusual circumstances that might distort the validity of the measure will contaminate, if not ruin, the results" (Sullivan, 1994, p. 326).

2.3.2 Aggregated measures of multiple dimensions

Since focusing only on a single dimension may not fully capture the extent of international expansion, some authors opt for an aggregate measure of internationalization to overcome the issues related to single-item measures. In literature, we have identified three main different indices: the

Transnationality Index (TNI) developed by UNCTAD, the Transnationality Spread Index (TSI) introduced by Ietto-Gillies (1998) and Sullivan (1994)'s Degree of Internationalization Scale (DOI).

The internationalization index of the UNCTAD appeared for the first time in the World Investment Report 1995 with the aim to "capture more adequately the importance of international activities" (UNCTAD, 1995, p. 24) . The index is computed for the 100 biggest companies as the average of three ratios: foreign sales to total sales (FSTS), foreign assets to total assets (FATA), and foreign employment to total employment (FETE). However, Hassel et al. (2003) criticise this choice asserting that the proportion of foreign employees cannot be grouped together with the share of foreign sales and share of foreign assets. First, the degree of assets per employee can vary among countries where firm's activities are spread; second, the size of the home country may influence the foreign share in employees. Moreover, it is not by chance that the ten leading companies by degree of transnationality are firms from small industrial countries such as Switzerland, The Netherlands, Belgium, Sweden, and Canada (UNCTAD, 1998). In these cases, the high scores may not be due to company's competitiveness but to the fact that growth in the domestic country is limited (Hassel, et al., 2003; Ietto-Gillies, 1998).

Another important drawback of the TNI is that it only considers the dichotomy between domestic and foreign activities, irrespective of whether these activities are concentrated in one single country/region or spread in many of them. To overcome this issue, Ietto-Gillies (1998) constructs the Transnationality Spread Index: a combination of the Transnationality Index and the Network-Spread Index (NSI). Specifically, NSI can be derived dividing the number of foreign countries in which an enterprise owns affiliates by the total number of countries that have accepted (and have been in receipt of) inward investment (Sommer, 2009; Ietto-Gillies, 1998). Therefore, calculating the Transnationality Spread Index as TSI = $TNI * NSI$ allows to capture both the volume and the dispersion of foreign operations (Hassel, et al., 2003).

Sullivan (1994) provides a third index: The Degree of Internationalization Scale (DOI). Indeed, he argues that the degree of internationalization is characterized by three attributes: performance (foreign activities), structure (presence of foreign resources) and attitude (TMT's international orientation). The variables that operationalize each dimension and compose the index are the ratio of foreign sales to total sales (FSTS), the ratio of foreign assets to total assets (FATA), proportion of overseas subsidiaries to total subsidiaries (OSTS), top managers' international experience (TMIE), and psychic dispersion of international operations (PDIO). Regarding the fifth element, Sullivan decided to estimate PDIO as the dispersion of the subsidiaries of a firm among the

ten psychic zones of the world as defined by Ronen and Shenkar (1985). Hence, the Degree of Internationalization Scale is computed as

$$DOI = FSTS + FATA + OSTS + TMIE + PDIO$$

In particular, FSTS measures the performance, FATA and OSTS capture the structure and finally, TMIE and PDIO capture the attitude. Despite the effort to use multidimensional measures, this index has been highly debated. The main critique regards the substitutability of the component variables. For instance, we would conclude that firms have similar DOI even if the structure of the single scores is completely different. Thus, "the summed index score reflects an implicit compensation effect that balances low scores on some variables with high scores on others" (Ramaswami, et al., 1996, p. 170). Also, Hassel et al. (2003) question the fact that measures of distinct aspects of internationalization are interchangeable. Nevertheless, factor analysis empirically confirms Sullivan (1994)'s scale.

Summarizing, it is difficult to develop a universal measure of multinationality due to problems of content validity. There is the risk that a composite index may include measures that do not change with the degree of internationalization (Hassel, et al., 2003). Hence, each study should fit the measure of international diversity with its theoretical intent to maximize content validity of the measure (Annavarjula & Beldona, 2000).

2.3.3 Disaggregated measures of multiple dimensions

As explained previously, collapsing different dimensions does not seem to be the right choice to gain a better understanding of the impact of multinationality. Instead, it would be worthwhile to consider the facets of internationalization separately and seek to obtain measures that fully capture the nature of a firm's international involvement (Bowen, 2007).

Accordingly, Miller et al. (2016) unbundle the conceptual complexity of internationalization into its distinctive aspects to elucidate the mixed findings in prior research. This multidisciplinary approach allows not only to develop a comprehensive framework but also to isolate the effects of each single aspect. They measure different levels of degree of internationalization using three variables: international intensity, international diversity and international distance. International intensity, measured as the proportion of foreign revenue to the total, suggests the commitment of a firm in serving foreign markets. International diversity captures the breadth versus depth of multinationality, measuring the dispersion of firm's subsidiaries though the Herfindahl Index. Finally, international

distance shows the degree of cross-national differences between the domestic country and the foreign countries in which the ventures are located. It is computed as a factor score made up of four indicators related to cultural, institutional, geographic, and economic distances.

Greve et al. (2009) adopt this multidimensional approach to examine the impact of changes in specific facets of the degree of internationalization on TMT's nationality and experiential diversity. Indeed, they argue that disaggregated measures of DOI lead to a more detailed understanding of the internationalization strategies and process, while aggregated ones might in some cases mask subtle elements related to each component. Specifically, DOI is estimated using three dimensions: the geographic dispersion of operations, the cultural dispersion of operations, and the ratio of foreign employees to total employees. The former measures the number of countries in which firm's undertakings are present divided by the highest number of countries with subsidiaries and it is sensitive to individual changes in the geographic posture. The second one captures the dispersion of foreign operations in ten main cultural regions, drawing from Ronen and Shenkar (1985)'s categorization of the world. Finally, the share of foreign employment represents the relative importance of foreign and domestic markets, measured in terms of human resources deployment.

After a review of the measurement of the degree of internationalization, we have a decided to use disaggregated measures to cover most of the relevant aspects of firm internationalization. On one hand, this will allow us to overcome the limitations of the adoption of single-item measures or aggregated indices. On the other hand, we will be able to consider the contribution of each facet of multinationality on the TMT diversity.

3 HYPOTHESES DEVELOPMENT

As it was mentioned before, the focus of the analysis is the relationship between a firm's level of internationalization and TMT diversity. Previous literature argues that the internationalization of a firm leads to an increase in the complexity confronting its top management team. Since TMT is the core decision-making unit of MNCs, it faces increasingly complex decisions when the company expands its presence abroad through its foreign subsidiaries (Ghoshal, 1987).

This complexity arises from different factors. First of all, when a firm enters a new market, it is challenged by liabilities of foreignness: different customers, competitors, regulation (Brahm, 1994), and, especially, different cultures (Gomez-Mejia & Palich, 1997; Hofstede, 2001). Second, there might be pressures to exploit synergies across products and geographic markets (Bartlett & Ghoshal, 1989; Roth & O'Donnell, 1996).

In order to effectively manage the expansion and, consequently, the complexity linked to this process, TMT members should have a corresponding degree of information-processing capacity (Sanders & Carpenter, 1998). In addition, internationalization increases also the need in top team of specialized knowledge about a firm's diffused local markets and operations, as well as the ambiguity surrounding team members' actions (Nohria & Ghoshal, 1994).

In this complex environment, TMT traits that help to handle additional complexity and uncertainty constitute a valuable human resource, as it was mentioned in Chapter 2. TMT diversity can be beneficial, providing a greater breadth of information sources and allowing to generate a wider range of strategic alternatives. Indeed, a team composition with high heterogeneity has been linked with a high level of creativity as well as innovation (Wiersema & Bantel, 1992) and might help to overcome the information overload, complexity and domestic myopia created by complex business environments (Carpenter & Fredrickson, 2001).

An important aspect of diversity is the international experience diversity embedded in the TMTs. International experience of executive members is a valuable source of knowledge and expertise about foreign markets, the culture and the way of working (Carpenter & Fredrickson, 2001; Johanson & Vahlne, 1977; Sambharya, 1996). In addition, it contributes to access to international networks (Athanassiou & Nigh, 1999). Having international experience not only helps to better understand the

complexity and dynamics of managing international operations of the company, but it also exposes managers to different cultures and business practices (Kobrin, 1984).

When companies encounter increasing global competitive pressure due to an increase in the degree of internationalization, they need to adjust their TMTs' composition. Indeed, teams that consist of managers without international experience will have to deal with some limitations in making international strategic decisions (Nielsen, 2009). Past research shows that the presence of high strategic complexity arising from the international diversification of a company is less likely to gravitate towards the selection of members with a similar international profile to the rest of the team (Nielsen, 2009). Therefore, there is an increase in TMT heterogeneity. Moreover, a more expansive international strategy that deals with entry in new geographical and cultural areas is associated with a more internationally diverse configuration of the TMT. Indeed, under conditions of high complexity and uncertainty, the demand for corporate-level information-processing dramatically increase (Greve, et al., 2009).

Another important factor is the industry experience diversity. In the classification of managerial resources provided by Castanias and Helfat (2001), the authors identify industry-specific and related-industry skills, where the latter refers to those skills acquired in industries dealing with related resources and competitive conditions (Bailey & Helfat, 2003). Industry experience can be particularly helpful for different reasons. On the one hand, it is a key resource to understand how an industry operates, to recognize market opportunities and identify common industry threats as early as possible (Kor, 2003). On the other hand, it may be fundamental to overcome liabilities of newness in newly funded companies providing connections, customers and suppliers that foster its growth (Cooper, et al., 1994). Eisenhardt and Schoonhoven (1990) argue that heterogeneity in industry experience is likely to generate particularly constructive conflict since they bring different points of view about technologies and competitive tactics. Similarly, Lee and Park (2006) show that there is a positive relationship between TMT outside industry diversity and firm internationalization. TMTs characterized by greater job-related diversity possess a broader and diverse set of knowledge, experiences and perspectives to effectively deal with the uncertainty arising from firm internationalization (Williams & O'Reilly, 1998). Moreover, experience in industries with different level of dynamism and competition may bring into the team new insights about how to cope with complex environments. Thus, a TMT with diverse backgrounds and experiences is more capable of managing complex strategies than homogeneous TMTs (Carpenter, 2002; Cannella, et al., 2008).

All in all, heterogeneity in the TMTs can have many benefits for multinational firms. First, the interaction with people possessing diverse backgrounds leads managers to take into consideration new elements they may not have considered before. Second, TMTs can have a more complete view of the environment and an improvement in the quality of the decision-making process since each team member can interpret a specific situation from a different perspective. Finally, the presence of diversity among executives broadens the human capital (i.e. skills and expertise) and social capital (i.e. network of relationships) and facilitate the access to information and resources.

So far, we have discussed the implication of internationalization on TMT diversity. However, the level of complexity is not always the same, but it changes to extent firm decides to grow their international operations. According to Sanders and Carpenter (1998, p. 160) "the more extensive a firm's degree of internationalization, the greater the level of complexity confronting its top management team". Building on this assumption, we examine how different DOI affect TMT diversity and provide new insights of the relationship between them.

In the following section, the hypotheses of our model will be presented. TMT characteristics are an essential resource for the firm, thus an increase in the degree of internationalization of the firm leads to seeking of these features and matching managers to strategies (Szilagyi & Schweiger, 1984).

3.1 INTERNATIONAL INTENSITY

A first type of complexity arises from the international intensity, the weight of the foreign markets on the total turnover of the firm. In fact, a firm may sell goods or services beyond national borders irrespective of whether the firm maintains a physical presence abroad. Since markets have become more and more globalised, not only exporting is a crucial strategy for the firm but its importance is expected to grow further (Pla-Barber & Alegre, 2007). For instance, IKEA derived 94% of its revenue from sales outside its domestic country in 2008 (Wringley & Lowe, 2010).

Despite the opportunities and benefits related to the internationalization of a company, export strategies may pose some challenges to TMTs. First of all, managers have to search for appropriate markets where demand for the product exists, satisfy regulatory requirements and deal with local distributors in the foreign country (Agnihotri & Bhattacharya, 2015). Indeed, internationally diversified firms must process multi-facet information about consumers' choices, legal barriers, customs duties and macro-environmental conditions (Kutschker, et al., 1997). Second, some organizational impediments stemming from the need to adapt to the local environment may outweigh

economies of scale and result in a negative effect on the firm's performance (Miller, et al., 2016). The adoption of different organizational routines to separately deal with the firm's home market and its international markets can entail an inefficient resource allocation and lack of specialization (Rosenzweig & Singh, 1991). Moreover, a company may risk losing the focus on the domestic operations and incur in information processing costs ascribed to ambiguity of information itself and the multiple incongruent interpretations (Egelhoff, 1991; Daft & Macintosh, 1981).

Another important obstacle is related to the concept of core rigidities. A firm can face additional costs due to the incongruence with its established values and managerial practices (Bartlett & Ghoshal, 1989). The set of values, skills, managerial systems, and technical systems that served well the firm in its domestic market and may still be appropriate for some projects, may become dysfunctional as companies extend their sales in foreign markets at high levels of international intensity, regardless of the pace of international expansion (Leonard-Barton, 1992; Miller, et al., 2016).

To overcome all these risks, firms must have a competitive advantage that allow them to differentiate from the others. In this context, the competitive advantage lies in the appropriate set of knowledge, competences, and experience embedded in the TMT. Industry experience diversity is vital for multinational firms since it constitutes a wide range of industry-specific knowledge and expertise and provides access to a network of contacts within several industries (Díaz-Fernández, et al., 2019). International experience diversity improves managers' ability to analyse different economic environments and adapt the product according to consumer preferences (Markus & Kitayama, 1991; Sousa & Bradley, 2008). Hence, a correspondent increase in TMT's diversity turns out to be fundamental in order to face challenges attributable to changes in international intensity.

HP 1: A positive change in the ***intensity of foreign activities*** is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

3.2 GEOGRAPHIC EXTENSION BY COUNTRY

Another facet of internationalization consists in the geographic extension that captures the overall geographic scope of operations in terms of the number of countries where the activities spread. At this stage, we narrow the focus to the presence of subsidiaries (partially or fully owned) in the foreign markets. Opening a subsidiary abroad requires information about the way of doing business

in that country, the regulations, and the level of competition. Also, the firm needs to develop a network with local stakeholders if it is not established yet. Johanson and Vahlne (2003, p.92) define a business network as "sets of interconnected business relationships, in which each exchange relation is between business firms conceptualized as collective actors." These actors can be customers, suppliers, distributors, or the government and they may be connected to each other through direct and indirect relationships. Networks are of strategic importance to firms for spotting opportunities, establishing credibility with partners and international relationships, providing access to key resources and acquiring foreign market knowledge (Amal & Filho, 2010; Andersson, et al., 2013; Kalinic & Forza, 2012).

The same situation is likely to occur also in other foreign markets. In fact, a unique institutional environment is expected to characterize each country based on the quality and effectiveness of institutions and the implications for firms' operations (Henisz, 2000). In order to survive and succeed, foreign ventures tend to meet the characteristics of other organizations in the local environment. Such isomorphism may be due to local regulation or economic pressures to adapt products to local preferences (Rosenzweig & Singh, 1991). In this regard, Westney (1989) recognizes that firm's subsidiaries come to reflect the values, norms, and "locally accepted practices" of the societies in which they operate. However, subsidiaries also respond to the parent company, therefore, face a dual pressure from the internal (parent company) and external (target country) environment (Kostova, et al., 2008). Given the simultaneous exposition to differing national environments and internal organisational pressures, TMTs require a distinct set of tacit knowledge stocks through which they can decode the specific knowledge related to each market and adjust it the firm business model (Athanassiou & Nigh, 1999). This requirement is even more important when developed countries MNEs enter emerging markets. Indeed, it is difficult not only designing compensation systems and business models that are perceived as equally legitimate and works well in both markets but also managing divergent stakeholder expectations (Asmussen & Goerzen, 2013). Moreover, firms may experience legitimacy challenges when crossing institutional boundaries. MNEs located in developed countries may be perceived as agents of neocolonization in emerging markets, while the brand of MNEs located in emerging markets may be associated with lower value in developed markets due to their origins (Kostova & Zaheer, 1999).

To sum up, the level of complexity gradually increases with the number of countries where the firm physically operates. Specifically, investments in new foreign markets will be more demanding on companies because of the presence of exploration and learning costs. Conversely, further

expansion in countries where the firm already operates allows the exploitation of mechanisms and routines (Greve, et al., 2009).

The diversity among foreign markets implies higher volumes and broader variety of the information that executives must process. In this context, a wider range of perspectives may help make the decision-making more effective and thoughtful. According to Talke et al. (2010, p.910) "task conflicts may also stimulate creative thinking and divergent thought processes, thereby fostering team decisions". Since each industry is characterised by specific features (e.g. level of competition, dynamism, growth rate), variance in the industry experience can provide expertise about how to operate in that peculiar environments. Different international experiences, instead, provide knowledge about foreign markets and how to interact with foreign stakeholders. Thus, overall diversity in the TMT is likely to increase.

HP 2: A positive change in the *firm geographic extension by country* is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

3.3 GEOGRAPHIC EXTENSION BY CONTINENT

Even if information technology and global communication are turning the world into a small and relatively homogeneous place, distance still matters in International Business. Indeed, the further the target market is from the firm home country, the greater the challenges of conducting business in that market (Ghemawat, 2001). Geographic distance increases entry barriers related to the transportation of raw materials, semi-finished or finished products: direct costs and indirect costs related to delays and increased response time (Levy, 1997) . From a transaction cost perspective, higher distance entails higher transaction costs due to information costs and the lack of personal contact needed to effectively transfer skills and competences (Buckley & Casson, 1979; Vachani, 1991). Shenkar (2001) argues that also agency costs are likely to increase since it is more arduous to coordinate and monitor managers' behaviour as well as obtain complete and accurate information on subsidiaries' performance.

Firms that have subsidiaries located in the same continent, instead, can benefit from political union, common currency and preferential trade agreements (Ghemawat, 2001). In fact, proximate countries are more likely to negotiate these type of agreements as outlined in gravity models of economic exchange (Frankel & Rose, 2002). Regional economic integration not only fosters

coordination among institutions, but also contribute to improving common transportations infrastructure (e.g. higher frequency and quality of transport connection) and increasing mobility of labour and managerial best practices (Rugman, et al., 2011).The leading example is the integration of the European Union that allows to diminish administrative and political distance among trading partners. Similar agreements are NAFTA or MERCOSUR in America, AfCFTA in Africa, ASEAN in Asia and PACER in Oceania. Hence, regional trade blocs tend to enforce most-favoured nation privileges to support internal markets, while regional outsiders can be discriminated by government policies (tariff and non-tariff barriers).

Boeker (1997) conceptualizes investment in familiar product markets as routine and entries into new product markets as strategic innovation. Adapting this model to our specific case, we can infer that additional entries in a familiar continent are routine moves while investments in new ones imply moving beyond familiar settings. In this case, the complexity and the transaction costs related to operations in brand-new geographical areas can imply a correspondent increase in TMT's job-related heterogeneity since it represents a valuable resource. Industry experience diversity allows to expand the range of experience and perspectives and to generate more alternatives about competitive tactics to adopt. International experience diversity provides TMTs with partnering capabilities useful to accelerate the learning and legitimization processes by tapping into partner firms' knowledge and reputation.

HP 3: A positive change in the *firm geographic extension by continent* is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

3.4 GEOGRAPHIC DISPERSION BY CULTURAL CLUSTER

Finally, the level of complexity depends not only on geographical and political borders but also on culture. In international business, it is a key determinant of the global environment in which firms operate and it can drive strategic and operational choices like globalization versus localization (Bartlett & Ghoshal, 2003). Culture can be defined as a "shared way of life of a group of socially interacting people, transmitted from one generation to the next via acculturation and socialization pro-cesses that distinguish one group's members from others" (Ronen & Shenkar, 2013, p. 868). In management, it can be associated to the set of values, beliefs, norms, attitudes, and behaviour patterns used to create cultural taxonomies (Leung, et al., 2005; Javidan, et al., 2006; Ronen & Shenkar, 2013).

Differences in religious beliefs, race, social norms, and language represent a tough challenge. Indeed, they hamper the effectiveness of managers' interaction (i.e. how they communicate and interpret information) with local parties such as employees, customers, providers, or institutions (Carlson, 1974). This may lead to severe consequences: from misunderstandings and conflicts to an inability to carry out business in a new cultural environment (Piaskowska & Trojanowski, 2014). Some cultural characteristics (e.g. language) are easily perceived and understood. Others, instead, are much more subtle and difficult to notice, even to individuals who conform with them. For instance, social norms consist in a deeply rooted system of unspoken principles that guide individuals in their everyday choices and interactions (Ghemawat, 2001).

High cultural diversity dramatically increases transaction costs. Specifically, language differences result in inefficient communication along with an increase in the cost of interpreting the information flow and in the risk of misinterpretation (Boyacigiller, 1990). In case of differences in political systems, there is a higher risk that companies misread government reaction in specific situations and other firms' behaviour to anticipate any potential intervention of the government (Dow & Karunaratna, 2006). Institutions, as a matter of fact, play a crucial role in monitoring business-to-business and business-to-consumer interactions (e.g. contract enforcement and antitrust or anticompetitive behaviour). In addition, religion is closely correlated with culture and attitudes since it can be the fundament to judge if a behaviour is acceptable, and religious metaphors are common in many languages (Boyacigiller, 1990; Dow & Karunaratna, 2006).

It is worth noting that culture has an impact also on consumer choices and on marketing strategy. First, consumer tastes may be closely correlated to cultural prejudice (Ghemawat, 2001). For instance, the word "red" in Russian also means beautiful or Japanese people may prefer small household appliances since the space assumes a high value there. Similarly, the food-related industry can be notably sensitive to religious attributes. The Hofstede model categorize different cultural environments according to five dimensions: power distance, individualism/collectivism, masculinity/femininity, uncertainty avoidance, and short-term/long-term orientation (Hofstede, 2001; Hofstede & Hofstede, 2005). These characteristics can also affect the communication styles and so the advertising strategy (Hofstede, 2011). Specifically, there is a clear distinction between high-context and low-context communication of collectivistic and individualistic cultures. In collectivistic cultures like China, appeals should focus on in-group benefits, harmony, and family. The communication relies on metaphors and non-verbal aspects and it varies with the roles and relationship (Kim, et al., 1998; Singelis & Brown, 1995). In individualistic cultures like United States, instead, the

Relationship between changes in the firms' degree of internationalization and TMT's diversity communication should be fast, linear, and explicit and appeal to individual benefits, personal success, and independence (Han & Shavit, 1994).

According to Ronen and Shenkar (1985), cultural clusters can be defined as relatively homogeneous groups of countries that have less within-variance in term of culture with respect to divergence between cultural blocks. While regulative, normative and cognitive commonalities facilitate in-cluster transactions (Ronen & Shenkar, 2013), entering a new cultural block means investing in specific setting that differs considerably from that in which the company has previously invested, making the investment particularly innovative (Barkema & Shvyrkov, 2007). In this scenario, firms need additional capabilities to fulfil the greater demand of information, speed up learning, and cope effectively with the greater cultural and institutional distance between headquarters and foreign subsidiaries. Thus, an increase in TMT diversity may be required. In order to fully achieve the benefits arising from the exploitation of foreign subsidiaries and markets, managers must possess a broad (possibly global) mindset (Kedia & Mukherji, 1999; Nummela, et al., 2004). Specifically, having a global mindset requires "knowledge – broad as well as deep, conceptualization – ability to deal with complexity, flexibility – ability to adjust to global and local demands, sensitivity – for cultural diversity, judgment – ability to intuit decisions with inadequate information, and reflection – seeking continuous improvement" (Earley, et al., 2007, p. 79). An increase in industry experience diversity and international experience diversity may facilitate the development of a global mindset in TMTs and the following competences: managing competition, complexity, adaptability, teamwork, uncertainty, and learning. At the same time, we decided to consider dispersion and not simply the extension as in the previous hypotheses because we assume that the presence of only few subsidiaries in a new cultural environment is easier to manage. Conversely, if many subsidiaries are dispersed in different cultural areas the need for additional knowledge and experience may increase even more. In this case, TMTs are more likely to change in the composition and become more heterogeneous.

HP 4: A positive change in the ***geographic dispersion by cultural cluster*** is likely to be associated with an increase of TMT a) industry experience diversity and b) international experience diversity, and as a result with an increase of total TMT diversity.

In order to get an overview of the different aspects of internationalization, we summarize the arguments of the hypotheses in Table 3.1. Specifically, these are subdivided in five categories: uncertainty (i.e. risks the firm may incur), discrimination against the foreign firm (e.g. consumer

stereotypes or economic discrimination enforced by government policies), complexity, managerial and information requirements.

	International intensity	Geographic extension by countries	Geographic extension by continents	Geographic dispersion by cultural clusters
Uncertainty	Erosion of benefits stemming from economies of scale due to organizational impediments and risk of losing the focus on domestic market	Inability to understand the "rules of the game" in an institutionally diverse environment	Communication costs, information distortion and difficulties in acquiring information about performances	Inability to understand more subtle cultural characteristics and interact with local parties
Discrimination	Consumers' stereotypes and discrimination against foreign products or firms	Negative country of origin effect: Consumers perceive political imperialism or lower brand value	Negotiation of preferential trade agreements that favour proximate countries	Consumers' cultural stereotypes and lack of trust towards the foreign firm
Complexity	Overcoming core rigidities and fulfilling regulatory requirements	Adapting business models and maintaining legitimacy in diverse foreign countries while responding to internal pressures	High transportation costs and agency costs (coordination and monitoring) due to geographic distance and lack of personal contact	Cost of interpreting information flow and organizational costs due to cultural differences
Managerial requirements	Collaboration with intermediaries (ETCs and EMCs), local distributors or agents	Development of a network with local stakeholders	Development of partnering capabilities	Development of a global mindset
Information requirements	Information about consumers' choices, legal barriers, customs duties and macro-environmental conditions	Information about the way of doing business, regulations and level of competitions of foreign markets	Information about regulations and trade restrictions	Information about social norms, values, customers' tastes, and communication styles in the cultural areas

Table 3.1 Characteristics and requirements of the different internationalization aspects

4 SAMPLE DESCRIPTION

As we have discussed in the previous chapters, the aim of our research is to investigate the effects of the degree of internationalization on the TMT diversity. We test our hypotheses on a sample of 144 public UK-based firms operated in the manufacturing industry in the eleven-year time horizon going from 2008 to 2018. After having identified the firms, we have collected the data about the respective TMT members. As a result, we have built 2 different databases: one of them contains the information about the internationalization process of the firm, another gathers data about the composition of TMT and individual characteristics of the TMT members. As a result, we obtained a dataset with comprehensive team-level information needed for the creation of variables for testing our hypotheses.

This chapter will present the design of the gathered dataset describing the procedures adopted. In the following sections, we will provide some descriptive statistics in order to contribute to the understanding of the analyses undertaken to verify our hypotheses.

4.1 SAMPLE DESIGN

Most of the researches in the field preceding this thesis have focused on companies based in the USA. Alternatively, in our set of firms, we included UK-based companies, specifically public companies operating in the manufacturing sector, and studied them in the period ranging from 2008 to 2018.

The database has been built and developed thanks to the partnership between Politecnico di Milano and Henley Business School, the business school of the University of Reading. This collaboration involves the supervisor of this thesis Stefano Elia (Politecnico di Milano), the co-supervisor Tommaso Vallone, and Dr. Peder Greve (Henley Business School).

In this this study, we investigate the correlation between the firm's degree of internationalization and the level of diversity of the TMT. We aim to understand if and in which way the change in degree of internationalization of the companies influences the extent of TMT composition diversity.

As it was mentioned before, much of the UE research has mainly examined CEO's characteristics. However, managerial responsibilities are rarely entrusted to a single individual and any examination of organizational strategies is more meaningfully studied within the context of TMT

characteristics (Herrmann & Datta, 2005). Therefore, we decide to focus on top management teams rather than CEOs.

The data collection process has led us to the generation of two databases that from now on will be referred as Internationalization database and TMT database. The first one contains information on the deals and international presence of the companies, the second presents TMT individual characteristics, including detailed data on executives and some basic features of non-executive members (such as age, gender, nationality, and TMT tenure). As a result, we obtained a dataset that aggregates the information of the previous two datasets and provides relevant information about the TMTs on supra and individual level. In the following paragraphs, we will explain these databases composition and data collection, as well as the descriptive analyses of them.

4.1.1 Internationalization database

Internationalization Database contains international data of the companies of our sample, such as the number and location of subsidiaries, the presence (and possible entrance) in different countries and the deals companies performed in the time period from 2008 to 2018. The list of firms we have considered in the sample have been obtained from a comprehensive database of Bureau Van Dijk, a publisher of business information. This database named Orbis contains information on more than 310 million companies around the world and it is a powerful tool for firm-level analysis since it relies on more than 160 separate providers to capture, treat and standardize a wide variety of data and to make them richer and easier to interrogate. The database provides the highest level of quality and reliability of information we can use for our research purposes. After selecting the firms from Orbis database for our sample according to six criteria that will be explained below, we manually collected internationalization and TMT data. The applied criteria are followings:

1. <u>Firm's headquarter located in UK only</u>: every company collected in our dataset is legally based in the United Kingdom. The decision of focusing solely on one country should not be considered a limit to the generalization of findings, since this decision appears coherent with the variance surrounding the TMT conceptualization across different corporate governance contexts. The choice is reinforced by several researches performed on both organizational and national culture, investigating the influence on cultural aspects on leadership (Liden & Antonakis, 2009). Furthermore, many scholars have identified organizational contexts as critical determinants of the behaviours that are adopted (Johns, 2001; Johns, 2006; Rousseau & Fried, 2001).

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2. <u>Public companies</u>: all the firms included in our database are listed. As for public companies, to be defined in this category they must trade its securities on public markets and must disclose a certain deal of business and financial information regularly (such as annual, quarterly reports, etc.). Thus, collecting business information for public companies is easier, more accurate and complete in comparison with private companies. Moreover, public companies have better access to capital in comparison to private ones, given the issue of shares. This amount of raised capital can be used as a resource in the internationalization process of the firm, and it makes public companies more appealing and important for our research.

3. <u>Companies are Global Ultimate Owners (GUO)</u>: this criterion requires that the individual or the entity at the top of the corporate ownership structure of the selected firms holds at least 50,1% of its own shares. Thus, global ultimate owners are not controlled by external entities. This requirement is of key importance since it assures that the TMT of company take decisions with full autonomy.

4. <u>Companies' number of employees comprised between 50 and 2000</u>: the number of employees is a common measure used to assess the firm size. Hence, we used this number to distinguish medium and large enterprises. European standards state that firm can be defined as middle sized if it has 50 individuals, while firms with fewer employees might not have the necessary resources for expanding abroad and are likely to have small or no TMT, being the CEO the main decision maker. An upper bound for the number of employees has been set as 2000 employees to diminish the influence of TMT on strategic decisions for very large multinational companies. Moreover, huge companies that have been founded and begun their internationalization before the period considered in our study, are most likely to already have subsidiaries in many countries thereby not giving us significant information about the changes in the DOI.

5. <u>Companies classified with a NACE Rev.2 comprised between 10 to 32:</u> the cluster of our companies includes manufacturing companies only. NACE (Nomenclature statistique des Activités économiques dans la Communauté Européenne) is the statistical classification of activities that is adopted as standard in the European Community. We have decided to select only companies that operate in the manufacturing sector (NASE codes between 10 and 32). The choice of collecting data from only one industry may affect the generalization of our findings to other industries and contexts. However, we have decided to select companies operating only in the manufacturing industry since they are more likely to follow a more traditional internationalisation process, which reflects the Uppsala model. It suggests that firms expanding internationally adopt a series of incremental decisions

(Johanson & Vahlne, 1977), starting from the expansion to markets that are geographically and culturally close, and then gradually moving into countries with increasing psychic distance. The stepwise approach is needed to gather information and knowledge on the target markets where the firm would suffer from the so-called Liability of Foreignness (Zaheer, 1995), e.g. the uncertainty of the entry in a new market.

6. <u>Expansion deals performed between 2008 and 2018</u>: we have considered only those companies that have done acquisition, greenfield, joint venture or merger deals in a period between January 2008 and December 2018.

Considering these sample criteria, we have acquired a sample of 145 firms. Since one of them turned public only in 2018, it was excluded from our database. Thus, our final sample consist of 144 companies.

Data collection procedure

For every company in our sample and for the period spanning from 2008 to 2018, we have gathered the following information about every equity deal undertaken by the firm:

- Deal year

- Deal type (e.g. Acquisition, greenfield, joint venture, merger)

- Ownership percentage

- Whether the target country was a new market, or the company was already present there

- Involved (either acquired or generated) entity name

- Involved entity location country

We have gathered the above-mentioned information from companies' annual reports and other companies' documents. In addition, we have collected information on each firm subsidiary countries portfolio at the end of each year and counted the number of companies' undertakings for each country of operations. Our focus on both on strategic choices and geographical presence is important to better understand the companies' international profile and strategy.

For what concerns firm financial data, we have retrieved the great majority of the information from two databases: Fame and Orbis which are both provided by the Bureau Van Dijk platform.

4.1.2 TMT database

After we have identified the set of our 144 firms and created the Internationalization database, we have collected data on the TMTs members for each firm in the studied 11 years period. The UK corporate Governance Code does not contain specific regulation about companies' board structure, alike some other European countries such as Germany, Italy, Spain, and Sweden. Thus, we have recovered the data on the TMTs' structure and composition manually. This task was accomplished thanks to the huge contribution of Tommaso Vallone, co-supervisor of this thesis, who in the past few years had been working on information collection about the TMTs of listed UK-based companies.

In the United Kingdom, the TMT most often refers to the executive committee (e.g. the executive members of the board of directors), even though some firms may have few additional top-level executives as members of their Top Management Team (Greve, et al., 2015). As regards to this study, we have identified the firms' TMT members from the annual reports, as it was done in previous studies (Finkelstein & Hambrick, 1990), that in our case were retrieved from companies' websites.

The commonly used definition describes TMT as the most influential group of decision-makers in a company, who have an executive responsibility for operations (Murray, 1989; Pettigrew, 1992). In line with this definition, the profiles we are looking for (CEO, CFO, COO, and similarly ranked top managers) are usually part of the Board of Directors (BoD), which usually includes both executive and non-executive directors. Since executives have a higher influence on the company's strategic decisions due to the managerial roles held, TMT has been defined as the executive managers of the Board of Directors (Nielsen & Nielsen, 2009; Piaskowska & Trojanowski, 2014).

In order to follow the approach used by studies mentioned above, we have gathered information about the executive members of the Board of Directors of our sample firms. Nevertheless, considering that non-executive directors also have an impact on the internationalization process, we have also collected basic information about these profiles (i.e. nationality, position, birth year, BoD tenure etc.).

Data collection procedure

Getting access to executives' primary data is very challenging, since response rates by executives for primary research (surveys and interviews) are low because of busy schedules and their saturation with requests for responses to questions (Cycyota & Harrison, 2006). Moreover, primary data are also subjected to several bias both on the responder and researcher's side (e.g. response bias,

common method variance etc.). Considering this kind of difficulties in obtaining personal information via primary sources, the large majority of all TMT studies have relied on secondary sources of data (Stewart & Amason, 2017).

Therefore, we have conducted a manual data collection for all the manager's profiles identified for each firm in the period considered. A key source and guideline to have a coherent and correct process of executive data collection during our study has been a data collection handbook by the Research Institute for International Management of University of St. Gallen (2010). It identifies three levels of information sources and suggest some appropriate sources for each of them:

1) Includes annual reports, corporate press releases and websites, e.g. information that is published by the company itself. These sources are the base of our data collection regarding TMTs. Another crucial source is the website *Wayback Machine* that collects snapshots of websites along the years. It helped us to collect information about previous financial years and to overcome an issue that websites store only current information.

2) Consists in second-hand biographical information. For our study, it has been the Companies House, which is a registry of data of UK-based firms handled by the British government and mandatorily filled in by UK firms. From this website, we have found significant data, such as appointed managers, appointment and resignation dates, birth date and nationality for most of the executives. Other helpful sources containing reliable information have been Bloomberg, which is the global provider of business-related information; Reuters, the British news agency; *LexisNexis database,* which comprises various levels of biographical details deriving from different sources (the database includes Marquis Who's Who, Debrett's People of Today, ICC Directors, Who's Who in Europe Business, S&P's Register of Directors & Executives).

3) Other sources of information that are of public domain. *LinkedIn*, the social network that connects 500 million of professional profiles, is a very relevant source, that often has allowed us to have a full picture of the executives' entire career. However, this source has been treated with attention because the information reported on the website is not by authority and filled in by the executives' themselves. However, public profiles of top executives are often reviewed by their own companies which make sure information are correct and kept up to date.

For the executive members of TMT the following information were collected: name, surname, position in the company, age, gender, nationality, company tenure, TMT tenure, industry and functional experience, international professional experience, career length and educational

Relationship between changes in the firms' degree of internationalization and TMT's diversity background. Such characteristics as name, surname, birth year, gender and nationality (e.g. demographics) have been mostly retrieved from first-level information sources. To define the age of the executives at the end of considered calendar year, the year of birth was used. As for nationality, it was considered to be equivalent to citizenship, thereby in some cases dual nationalities are present.

We have measured the company tenure as the time spent by an executive in the company since the start of employment. As for the TMT tenure, it is the number of years spent holding an executive position in the company's board.

In order to collect data related to the work experience, since the central aim of our research is to investigate the impact of the degree of internationalization on the TMT diversity, different aspects have been investigated:

- the number of countries in which the director has worked, from where we have retrieved information about socio-cultural cluster and continent

- the number of companies in which executive member has obtained a previous work experience

- the number of functions a director has fulfilled during career path and the length of the career

We should point out that it was very difficult to access information about detailed work experience background since, alike bio-demographics, appointment dates, positions held and educational backgrounds are rarely fully reported in annual reports or company websites.

In addition, while collecting info on different industries, we have also looked at the functions an executive has fulfilled during his work in each company. The collection of data was done according to the available information about the executive's managerial titles or roles. In case of mismatches in the information obtained from different sources, we have considered as more reliable the one with a higher rank in the information source hierarchy.

Lastly, we have considered also the educational background of the executives. Thus, we filled in our database with the following information: type of the degree (honorary degree excluded), field of studies, name of the educational institute and country where the degree was obtained.

The data collection has required months of work, since was quite complex and time consuming. After all work has been done, we have built a database with 9474 BoD members (executives and non-executives as well), where the detailed info is present for 4530 executive

members of 1560 TMTs. If to consider only unique members since some directors may be repeated in the same firm for several years, there are 1,749 distinct people where there are 860 executives and 889 non-executives.

4.1.3 Final sample

After gathering info in two above-mentioned databases (Internationalization and TMT) and collecting the data at the individual level, we have merged them at the firm-level and created our final database, where we have computed the TMT variables to test our hypotheses. Thus, our final sample comprises the TMTs of 144 UK-based firms studied from 2008 to 2018 (covering 11-years period) for a total number of 1560 of TMTs. To clarify, each single observation covers a set of information "single TMT - single company - single year".

There are firms both operating only within the national boundaries (20 firms, e.g. 13.9% of the sample did not control any foreign subsidiary during the period), and firms working also abroad.

Since our Final database contains all our variables (control, dependent and explanatory), we will explain it in detail in the chapter 5.

4.2 DESCRIPTIVE STATISTICS

In this section, we will present some descriptive statistics of our final sample. We will start by looking at the internationalization database, and then we will describe some features of the TMT data.

4.2.1 Companies database descriptive statistics

As we have mentioned before, our final companies' sample is composed by 144 firms based in UK, and in the time frame from 2008 to 2018 altogether they operate in 83 different countries (including United Kingdom).

Exploiting the availability of the data along the 11 years, we can observe the distribution of the average number of subsidiaries per firm from 2008 to 2018. As shown in Figure 4.1, a clear positive trend underlines the increase in firms' average number of subsidiaries along the analyzed period. The average decrease in 2018 is related to unavailability of the data for this year for 17 firms.

Relationship between changes in the firms' degree of internationalization and TMT's diversity
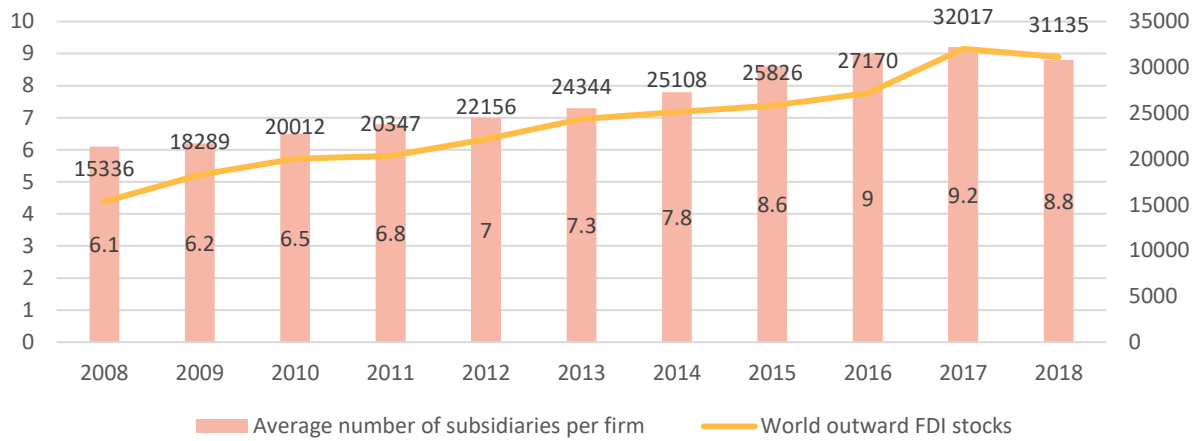
Figure 4.1 Average subsidiaries per firm vs World FDI Stocks (Source: OECD)

It is worth comparing this gathered information with the World Foreign Direct Investment (FDI) stocks outward. This latter demonstrates the value of the resident investors' equity and net loans to enterprises in foreign economies at the end of the year, giving as a proxy of the level of the involvement in investments abroad at world level. As we can see from the graph, this value has a positive trend too, thereby showing that our research's generalization is reliable even if the sample includes data of firms located just in the United Kingdom.

The number of subsidiaries reflects the firm international commitment, i.e. the extent to which the company is international, thus can be considered as a crucial point. It describes a degree on which a firm relies on international markets, representing international intensity (Carpenter, et al., 2003). However, there is another interesting aspect that should be considered, which is the geographic scope. Taking a look at number of countries where the firms from our database operate, we can see that they have been diversified across different countries (Table 4.1).

Number of countries	Number of firms	Percentage
1	20	13.9%
2-3	59	41.0%
4-5	34	23.6%
6-7	19	13.2%
8-14	11	7.6%
>15	1	0.7%
Total	144	100%

Table 4.1 Geographic scope of subsidiaries

The process of Internationalization can be described as "the process of increasing involvement in international operations" (Welch & Luostarinen, 1988, p. 36) that is done through extending the

business activities in many countries, with their own culture, language, political and commercial systems (Rugman & Verbeke, 2004). Thus, spreading activities across countries enlarges the sales market, leads to an increase in the customer base and rivals that challenge the firm, thus creating new and more complex learning opportunities.

As a matter of fact, the gathered data show (Table 4.1) that only 13.9% of our observations are related to firms working only in GB (considering average of 11 years). The rest of the firms are international and operate in more than 1 country. The large majority (64.6%) of the firms have activities spread across 2 to 5 countries, while the 21.5% of the companies have subsidiaries in more than 5 different countries, among them is one firm, operating in more than 15 countries (15.73 in average, embracing 19 countries in 2005-2018 years). The following bar chart shows that in the time span between 2008 and 2018 the number of firms of our sample that enlarged their geographic posture and opened a subsidiary in a new country, increased from 10 (7%) in the first year to 18 (15%), reaching 29 (20%) between 2013-2014.
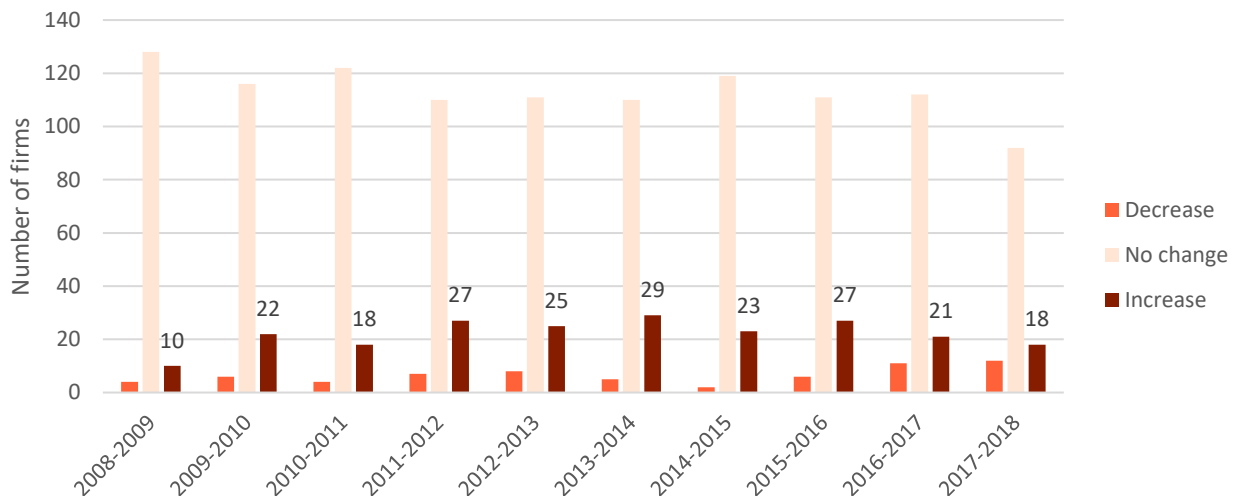
Figure 4.2 Yearly frequency of change in number of countries

Looking at the Table of countries where the subsidiaries are located, we can observe that firms are spread among 83 countries (UK included) and cover different regions and clusters all around the World. In order to analyze gathered data from different perspectives, we have decided to look at the distribution of subsidiaries both along continents and clusters. For this reason, considering the clustering of world countries developed by Ronen and Shenkar (2013), the deals of firms from our database have been classified in relation with the country and cluster which it belongs to. In particular, the authors identified eleven different clusters including countries characterized by affinities in terms

Relationship between changes in the firms' degree of internationalization and TMT's diversity of work-related attitudes. Pie charts below (Figures 4.3,a and 4.3,b) show the distribution of the target countries and their respective clusters. In addition, detailed Table is presented in the Appendix 1.

a) *b)*
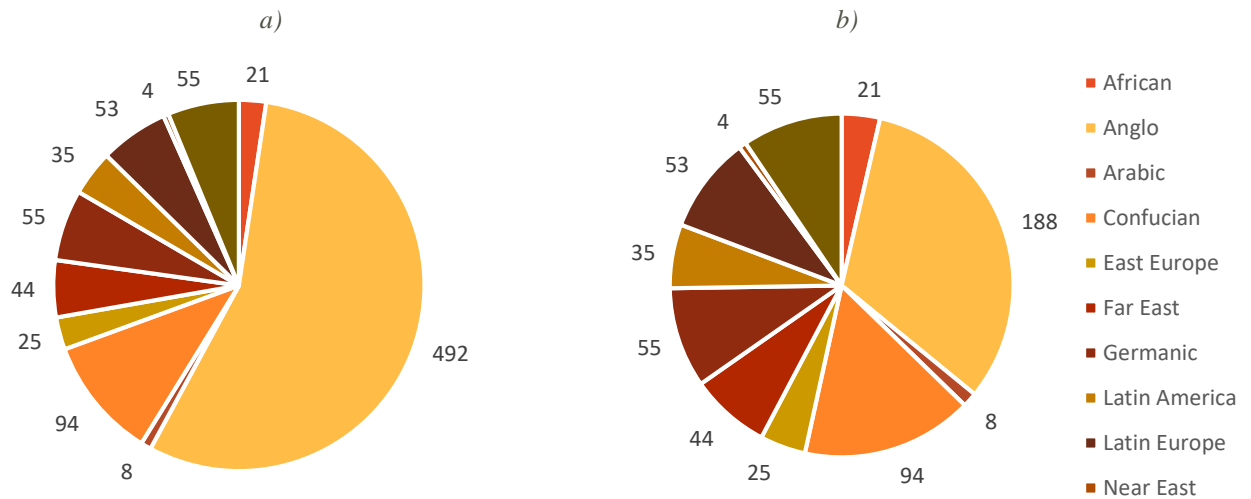
Figure 4.3 Subsidiaries location by cluster: a) GB included, b) GB excluded

In order to be more precise and analyze the real degree of internationalization, we have decided not to take into consideration UK subsidiaries in this table, since they represent the majority of the deals (304 out of 886) and resulting in 34.3%.

The pie charts show that the vast majority of the subsidiaries are located within Anglo cluster (32.3%), while the Confucian cluster with the 16.2% of the total number of subsidiaries comes as the second most attractive region for internationalization. The following bar chart demonstrates that a number of firms that increased the number of clusters of presence slightly fluctuates over time. However, every year on average 22 firms (20% of the sample) tend to capture a new market, opening a subsidiary in a cluster different from Anglo.
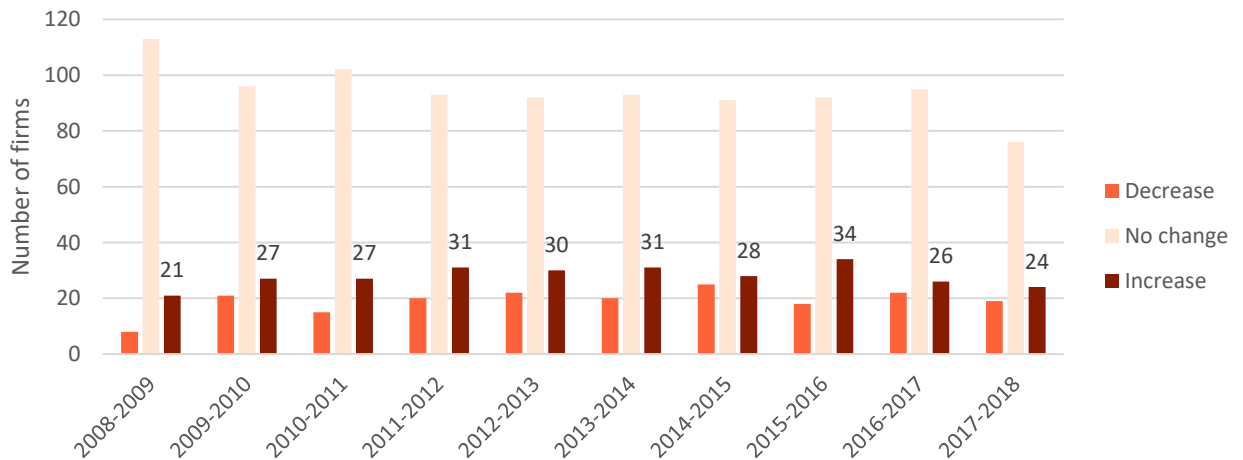
Figure 4.4 Yearly frequency of change in number of clusters

If we take a look at the spread of firms' subsidiaries along continents, we will find out that the vast majority of the subsidiaries are located within Europe (34.7%), while outside the Europe North America and Asia, with the 27.1% and 25.1% of the total number of subsidiaries respectively are the first and second regions in order of importance. The Table and pie charts below are helpful to get clearer and visualized the situation of the internationalization.

Cluster	Country Code	Country name	Frequency	Percentage
Africa			**22**	3.8%
	BFA	Burkina Faso	2	0.3%
	ETH	Ethiopia	3	0.5%
	GNQ	Equatorial Guinea	2	0.3%
	KEN	Kenya	2	0.3%
	MAR	Morocco	1	0.2%
	MLI	Mali	1	0.2%
	MOZ	Mozambique	2	0.3%
	MUS	Mauritius	2	0.3%
	UGA	Uganda	1	0.2%
	ZAF	South Africa	6	1.0%
Asia			**146**	25.1%
	ARE	United Arab Emirates	7	1.2%
	CHN	China	45	7.7%
	HKG	Hong Kong	14	2.4%
	IDN	Indonesia	5	0.9%
	IND	India	23	4.0%
	ISR	Israel	1	0.2%
	JPN	Japan	6	1.0%
	KOR	Korea, Republic of	6	1.0%
	MAC	Macao	1	0.2%
	MYS	Malaysia	7	1.2%
	PHL	Philippines	1	0.2%
	SGP	Singapore	15	2.6%
	THA	Thailand	6	1.0%
	TWN	Taiwan, Province of China	8	1.4%
	VNM	Viet Nam	1	0.2%
Europe			**506**	86.9%
	AUT	Austria	2	0.3%
	BEL	Belgium	5	0.9%
	BIH	Bosnia and Herzegovina	1	0.2%
	BLR	Belarus	1	0.2%
	CHE	Switzerland	7	1.2%
	CYP	Cyprus	1	0.2%
	CZE	Czechia	3	0.5%
	DEU	Germany	46	7.9%

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	DNK	Denmark	6	1.0%
	ESP	Spain	15	2.6%
	FIN	Finland	3	0.5%
	FRA	France	18	3.1%
	GGY	Guernsey	1	0.2%
	GRC	Greece	1	0.2%
	HRV	Croatia	1	0.2%
	IMN	Isle of Man	1	0.2%
	IRL	Ireland	8	1.4%
	ISL	Iceland	1	0.2%
	ITA	Italy	12	2.1%
	JEY	Jersey	1	0.2%
	NLD	Netherlands	25	4.3%
	NOR	Norway	5	0.9%
	POL	Poland	9	1.5%
	PRT	Portugal	2	0.3%
	RUS	Russian Federation	6	1.0%
	SRB	Serbia	1	0.2%
	SVN	Slovenia	1	0.2%
	SWE	Sweden	15	2.6%
	TUR	Turkey	3	0.5%
	UKR	Ukraine	1	0.2%
North America			**158**	27.1%
	BRB	Barbados	1	0.2%
	CAN	Canada	18	3.1%
	CYM	Cayman Islands	2	0.3%
	GTM	Guatemala	1	0.2%
	MEX	Mexico	7	1.2%
	NIC	Nicaragua	2	0.3%
	USA	United States of America	127	21.8%
Oceania			**32**	5.5%
	AUS	Australia	27	4.6%
	NZL	New Zealand	5	0.9%
South America			**22**	3.8%
	ARG	Argentina	4	0.7%
	BRA	Brazil	13	2.2%
	CHL	Chile	1	0.2%
	ECU	Ecuador	2	0.3%
	URY	Uruguay	2	0.3%
Total			**582**	100.0%
Europe	GBR	United Kingdom of Great Britain and Northern Ireland	304	

Table 4.2 Internationalization Breadth and Internationalization Depth (GB excluded)

The pie charts below (Figures 4.5,a and 4.5,b) demonstrate that the majority of the subsidiaries are located in Europe (34.7%), while North America and Asia with the 27.1% and 25% of the total number of subsidiaries respectively come as the second and third most appealing geographic area for internationalization.
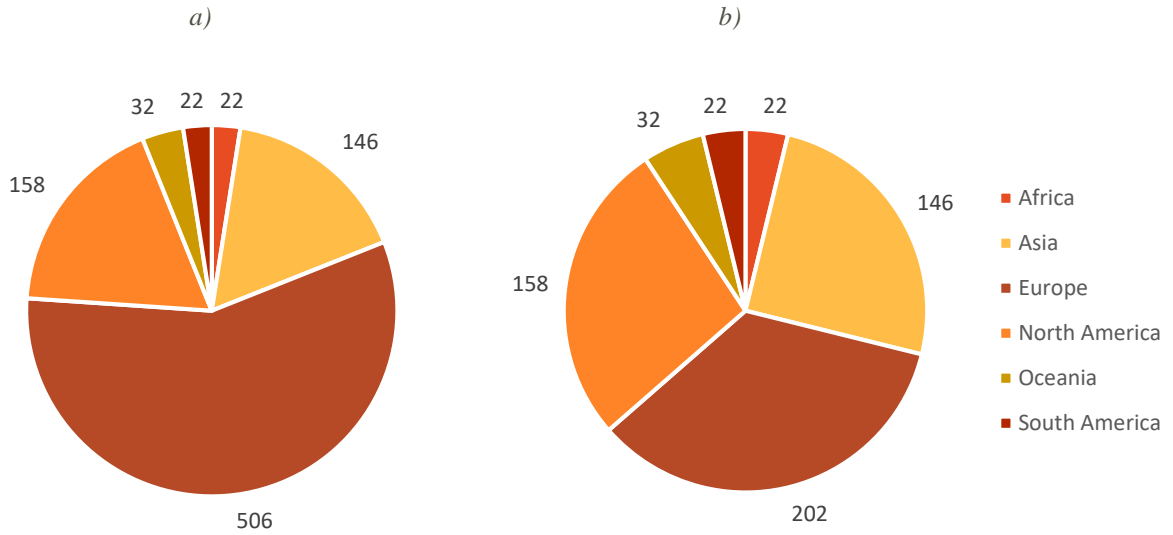
Figure 4.5 Subsidiaries location by continent: a) GB included, b) GB excluded

Figure 4.6. shows that every year on average 27 firms (19%) of the selected firms expand their presence to another continent, while 92 of them (65%) remain on the same positions and 22 (16%) shut down subsidiaries located on another continent.
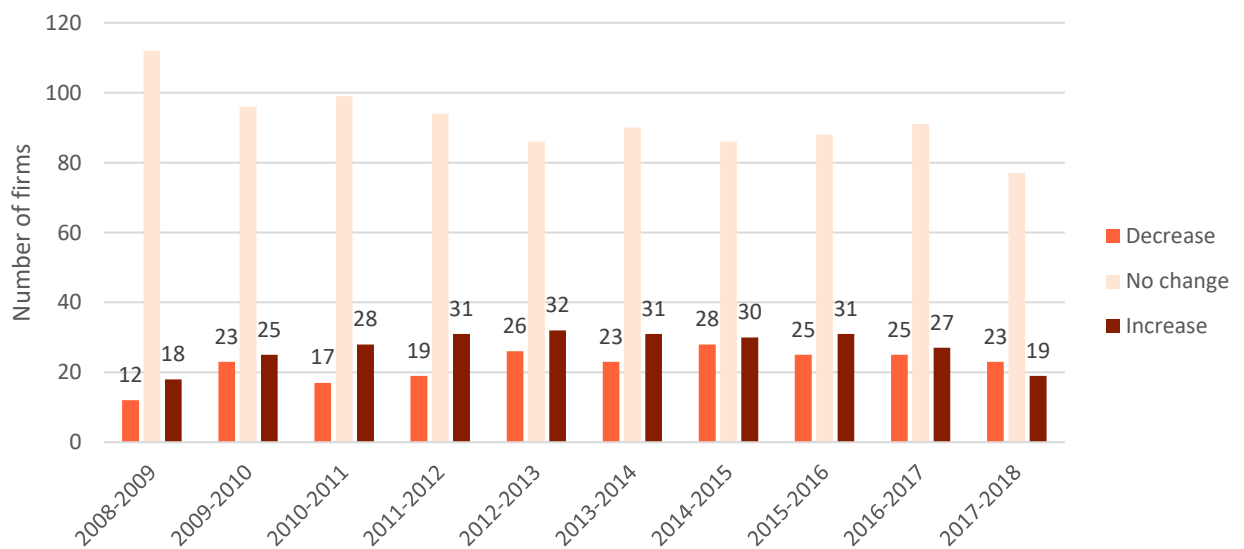
Figure 4.6 Yearly frequency of change in number of continents

Another important point that we have to take into account is the firm size. A firm can start expanding its business only in case if it has resources surplus to make this step economically feasible (Wan, et al., 2011). Thus, larger companies have size-related advantages that enable them to more effectively engage in international operations (Aaby & Slater, 1989; Miesenbock, 1988). Firm size might allow an organization access to resources denied to smaller firms and thereby help organizations take risks, withstand setbacks, and initiate changes. However, smaller firms, compared to larger companies, have strengths such as high quality standards and individualized product/service offerings while enjoying a flexible cost structure, flexibility through the concentration of decision-making authority and short information structure, spontaneous ability to adapt to changing market environments and customer needs (Pleitner, et al., 1998; Dass, 2010). Moreover, firm size is related to the complexity and information-processing demands faced by TMTs and Board of directors (Henderson & Fredrickson, 1996). It indicates an organizational complexity and whether a firm already has resources to deal with this complexity or it seeks for additional diversity in TMT to cope with it. For that reason, in our descriptive statistics we have to consider also firms' size, since this aspect may influence both the degree of internationalization and diversity of a TMT.

As mentioned previously, our database consists of firms with 50 to 2000 Employees. In order to distinguish our sample, we have decided to use European Commission' classification which defines SMEs (Small and Medium-sized Enterprises) as companies having less than 250 persons employed. They should also have an annual turnover of up to EUR 50 million, or a balance sheet total of no more than EUR 43 million (Commission Recommendation of 6 May 2003). The second cluster will include large firms with more than 250 employees. Regarding our sample, Figure 4.7
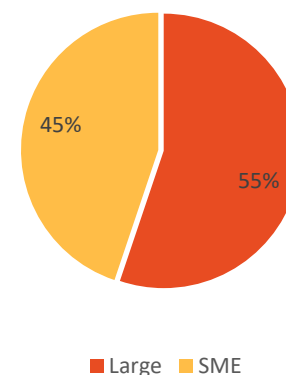
Figure 4.7 Firms' size

shows that 45% of firms can be considered as small and medium-sized enterprises while the remaining 55% is large firms that make our sample almost equally divided into 2 categories.

In order to evaluate the differences in the resources' endowment, we have to take a look at the differences of average operating revenues and average overseas turnover among these two categories (SMEs and large firms). Table 4.3 shows that firms with less than 250 employees have an average operating revenue equal to 34 311 kGBP, while large firms have, on average, total operating revenues

to 152 099 kGBP. The same difference is obvious if to consider average overseas turnover, where the SMEs have 8 times lower average turnover than the large firms (10 840 vs 81 526 kGBP).

Firm type	Frequency	Percentage	Average number of employees	Average Operating revenue	Average Overseas Turnover
Large	79	55%	849	152 099	81 526
SME	65	45%	128	34 311	10 840

Table 4.3 Comparison of large and SMEs' financials

Another relevant characteristic of the firms is the degree of dependence on technology. Even though all firms of our sample operate in manufacturing sectors, they face different technological complexity in running their business. For example, firms operating in the manufacture of computers, electronic and optical products have more technological intensive activities than firms manufacturing papers or wearing apparel. Thus, a further analysis about the different activities performed by the companies in our database is needed.

The following Table 4.4 gives an idea of how our firms are distributed among the different divisions of the manufacturing sector, according to the 2 digits NACE codes.

Eurostat classification	Division	NACE code	Freq.	Perc.
Low Technology	Manufacture of food products	10	2	1.4%
	Manufacture of beverages	11	7	4.8%
	Manufacture of textiles	13	2	1.4%
	Manufacture of wearing apparel	14	6	4.1%
	Manufacture of leather and related products	15	2	1.4%
	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	16	1	0.7%
	Manufacture of paper and paper products	17	3	2.1%
	Printing and reproduction of recorded media	18	1	0.7%
	Manufacture of furniture	31	1	0.7%
	Other manufacturing	32	10	6.9%
Medium/Low Technology	Manufacture of rubber and plastic products	22	5	3.4%
	Manufacture of other non-metallic mineral products	23	7	4.8%
	Manufacture of basic metals	24	11	7.6%
	Manufacture of fabricated metal products, except machinery and equipment	25	10	6.9%
Medium/High Technology	Manufacture of chemicals and chemical products	20	14	9.7%
	Manufacture of electrical equipment	27	9	6.2%
	Manufacture of machinery and equipment n.e.c.	28	7	4.8%

	Manufacture of motor vehicles, trailers and semi-trailers	29	3	2.1%
	Manufacture of other transport equipment	30	2	1.4%
High Technology	Manufacture of basic pharmaceutical products and pharmaceutical preparations	21	14	9.7%
	Manufacture of computer, electronic and optical products	26	28	19.3%
			144	100.0%

Table 4.4 Industry classification

According to Eurostat classification, codes are combined into 4 groups by the technological level. Figure 4.8 shows the distribution of the firms of our sample among these clusters which is useful in describing the activities run by the firms in the manufacturing sector. Thus, we see that firms are almost evenly distributed among 4 clusters, particularly, 23.6% of them operate in low technology sector, 24.3% in medium/low and medium-high, and 29% in a sector that faces high technological complexity.
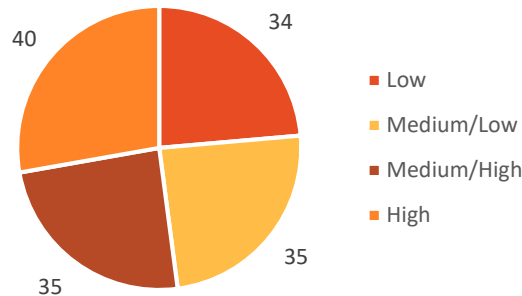
Figure 4.8 Level of technological complexity

4.2.2 TMT database descriptive statistics

In this section of chapter 4, some descriptive statistics of our TMTs will be provided. Our database consists of 144 firms, and in 11 years period they result in 1560 TMTs that can be considered as a unique unit of measure for our analysis.

Since in large and complex organizations, the firms' decisions are the domain of TMT decision-making (Hambrick & Mason, 1984; Gupta, 1988), we have considered in the TMT only executive members of the Board of Directors, as we mentioned before. Thus, our database contains data on 4530 executives.

However, non-executive directors also have an impact on the internationalization process, as it has been investigated by some of the previous studies (Barroso, et al., 2011; Rivas, et al., 2009;

Tihanyi, et al., 2003). Even though the studies consist of only a limited number of researches, they have drawn attention to the impact of the board (executives and non-executives as well) on the internationalization process. Some recent researches (Georgakakis, et al., 2018) tried linking TMTs, boards, and international expansion as well. Since they argue that the interaction between the TMT and the board is arguably a crucial element of major internationalization decisions, we have thought that considering some characteristics of non-executives may be very useful in our following analyses. Thus, we have collected some fundamental data for whole BoD, that contains information on 9474 BoD members (executives and non-executives as well).

Gender

Women participate in all aspects of the economic world and gender equality is a critical component of economic growth. Females are half of the world's population and there is a need in creating a more prosperous world (World Bank Group, 2019). Although companies are taking concrete steps to empower women, contributing to closing the gender gap while building business value, inequality does still persist.

In the workplace, as The Global Gender Gap Report (World Economic Forum , 2018) states, women still encounter significant obstacles in taking on managerial or senior official roles, and just about 34% of global managers are women. As the report announces, the presence of women in management roles is today one of the main barriers to overcome, both in the public and private sector, in order to achieve full economic gender parity.

According to another research by Cranfield University (2018) into the numbers of women on Boards, the percentage of female Non-Executive Director positions in 2018 is at the all-time high of 35.4%, whilst the percentage of female executive positions is 9.7%. This is an important point that top companies are making progress in appointing women to the most senior positions. However, The Female FTSE Board Report 2018 shows that in contrast, the percentage of female executive directorships has dropped from 7.7% to 6.4%, and the percentage of women on FTSE 250 boards has only increased slightly from 22.8% in 2017 to 23.7% in 2018.

If we consider the position of UK in the Global Gender Score (2018) that benchmarks national gender gaps on economic, education, health, and political criteria, we see that the UK holds 15th position in country rankings (with the gap of 32.6%). However, it occupies the 52nd position in economic participation and opportunity at the world level. Even though this gap of 30% on a country level is lower than the Global level (the second-largest at 41.9% among 4 sub-indexes, following the

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disparity on Political Empowerment (77.1%)), this result cannot be considered as positive and there is still much to be improved. We can observe this gender gap also in our database. Among our 4530 executives, only the 5.2% of them are women (Table 4.5).

Gender	Frequency	Percentage
Female	235	5.2%
Male	4295	94.8%
Total	4530	100%

Table 4.5 Gender distribution for executives

The percentage of women in our sample of BoD is a little bit higher and consist of 6.3%. However, this result is much lower than percentage of women in BoD in FTSE 250 and FTSE 100. (Table 4.6).

Gender	Frequency	Percentage
Female	593	6.3%
Male	8881	93.7%
Total	9474	100.0%

Table 4.6 Gender distribution for non-executives

Considering data aggregated in teams, we see that 86.7% of our sample (1370 TMTs out of 1560), consist only of male members. However, we found out that there are few TMTs (only 8), composed only of women, that gives us the result of 0.5%.

Even though the number of women in the BoD is low, there is a positive trend over the considered time span, and diversity of out sample increases 5 times: from 0.031 in 2008 to 0.139 in 2018 (Figure 4.9).
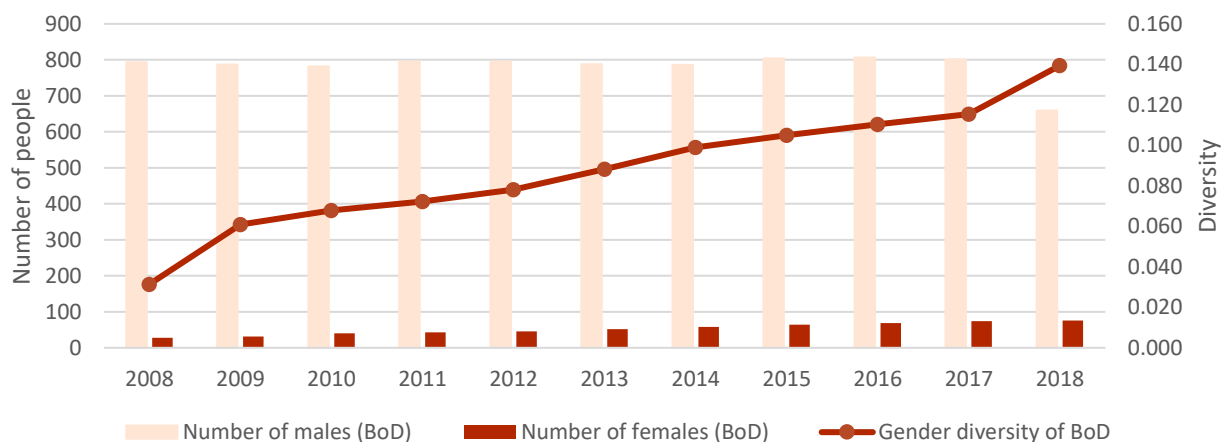
Figure 4.9 Gender diversity of the BoD

According to the 2018 Spencer Stuart UK Board Index, percentage of female CEO is 5.3%, while our results show much lower level: there are 14 TMTs that have female CEO (that is only 1% of our sample, Table 4.7).

Gender	Frequency	Percentage
Female	14	1%
Male	1546	99%
Total	1560	100%

Table 4.7 CEO gender distribution by TMT

Age

It is interesting to look at our data from the perspective of executives' age since there are studies that point to the importance of this demographical characteristic. Richard and Shelor, (2002) point out that age is, in part, a reflection of an individual executive's perspectives, values, and belief systems.

Higher age usually brings an increased quantity and variety of experiences, and it allows older people to learn from wider number of life lessons and developed character strengths. Moreover, age is linked to the moral and ethical frameworks that can explain the willingness and ability of older individuals to effectively handle conflict in a mature way, whereas the actions of younger people are associated with riskier behavior. Taylor (1975) positively associated age with better moral judgment among organizational decision-makers because of their tendency to utilize more time in reaching decisions.

On the other hand, age can be viewed as a proxy not only of the extent of experience earned but also of individual's propensity for risk-taking. Thus, previous studies have identified that younger managers are more willing to take risks, pursue more innovative and uncertain strategies, and have more physical and mental stamina (Child, 1974; Tihanyi, et al., 2003).

According to Spencer Stuart, in 2018 the average age of non-executives is 60.6, which is slightly higher than the 2017 year's average of 60.3. Our results show that the average age of non-executives of our sample is slightly lower than reported number, resulting in 56.05 years, while the average age of BoD members (both executives and non-executives) is 57.35.

For executives, the average age is 54.2, up from 53.4 in 2017. As for our sample, the average age of the executive managers in our TMTs is 52.65, so we can state that this data is in line with the average age of executive directors in the UK board of directors.

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If we consider age ranges for individual-level (Table 4.8), we observe that the percentage of young members (< 35 years) is extremely low (0.9% for BoD and 1.5% for TMT) that could be explained by difficulties in reaching top positions and necessary previous experience for being appointed. The vast majority of executive members is in its middle ages (46-55 years), while the majority of BoD overall is older and is aged between 46 and 65 (65.3%). Looking at the age range of older than 65, we observe that there are just a few executives (9.6%), while the BoD members' number is more than double that and consists of 22.7%.

Age range	BoD		TMT (exec only)	
	Frequency	Percentage	Frequency	Percentage
<35	85	0.9%	68	1.5%
35-45	1049	11.1%	867	19.1%
46-55	3259	34.4%	2114	46.7%
56-65	2931	30.9%	1048	23.1%
>65	2150	22.7%	433	9.6%
Total	9474	100.0%	4530	100.0%

Table 4.8 Age distribution for non-executives and executives at the individual level

If we take a look at the team-level (Table 4.9), considering the average age of the members of each TMT, we can see that the majority of executives is aged 46-55 (64.1%), while the average age of BoD of half of our TMTs is in the range 56-65.

Age range	TMT		BoD	
	Frequency	Percentage	Frequency	Percentage
<35	1	0.1%	1	0.1%
35-45	134	8.6%	13	0.8%
46-55	1000	64.1%	534	34.2%
56-65	319	20.4%	800	51.3%
>65	106	6.8%	212	13.6%
Total	1560	100%	1560	100%

Table 4.9 Age distribution for non-executives and executives at the team level

Yearly data of average age (Figure 4.10) of executive members shows a positive trend, increasing from 50.3 in 2008 and reaching 54.3 by 2018. At the same time, the standard deviation representing diversity separation of the age of executive members also rises.
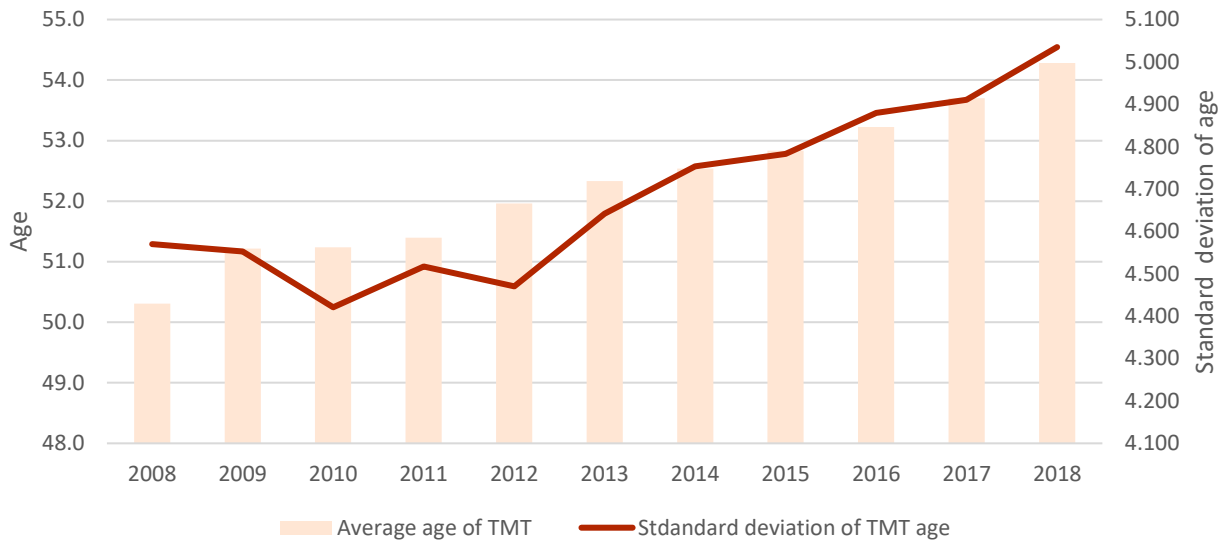
Figure 4.10 Average age of executives members and age diversity

Nationality

Previous researches have considered nationality of the TMT members as a source of knowledge, expertise, and values for firms facing the complexity and the opportunities deriving from the internationalization process. Thus, nationality influences underlying orientations and values (Hofstede, 1980), and the fundamental cognitions of the decision-makers. They are used as lenses to scan, organize, interpret and utilize information, which in turn provides the basis for strategic choice (Shaw, 1990). Nielsen (2010) argues that TMT nationality diversity together with TMT international experience are important sources of managerial competence and ability necessary to deal with the complexity of foreign expansions of MNCs.

Taking into account importance given to nationality in previous years, we have collected data about national origin of both executives and non-executives of our sample.

If we take a look at our executives' nationality, we can see that 90.5% of them are British, while overall BoD is more diverse, and percentage of members originated from UK is slightly lower and consist of 87.8%. Even though there are not so many executives with nationality differing from British, 432 TMT members come from 24 countries around the World, while 1153 BoD members originate from 31 countries (UK excluded).

In order to analyze these data in more detailed way, we have decided to take a look at the distribution of these countries of origin among clusters, i.e. groups of countries that are culturally and institutionally similar one another. For this reason, we have considered the clustering of world

Relationship between changes in the firms' degree of internationalization and TMT's diversity

countries developed by Ronen and Shenkar (2013). The following pie chart (Figure 4.11, a) shows that among the 432 non-British executives, 224 come from countries that are in the same cluster with UK (which is Anglo), while 208 (48%) executives come from outside. The same analysis can be performed for BoD members and we get the following results (Figure 4.11, b): 576 members' nationalities belong to Anglo cluster, while 555 do not (49%).

a)   *b)*
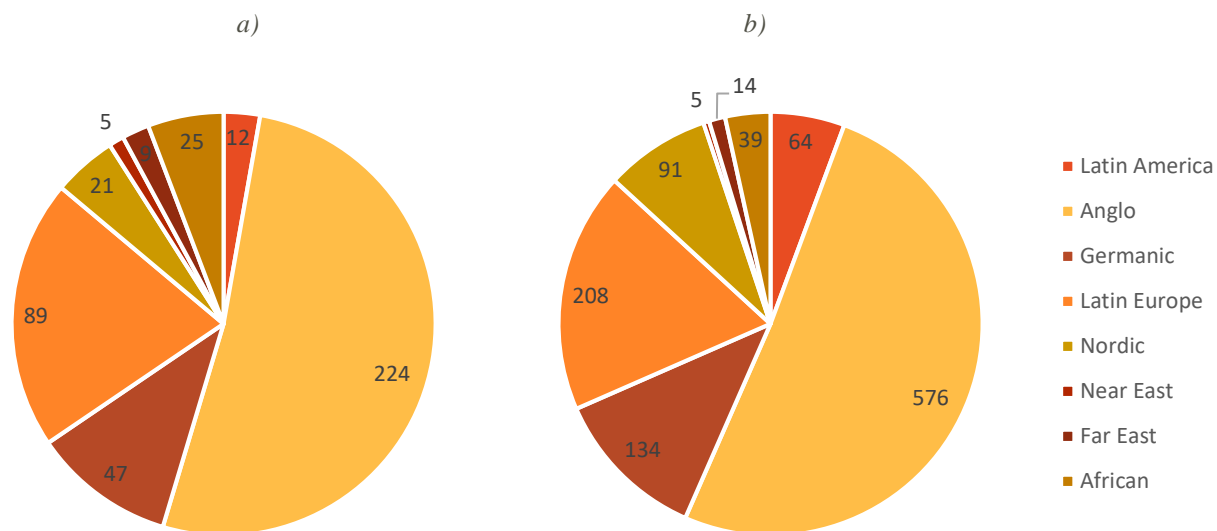
Figure 4.11 Distribution of countries of origin of a) executives, b) non-executives among cultural clusters

For the scope of our research, we evaluated the presence of foreign executives within the different TMTs of our database. Data shows that only 316 TMT have at least 1 foreign member, who contributes in enlarging the pool of TMT's knowledge and expertise in the management of the complexities. The rest 78.9% consist only of British people that decreases the diversity within the team (Table 4.10).

# of foreigners in TMT	Frequency	Percentage
0	1244	79.7%
1	249	16.0%
2	50	3.2%
3	16	1.0%
4	1	0.1%
	1560	100.0%

Table 4.10 Foreign executives' distribution at the team level

Table 4.11 shows that 622 (39.3%) of the BoD members have foreign executives among its members, while 60.7% of BoD of our sample are not diversified in terms of nationality at all.

# of foreigners in BoD	Frequency	Percentage
0	959	61.5%
1	364	22.9%
2	111	6.5%
3	72	4.4%
4	35	2.2%
5	25	1.5%
6	11	0.7%
7	3	0.2%
8	1	0.1%
	1560	**100.0%**

Table 4.11 Foreign non- executives' distribution at the team level

Yearly data of an average number of foreigners in 1560 TMTs of our sample (Figure 4.12) shows a positive trend with some fluctuations, increasing from 86 in 2008 to 107 in 2018, thus enlarging nationality diversity of selected firms.
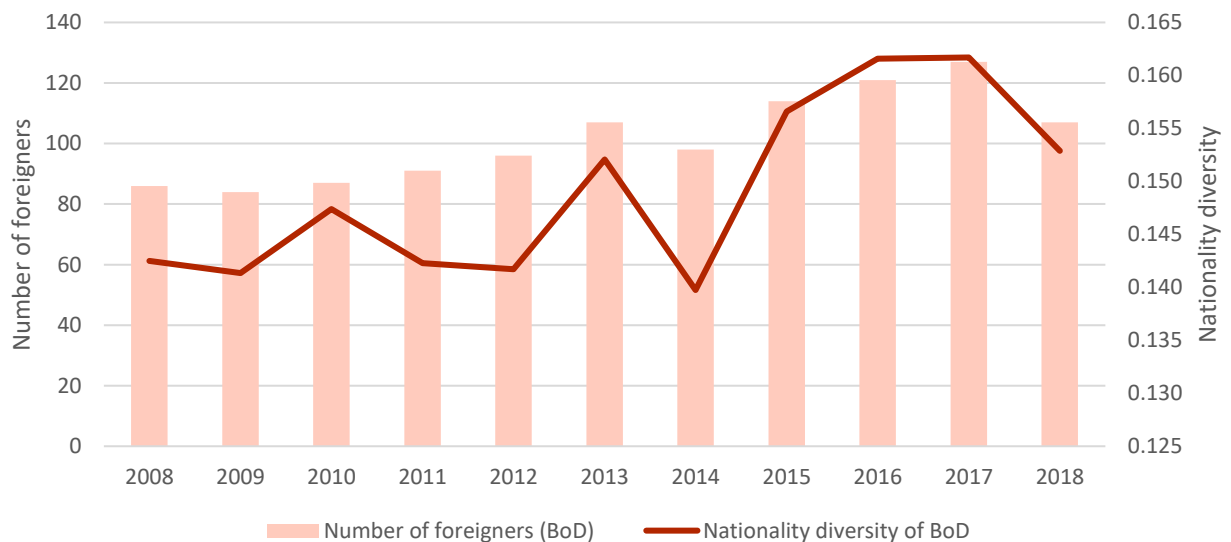
Figure 4.12 Nationality diversity of the BoD

Working experience

As globalization progresses, companies are more present in foreign markets. In these conditions, international experience becomes an indispensable yet still rare resource in the executive suite (Carpenter, et al., 2001). Previous studies discovered that managers' international career experience plays an important role in their strategic decisions. One of them states that when top managers have international experience, their perceptions and personality take on a more international orientation (Gunz & Jalland, 1996). Moreover, TMT experience diversity positively moderates the

Relationship between changes in the firms' degree of internationalization and TMT's diversity relationship between international diversification and the firm performance (González-Rodríguez, et al., 2015).

According to Sambharya (1996), managers with international experience are not only able to integrate the learned culture with their own, but they are also better equipped to deal with the uncertainties and ambiguities associated with international operations. Indeed, the experience of living in another country with different customs and habits has an important impact on the cognitive orientation of managers.

In our work we have considered two aspects of our managers' working experience: international experience and their industry-related experience.

Starting with international working experience, we observe that almost a third of executives from our sample have worked abroad (Table 4.12).

Has international working experience	Frequency	Percentage
No	3247	72%
Yes	1283	28%
	4530	**100%**

Table 4.12 Presence of international working experience for executives at the individual level

Considering the TMT level data, we observe that more than half of our sample TMTs has at least one manager that had worked abroad. 21.6% of TMTs have more than 2 executives with international work experience. Among them, there are 7 TMTs with 4 executives that have been working in a country different from his/her origin at least half year.

# of people with int. work experience	Frequency	Percentage
0	701	44.9%
1	526	33.7%
2	283	18.2%
3	44	2.8%
4	6	0.4%
Total	**1560**	**100.0%**

Table 4.13 Executives' international working experience distribution at the team level

To have a clearer idea about the international experience of managers from our database, we decided to consider different types of dispersion: by country, by cluster and by continent. First of all, we took a look at the number of countries where executives obtained their working experience. Results show (Table 4.14 and Figure 4.13) that 66.8% of managers with international working experience worked in 1 country different from the country of origin, while 14.1% of our sample gained their experience in more than 3 countries.
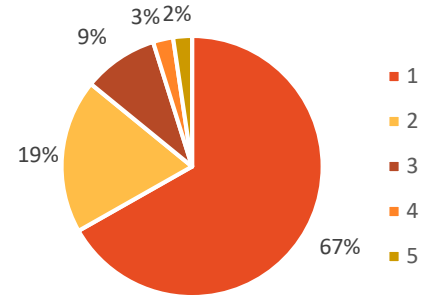
Figure 4.13 Number of countries where executives obtained international experience

# of countries (country of origin is excluded)	Frequency	Percentage
1	857	66.8%
2	245	19.1%
3	119	9.3%
4	32	2.5%
5	30	2.3%
Total	1283	100.0%

Table 4.14 Distribution of number of countries where executives obtained international experience

95% of managers with foreign experience have worked in Anglo cluster, while Near East, Arabic and Latin America clusters are least popular for gaining international experience among managers of our sample and consist of only 1.2%, 1.9% and 3.8% respectively (Figure 4.14).
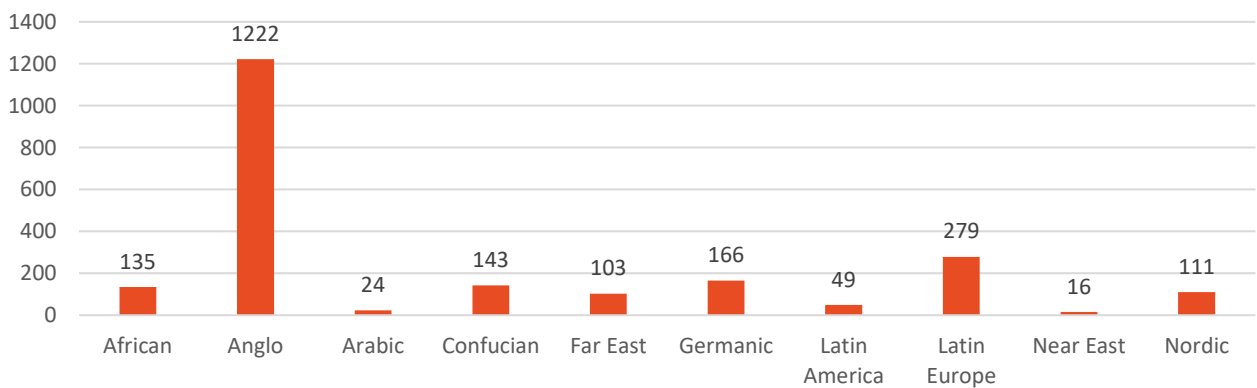
Figure 4.14 Number of executives with international work experience by cultural cluster

Relationship between changes in the firms' degree of internationalization and TMT's diversity

Considering work experience dispersion by continent, we can see that experience of our TMT members is spread around the World (Figure 4.15). Specifically, 7.5% of executives have worked in Oceania, 11.2% in Africa, 21.6% in Asia, 44.9% in the USA and 93.2% in Europe.
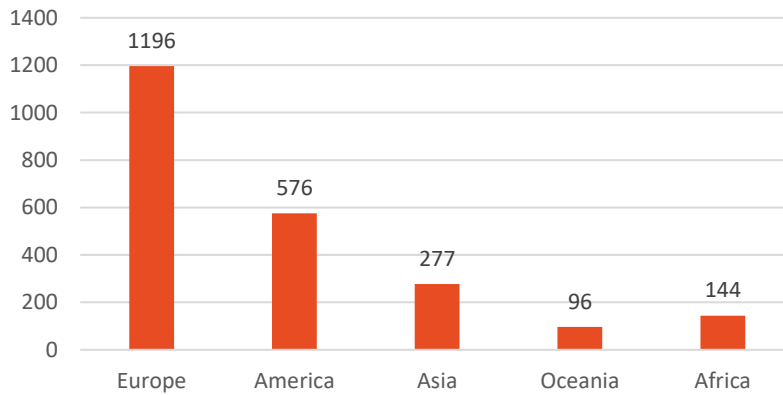
Figure 4.15 Number of executives with international work experience by continent

Figure 4.16 shows a slight increase in average international experience diversity of the executives of the firms along the considered time span. It points out that heterogeneity of the firms from the sample in terms of the experience of working in different countries increases over time.
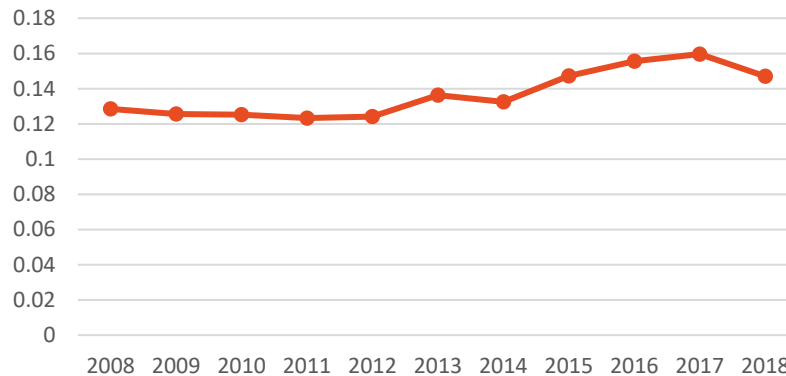
Figure 4.16 Average international experience diversity

A change in international experience diversity can be observed in Figure 4.17. The chart shows that even though the majority of firms stay stable in terms of international experience diversity of the executives, every year at least 19 firms experience an increase in diversity.
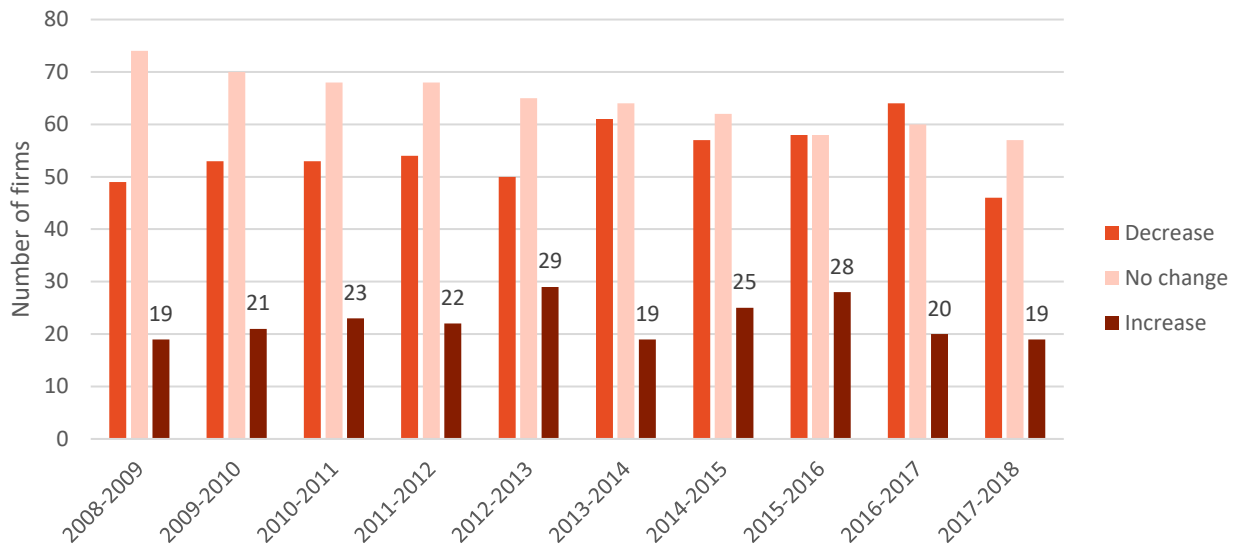
Figure 4.17 Yearly frequency of change in international experience diversity

This TMT international experience helps managers to cope with the complexity derived from added cultural distance. Furthermore, through their international encounters managers may build useful networks of local contacts (Blomstermo, et al., 2004)and internal advice networks (Athanassiou & Nigh, 1999).

Continuing the analysis of working experience, we want to take a look at industry-related experience. Alike to an international experience diversity, industry experience diversity is a source of complementary knowledge. In this case, however, experience in industries with different level of dynamism and competition brings new insights in team about how to cope with complex environments.

In our database we have collected information on companies our managers have worked during their career. Each company was specified by a SIC code, which is a standard industrial classification of economic activities and gives a description of a company's nature of business.

We have considered 2-digits codes, since it allows us to consider managers' industry-related diversity not going so much into details of each business nature. The following Table 4.16 shows that only 17.64% of our sample have always worked in the same industry, while others have diversified experience. In particular, 28% of executives have worked at least in 2 industries, while the portion of managers with a career that spans to more than 6 industries is extremely low and consist of less than 5% of the sample.

Relationship between changes in the firms' degree of internationalization and TMT's diversity

Number of industries	Frequency	Percentage
1	799	17.64%
2	1269	28.01%
3	954	21.06%
4	607	13.40%
5	415	9.16%
6	135	2.98%
7	58	1.28%
8	17	0.38%
9	2	0.04%
10	1	0.02%
11	1	0.02%
Missing	272	6.00%
Total	**4530**	**100.00%**

Table 4.15 Distribution of number of industries where executives have worked, at the individual level

Figure 4.18 demonstrates that the average industry experience diversity of the executive members of the firms rises from 2008 to 2018, signaling that heterogeneity of the firms in terms of industry-related experience increases.
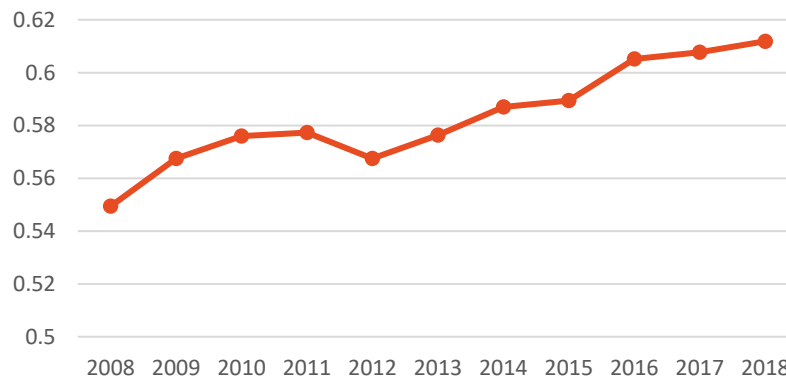
Figure 4.18 Average industry experience diversity

A year by year change in industry experience diversity can be observed in Figure 4.19. The bar chart shows that the majority of firms experience a decrease in industry-related diversity, however, at least 19 firms increase this aspect of diversity.
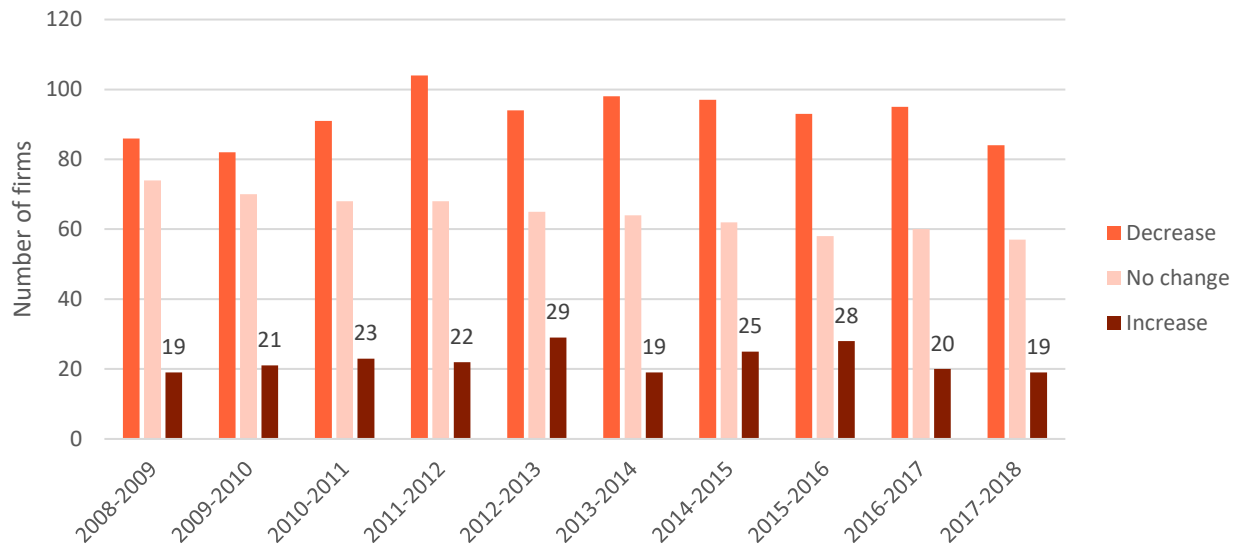
Figure 4.19 Yearly frequency of change in industry experience diversity

Together with studying the executives' international and industry related experience, we have considered also their TMT tenure, which refers to the number of years that executive members have held their position in the TMT. This aspect is worth to be analyzed, since different tenures impact managers' commitment to the firm, risk orientation, and insights (Hambrick, et al., 1996).

Results of previous researches show that TMT tenure diversity has a contradictory effect on the performance. On the one hand, TMT tenure diversity can improve job-related skills, information, and perspectives (Simons, et al., 1999). On the other hand, less tenure diversity of TMT members (Tyran & Gibson, 2008) leads to similar behavior patterns, beliefs, and expectations. This generates team identity and cohesion, also resulting in higher performance (Tziner, 1985).

We have analyzed an average TMT tenure diversity of the executives for 144 firms for each year, and the standard deviation (SD) of number of years that executive members have held their position in the TMT. Figure 4.20 shows that the average TMT tenure increases over the years from 7.4 years in 2008 to 8.8 in 2018. At the same time, TMT tenure diversity, showing tenure separation and representing the sense of distance team members feel toward each other due to different organizational tenures, also rises from 3.3 to 4.

Relationship between changes in the firms' degree of internationalization and TMT's diversity
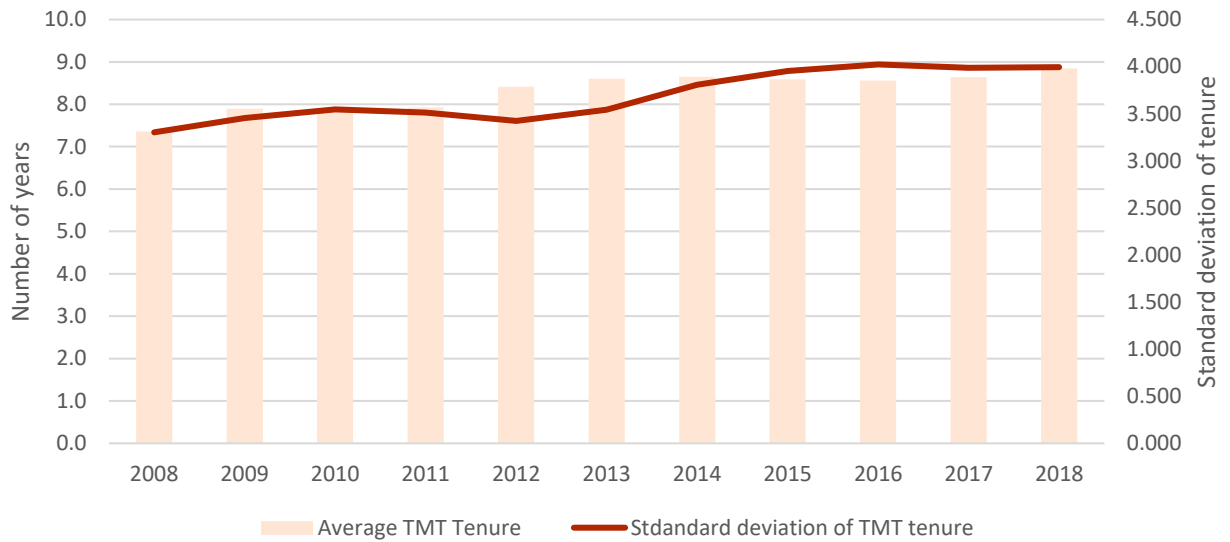
Figure 4.20 Average TMT tenure of executives members and TMT tenure diversity

The aspects we have presented in this chapter are important for testing our hypotheses developed in chapter 3. Moreover, they are crucial in order to verify that the dependent variables we will describe in the following chapter are somehow affected by the international intensity, geographical extensity and dispersion.

5 METHODOLOGY

In order to test the hypotheses presented in Chapter 3, we have applied a statistical methodology that will be explained in this chapter. First, we will list and describe the dependent, the explanatory, and the control variables and present some insights and statistics in order to clarify their distribution and behavior. Second, we will explain the methodology and statistical models used for testing our hypotheses. Finally, we will provide the results obtained during our statistical analysis and explain them in relation to our initial hypotheses.

5.1 MODEL VARIABLES

Before moving forward with the description of our variables, few comments need to be done. As it was mentioned before, our sample consist of data related to a period from 2008 to 2018. However, the goal of this thesis is to study the influence of change in DOI on change of TMT diversity. Therefore, we did not simply consider yearly data, but we have computed the delta between two consecutive years for both dependent and explanatory variables. To clarify, deltas were computed in Stata as

$$\textit{generate } \text{D\_variable} = \text{s.variable}$$

that stands for:

$$\Delta \textit{ of variable in year}_T = \textit{absolute value in year}_T - \textit{absolute value in year }_{T-1}$$

5.1.1 Dependent variables

As we described in the previous chapters, the aim of our research is to explore the relationship between the firm degree of internationalization and TMT diversity, if there is any. According to previous studies, the higher the degree of internationalization of the company, the higher the complexity of its operations and the higher the information processing demands posed on the top management team (Michel & Hambrick, 1992; Sanders & Carpenter, 1998). In order to successfully manage complexity both coming from international operations and organizational structure, TMTs seek for additional resources such as executives' background and experience diversity that brings to the firm both relational capital (network contacts) and human capital (e.g. expertise, skills etc.) (Becker, 1962; Hillman & Dalziel, 2003).

Relationship between changes in the firms' degree of internationalization and TMT's diversity

Since diversity of TMT is a broad concept, it may intend different characteristics of the TMT, such as nationality, age, educational background diversity etc. For the purpose of our study, we have developed different dependent variables that separate the distinct aspects of TMT's diversity, such as international experience diversity and industry experience diversity. In addition, we have combined these two types of diversity and developed another dependent variable representing the total diversity. We will now explain how these variables have been calculated and will describe their distributions.

International experience diversity

As we explained in the Chapter 3, international experience of executive members of TMT is a valuable source of knowledge and contributes to understanding the complexity, arising from internationalization. Thereby, when companies enlarge their international presence, they need to adjust their TMTs' composition, and they attract executives with higher level of international experience diversity.

In our thesis, this variable was calculated using Blau's (1977) index, that is a measure of group heterogeneity commonly used in top management team research (Carpenter, 2002; Finkelstein and Hambrick,1996).

$$International\ experience\ diversity\ = 1 - \sum_{i=1}^{n} p_i^2$$

where p_i is the percentage of years worked in the country i by all members of TMT, and n is the number of countries in which TMT members have worked. Here, a short explanation in order to clarify the formula used. For example, TMT consists of three executives:

- first executive during 15 years of his career has worked only in GB

- second executive has worked 10 years in UK and then has 10 years of international experience, among them 2 years in the USA and 8 years in Spain

- third executive has 7 years of experience in GB, 3 in Russia, 5 in Spain and 1 in China

On the TMT level, we have:

- 32 years of experience in the home country which is GB

- 2 years of international experience in the USA

- 13 years of international experience in Spain

- 3 years of international experience in Russia

- 1 year of international experience in China

- 51 years of total experience on the TMT level

Thus:

$$International\ experience\ diversity\ = 1 - \left[\left(\frac{32}{51}\right)^2 + \left(\frac{2}{51}\right)^2 + \left(\frac{13}{51}\right)^2 + \left(\frac{3}{51}\right)^2 + \left(\frac{1}{51}\right)^2\right] = 0.4641$$

The higher the value of this variable, the greater is the heterogeneity in terms of experience of working in different countries, and the closer this variable will be to 1. If executives in a TMT have worked only in GB, this variable will be equal to 0.

Variable Values	Frequency	Percentage	Cumulative
(-0.80) — (-0.21)	11	0.71	0.71
(-0.20) — (-0.01)	534	34.23	34.94
0	646	41.41	76.35
0.01 — 0.20	214	13.72	90.06
0.21 — 0.80	11	0.71	90.77
Missing value	144	9.23	100.00
Total	1560	100.00	100.00

Table 5.1 International experience diversity's delta distribution

Out of the 1 560 observations in our database (144 firms for 11 years), this variable has 1 416 observations. 144 observations (9.23%) have been dropped from our sample since we have calculated two-year deltas. Consequently, we were not able to compute this variable for the year 2008. It is interesting to notice that nearly 35% of the TMTs show a decrease of heterogeneity, having the delta of Blau's (1977) index lower than 0, while almost 15% of TMTs have positive index, demonstrating an increase of heterogeneity. After the computation of the variable, deltas between two consecutive years were calculated as we have explained previously. The last step was normalization of the index, i.e. scaling it to have values between 0 and 1, using the following formula:

$$\Delta\ int.div = \frac{\Delta\ int.div - \Delta\ int.div_{min}}{\Delta\ int.div_{max} - \Delta\ int.div_{min}}$$

Industry experience diversity

It was already described in the Chapter 3, that experience in industries with different level of dynamism and competition brings into the TMT new insights about how to cope with complex environments. Thus, multinational firms will benefit from the heterogeneity in the TMTs in terms of industry-related experience. In order to access this type of diversity, we have measured it in the same way as international experience diversity, i.e. by Blau's (1977) index.

$$Industry\ experience\ diversity\ = 1 - \sum_{i=1}^{n} p_i^2$$

where p_i is the percentage of years worked in the industry i by all members of TMT, and n is the number of industries in which TMT members have worked. Here, a short explanation in order to clarify the formula used. For example, TMT consist of two executives:

- one of them has worked 16 years in the industry with SIC code 15 ("Manufacture of leather and related products") and 9 years in the industry with SIC code 27 ("Manufacture of electrical equipment")

- another executive has 5 years of experience in the industry with SIC code 27 ("Manufacture of electrical equipment") and 20 years of experience in the industry with SIC code 29 ("Manufacture of motor vehicles, trailers and semi-trailers")

On the TMT level, we have:

- 16 years of experience in Manufacturing of leather and related products (SIC code 15)

- 14 years of experience (9 + 5) in Manufacturing of electrical equipment (SIC code 27)

- 20 years of experience in Manufacturing of motor vehicles, trailers and semi-trailers (SIC code 29)

- 50 years of total experience on the TMT level

Thus:

$$Industry\ experience\ diversity\ = 1 - \left[\left(\frac{16}{50}\right)^2 + \left(\frac{14}{50}\right)^2 + \left(\frac{20}{50}\right)^2\right] = 0.6592$$

It should be noted that the higher the value of this variable, the greater is the heterogeneity in terms of industry experience and the closer this variable will be to 1. Conversely, the lower the

industry experience diversity, the closer this variable will be to 0. As in the case of international experience variable, deltas between two consecutive years were calculated for industry experience diversity, and the variable has been normalized.

Table 5.2 shows that, similarly to the international experience diversity, this index has 156 missing values out of the 1 560 observations in our database (144 firms for 11 years) because of the computation of deltas. In addition, for some of the TMTs it has not been possible to retrieve data related industry experience of the executives. This variable allows us to observe that heterogeneity of the TMTs of our sample increases in nearly 26% of cases, while deltas are negative for 59% of the firms, indicating an increase of homogeneity of the TMT.

Variable Values	Frequency	Percentage	Cumulative
(-0.80) — (-0.21)	6	0.38	0.38
(-0.20) — (-0.01)	918	58.85	59.23
0	66	4.23	63.46
0.01 — 0.20	401	25.71	89.17
0.21 — 0.80	13	0.83	90.00
Missing value	156	10.00	100.00
Total	1560	100.00	100.00

Table 5.2 Industry experience diversity's delta distribution

Total TMT diversity

As we have mentioned before, in order to pursue more expansive internationalization strategies, the firm should own or obtain resources to cope with the new market entry uncertainty and at the same time to process information that is more complex. These resources can be gathered from more diverse TMTs.

In order to measure the total diversity of TMT on a team level, this variable was created. It was computed as a sum of normalized international experience diversity and industry related diversity, then was normalized in order to provide values in a 0-1 range. We suppose that studying relationship between change in DOI and change of total diversity variable could help us to explore the extent to which companies adjust their TMTs' composition as a response to their internationalization strategies.

5.1.2 Explanatory variables

In Chapter 2 we already explained that there is not a unique definition and measure of the degree of internationalization, but they are still highly debated. Some scholars used only a single and not complete measure (e.g. the proportion of foreign sales, assets or employees) to grasp the extent of firm internationalization in general. Others merged different facets of internationalization into one variable in the attempt to get a more comprehensive measure. Nevertheless, the adoption of this approach does not allow us to understand how the different degrees of internationalization affect TMTs structure. Thus, we decided to analyse internationalization generating multiple single-item variables that consider all the various aspects separately. Specifically, the explanatory variables are international intensity, geographic extension by country, geographic extension by continent and geographic dispersion by cultural cluster. As mentioned previously, we computed deltas between two consecutive years for each independent variable in order to study the effects of changes in the degree of internationalization.

International intensity

International intensity is defined as the firm's commitment to serving foreign markets and it is the most common measure of the degree of internationalization used in literature (Miller, et al., 2016). In fact, Geringer et al. (2000) argue that measures of multinationalization should not disregard the relative size and strategic importance of foreign and domestic operations. Thus, we computed international intensity as the proportion of firm's sales in foreign countries to its total sales in a certain year

$$International\ intensity = \frac{foreign\ sales}{total\ sales}$$

and then we calculated deltas between two consecutive years. Foreign sales include the sales deriving from firm's exports and the sales of its overseas affiliates in foreign countries. Unlike foreign asset ratio and foreign employee ratio, this measure provides a complete proxy of the complexity related to serving customers with different preferences and needs, considering also firms that only export. Moreover, asset-based ratios may be affected by greater distortion than operational-based ones. In fact, depreciation adjusts asset values differently according to the date of the investment and the accounting rules (Geringer, et al., 1989; Geringer, et al., 2000). Data of total sales were retrieved from Bureau Van Dijk's Fame database. Foreign sales data instead were retrieved from carefully

merging Orbis and Fame datasets. Data have been also double-checked with company data retrieved from reports whenever they were made available.

Variable Values	Frequency	Percentage	Cumulative
(-1.00) — (-0.61)	9	0.58	0.58
(-0.6) — (-0.31)	16	1.03	1.6
(-0.30) — (-0.01)	409	26.25	27.86
0	95	6.10	33.95
0.01 — 0.30	530	34.02	67.97
0.31 — 0.60	19	1.22	69.19
0.61 — 1.00	12	0.77	69.96
Missing value	470	30.04	100.00
Total	1560	100.00	100.00

Table 5.3 Distribution of delta of international intensity

Table 5.3 shows in detail the distribution of changes in the international intensity. Out of 1560 observations, 470 are missing values due to two main reasons. First, some data were lost during the computation of the deltas. Second, it has not been possible for some firms to retrieve information about foreign sales, total sales or both. It is worth noting that about 6% of observations assume a value of 0. This means that firms have exactly the same proportion of foreign sales in two consecutive years. Moreover, the majority of firms experienced an increase in international intensity up to 30%, while 26.25% showed a decrease for the same percentage.

Geographic extension by country

Examined firms' involvement in international operations, now we want to deeply explore their physical presence abroad. Indeed, geographic extension by country is measured as the number of countries in which a firm has direct investments (i.e. greenfields, acquisitions or joint ventures) outside UK. This variable captures another facet of internationalization, specifically the breadth of the foreign activities of a firm (Lee, et al., 2010) or how widely these activities are spread in the world. While the international intensity indicates the scale of multinationalization, measuring the geographical scope allows to address the ability to cope with subsidiaries located in many different countries, leverage location-based advantages and overcome coordination problems (Tallman & Li, 1996). Moreover, we calculated deltas between two consecutive years to capture changes in the geographic extension by country.

Variable Values	Frequency	Percentage	Cumulative
(-5) — (-3)	5	0.31	0.31
(-2) — (-1)	58	3.73	4.04
0	1131	72.59	76.63
1 — 2	200	12.83	89.46
3 — 5	17	1.09	90.55
6 — 8	3	0.18	90.73
Missing value	146	9.27	100.00
Total	1560	100.00	100.00

Table 5.4 Distribution of delta of geographic extension by country

As showed in the distribution Table 5.4, the majority of observations does not indicate any change in the geographic extension of a firm. Nevertheless, those companies that decided to expand in new geographical markets, opted to enter maximum 2 countries in a single year and only around 1% of them spread operations in more than 3 countries. On the other side, we can notice that 4% of firms decided to close subsidiaries and exit from some countries.

Geographic extension by continent

Geographical extension by continent allows to further assess the international breadth. Indeed, it is not enough to understand the number of countries in which the firm is present, but we need also to determine where its undertakings are located. Subsidiaries placed in the same region, even if in different countries, may be affected by common practices, regulations and regional trade agreements (e.g. EU, NAFTA, MERCOSUR, PACER or AfCFTA). Therefore, physical presence across various regions can be a signal of the dexterity of a firm in dealing with economic and managerial obstacles, result of the difference in these environments. As the previous measure, geographical extension by continent is a count variable and it is operationalized considering the number of continents that are involved in firm's foreign activities. Then, we computed deltas between two consecutive years.

Variable Values	Frequency	Percentage	Cumulative
-2	3	0.19	0.19
-1	20	1.28	1.48
0	959	61.55	63.03
1	79	5.07	68.10
2	3	0.19	68.29
3	1	0.06	68.36
Missing value	495	31.66	100.00
Total	1560	100.00	100.00

Table 5.5 Distribution of delta of geographic extension by continent

Here, Table 5.6 describing the distribution of the variable. In this case the higher presence of missing values is also due to the exclusion of those companies that do not have subsidiaries abroad. In the majority of cases deltas were equal to zero. This does not imply that the firms have not conducted any expansion abroad, but they may have simply increased their investments in continents where they are already present. However, many firms expanded their operations in a new continent (5%) and only 4 enter different continent in the same year. It is also worth noting that 1.5 % of observations represent a closure of all subsidiaries in some continents.

Geographic dispersion by cultural cluster

The geographic dispersion by cultural cluster captures the cultural variety in the distribution of firms' international operations and allows to integrate the depth and breadth of internationalization. It is measured using the Blau's (1977) index and calibrating the dispersion of the subsidiaries among the eleven psychic zones of the world identified by Ronen and Shenkar (2013). Specifically, the authors considered the combined effect of language, religion and geography in the clusters' generation. This measure allows to better analyse the role played by culture in the internationalization process and its implications on TMT composition. In fact, geography alone is not a sufficient predictor. For instance, members of the Anglo-cluster, which share the same culture, are geographically dispersed across different continents as a result of colonization and immigration. Similarly, European countries are clustered several zones, each one with its own culture. Hence, the variable is computed as follows,

$$Geographic\ dispersion\ by\ cluster = 1 - \sum_{i=1}^{n} p_i^2$$

where p_i is the proportion of subsidiaries located in the cluster i. As Sullivan (1994) suggests, each zone is characterized by a unique "cognitive map" of the managerial principles and attitudes.

Therefore, we can infer that higher the dispersion of the firm's ventures across these zones, the greater the cultural dispersion of its international operations. The variable ranges from 0 to $\frac{n-1}{n} = \frac{11-1}{11} \approx 0.91$, where n represents the total number of clusters. Indeed, the value will be close to 0.91 if the company is present in almost all the cultural zones; conversely if the physical presence is restricted to one single cluster, dispersion will be equal to 0.

To clarify, we should note once again that in our thesis that deltas between two consecutive years have been calculated for this variable, and the following Table 5.6 shows their distribution.

Relationship between changes in the firms' degree of internationalization and TMT's diversity

Variable Values	Frequency	Percentage	Cumulative
(-0.80) — (-0.41)	2	0.13	0.13
(-0.40) — (-0.01)	188	12.07	12.20
0	943	60.53	72.72
0.01 — 0.20	240	15.40	88.13
0.21 — 0.40	27	1.73	89.86
0.41 — 0.80	12	0.77	90.63
Missing value	148	9.37	100.00
Total	1560	100.00	100.00

Table 5.6 Distribution of delta of geographic dispersion by cultural cluster

We can notice most firms did not further spread their activities in cultural clusters different from those where companies are already present. Moreover, nearly 12% of them shut down some subsidiaries and exited some cultural clusters. However, in 17,5% of cases we observe that the variable value is positive, indicating on the increase of firms' dispersion among cultural zones. As for missing values, they are absent due to the computation of deltas.

5.1.3 Control variables

We have included some relevant control variables as suggested by the existing literature in order to strengthen the model and to help explaining the DOI and TMT diversity relationships. Since many factors may influence the level of TMT diversity, we have considered some industry-, firm- and team-level drivers. Below we are going to explain the rationales of the controls adopted in the model and how we have constructed them.

Firm profitability change

We have measured this variable through the Return on Assets (ROA) of the company. This KPI is used as an indicator of how profitable a company is relative to its total assets and how efficient a company's management is at using its assets to generate earnings. Return on assets is a financial ratio measured as the ratio of net income to the sum of equity and debt (i.e. total assets) and, for this variable, we consider deltas between two consecutive years and not its absolute measure. We have decided to control for change in firm profitability, since increase in firms' financial resources might enrich possibilities and capabilities of further development. Hence, we suppose that bigger change in ROA indicates that a firm becomes more efficient in satisfying shareholders' needs and does not seek for a diversity that could help to deal with a complexity.

Data about ROA have been retrieved from Bureau Van Dijk's Fame database.

Firm size

Based on prior literature on TMT's study, we have used the firm size as control variable (Herrmann & Datta, 2005; Nielsen, 2009). We have measured the firm size with two different variables: the sales, measured in kGBP considering both UK sales and foreign sales, and the number of total employees of the firm. Firm size was operationalized as the logarithm of a two-year average of the total number of employees (Guthrie & Olian, 1991), and the same log-transformation was adopted for the sales.

Firm size was controlled for because, from one hand, it is related to the complexity and information-processing demands faced by an executives and board of directors (Henderson & Fredrickson, 1996). From another hand, a larger size of the firm often denotes economies of scale that allow larger firms to have an advantage over smaller-sized organizations (Carmeli, 2008), and indicates that firm already has resources to deal with complexity thus does not seek for additional diversity in TMT to cope with it.

Data about number of employees and sales have been retrieved from Bureau Van Dijk's Fame database.

Current ratio change

Based on prior researches, we have decided to control for organizational slack (Bromiley, 1991; Steinbach, et al., 2017). The presence of slack resources enables firms to increase search, which creates opportunities for organizational growth (Cyert & March, 1963; Levinthal & March, 1981). As literature suggests, firms with additional resources (high slack) have more strategic options available than firms without resources. Slack around target level leads that managers take fewer risks; they see their organization as operating in a satisfactory manner and continue with conventional routines (Bromiley, 1991), thus they are able to cope with complexity with available resources and do not look for additional diversity of TMT.

In order to measure slack, we have used a current ratio, which is categorized as available slack (Borgeous & Singh, 1983). It is a continuous variable operationalized as the ratio between the current assets of a firm and its current liabilities, showing a company's ability to pay short-term obligations. In our thesis, this variable is measured as deltas between two consecutive years in order to consider change in firm slack.

Data about current ratio have been retrieved from Bureau Van Dijk's Fame database.

Relationship between changes in the firms' degree of internationalization and TMT's diversity

TMT Size

TMT size was included as it is an important control variable in upper echelons research (Carpenter et al., 2004). It is a discrete variable measuring the number of executives of the TMT that has been largely used in this kind of study, because associated to the information processing capabilities of the TMTs (Certo, et al., 2001). The size of a top management team may have implications for the ability of the team to manage complexity (Haleblian & Finkelstein, 1993). TMT size points out at the amount of resources that can be employed and the TMT collective capacity to process complex information derived from higher levels of multinationality. Every person within a team gives his/her contribution and ideas and the presence of a high number of executives enriches the TMTs of skills, competences, knowledge. Thus, the higher the number of executives within the team, the higher should be the effect of the team diversity. However, the size of TMT can also have a negative effect on diversity since with an increase in the number of members we expect also that some coordination problems arise and managing larger teams becomes more complex. In our study, this variable was computed as the average of two years' period (same period of each delta).

TMT tenure diversity

TMT tenure diversity is a variable defined as tenure separation and represents the sense of distance team members feel toward each other due to different organizational tenures. It was measured, as recommended by Harrison and Klein (2007), as the standard deviation (SD) of number of years that executive members have held their position in the TMT. Then, we computed the average of two years' period. The degree of separation is driven by the extent to which TMT members have similar tenures and not the tenure per se (Bell, et al., 2011). Although it may have a negative effect on firm performance (Yi, et al., 2014), it reflects how visibly different team members are and thus captures their level of difference in opinions, values, and attitudes especially with regards to team goals and processes. Moreover, with different tenures, managers may differ in their commitment to the firm, risk orientation, and insights (Hambrick et al, 1996). The greater the SD, the higher the tenure separation, signalling that the TMT accepts new members. Thus, we suppose the higher the level of overall diversity of the team.

TMT age diversity

Age is one of the demographics that influence strategic decision-making (Wiersema and Bantel, 1992). It can be used as a proxy of managerial experience and risk-taking propensity. In our

study, TMT age diversity has been measured as the standard deviation of age of executive members and represents diversity separation. Because of similar stages of life, people of a similar age are likely to have the same values and beliefs (Ireland, et al., 1987), thus increasing the propensity to agree (Knight, et al., 1999). Conversely, age diversity might be related to emotional conflicts. Moreover, the generational differences introduce divergent opinions into decision-making process that can be negatively associated with overall TMT diversity. Thus, we have controlled for executives age diversity, computing this variable as 2-years average.

Board gender and nationality diversity

Gender diversity and nationality diversity are continuous variables computed on the overall Board of Directors and using the Blau's (1977) index

$$Diversity = 1 - \sum_{i=1}^{n} p_i^2$$

where p_i is the percentage of executives of gender i in case of gender diversity or the percentage of executives of nationality i in case of nationality diversity. Then, we calculated the average for a period of two years. Even though our research focuses primarily on TMT level, it is important to consider Board's impact on TMTs. In fact, Board members not only represent ownership interests monitoring top management, but they also provide strategic advice and give access to external resources (Johnson, et al., 1996). The idea is that this can signal that the organization is diversity conscious, encourages diversity in its hiring and promotion practices and values the contribution of diverse executives (Mattis, 2000).

Board independence

Agency theory suggests that boards with a higher proportion of outside directors are more diligent in pursuing their monitoring role, owing to their independence from top management (Daily & Dalton, 1994; Zahra & Pearce, 1989) and it has an effect on firm's financial performance (e.g. Dalton, et al., 1998). Moreover, outsiders play an important role in expanding a company's horizons of corporate social responsibilities and act as boundary spanners, building relationships and representing the interests of all relevant stakeholders (Coffey & Wang, 1998; Kang, et al., 2007). Thus, the higher independence of the board is an indicator that the board is already managing complexity due to its independent outsiders and should be negatively associated with TMT diversity. This variable was computed as the ratio between the number of non-executive members and board

Relationship between changes in the firms' degree of internationalization and TMT's diversity size. In order to be coherent with independent and dependent variables used in this thesis an average of two-year period was considered.

CEO duality

According to Rechner and Dalton (1991), CEO duality occurs when the CEO holds also the board chairperson position in a corporation. Thus, it is a dummy variable with value 1 if the CEO is also chairman, 0 otherwise. The reason behind CEO duality may lie in the provision of a focal point of leadership. Nevertheless, this is likely to create chaos within the organization and in the relationship with the board reducing its ability to fulfil governance function and constituting a clear conflict of interests (Anderson & Anthony, 1986). This unstable environment may hamper the information flow and TMT diversity.

CEO Career variety

CEO career variety can be defined as the array of professional and institutional experience a CEO engaged in over the course of his/her career (Crossland, et al., 2014). Specifically, it was measured as the sum of normalized functional, industry and international experience diversity, computed using the Blau's (1977) index. Afterwards, we considered the average of a two-year period. We decided to control for CEO career variety since high-variety CEOs are more prone to experimentation and change. Moreover, their broader experience leads them to take advantage of strategic and operational potential in the range of approaches and capabilities embedded in heterogenous TMTs. In contrast, low variety CEOs will be less tolerant of divergent viewpoints inside the team.

CEO founder

It is a dummy variable whose value is 1 if the CEO is also the founder of the firm (solely or co-founder) or 0 otherwise. Finkelstein and D'Aveni (1994) identify four sources of executional power: structural (positional), ownership, expert, and prestige power. Since founding CEOs combine structural and ownership power, formal power asymmetries arise within the team hampering effective communication and information exchange (de Brabander & Thiers, 1984). On one hand, team members are likely to report only what superiors expect to know, rather than what they should know, due to superiors' "sanctuary" power. On the other hand, CEOs may become more dominant and less inclined to accept compromises and input from other TMT members, when combining different

sources of formal power (Adams, et al., 2005). Hence, we control for this aspect as the presence of CEO who is also founder might decrease TMT diversity.

CEO newness

It is a dummy variable indicating if the CEO is new to the company. In fact, the value is 1 only if the company tenure of the CEO is equal to one year, 0 otherwise. CEOs who are not coming from the focal firm tend to be more open to external information. In addition, they tend to break the status quo bringing non-routine information flow at TMT level that allows the team to enhance information processing and innovation (Georgakakis & Ruigrok, 2017). Therefore, new CEOs are more likely to accept or even promote TMT diversity. Conversely, as tenure increases the CEO may narrow the scope of information search and be more adherent to status quo.

Industry munificence

Industry munificence measures the extent to which environment supports sustained growth (Starbuck, 1976). It was measured as the rate of growth (regression coefficient of time on the annual average sales for each industry in a period of four years) divided by the average sales in those years. Subsequently, we computed the average for a period of two years. As in our sample we do not have enough firms to effectively represent average sales for each industry, we include all companies that are global ultimate owner with headquarters in UK only, number of employees between 50 and 2000 and NACE Rev.2 comprised between 10 and 32, even if they are not public. We control for this variable because industry environments that enhance organizational growth protect firms from external threats and allow them to generate slack resources. In such environments, organizations are less likely to strive for a diverse TMT since executives operate with less constraint and pressure for radical strategic changes (Nielsen, 2009).

Data of sales starting from 2004 were retrieved from Bureau Van Dijk's Fame database.

Industry dynamism

It refers to the environmental instability and can be defined as the rate of change in environmental factors that affect an organization (Thompson, 1967). Industry dynamism was measured as the dispersion about the regression line (Nielsen, 2009) dividing the standard error of the regression slope by the average value of sales in the four-year period. Then, we considered the average of a period of two years. We decided to control it since unstable environments increase the level of

Relationship between changes in the firms' degree of internationalization and TMT's diversity

uncertainty faced by TMTs, and consequently increase the information processing-demand (Galbraith, 1973). Thus, TMT experience diversity allows to broaden the knowledge base and the perspectives brought in the decision-making process.

Industry dummies

In our study, we have implemented 4 dummy industry variables in order to indicate the level of technology of the sector in which the firm operates. Even though all the firms of our database are manufacturing firms, potential differences existing across industries may impact TMT composition. For instance, we may expect more technological intensive industries to demand more diverse TMTs for the characteristics of the industry itself. The classification of the firms has been done matching the classification used by Eurostat (Eurostat, 2019) and the firms' NACE Rev.2 2-digit code (see Table 4.4).

The dummy variables are "Low Technology", "Medium/Low Technology", "Medium/High Technology" and "High Technology", referring one to each industry level cluster. For example, the dummy Low Technology assumes value 1 if the firm operates in a cluster that has low level of technology intensity, 0 otherwise (the same reasoning was applied for the other three variables).

Time dummies

Lastly, to control for time-specific effects and correlation among firms, we included year dummies in our models. Even though we have considered eleven-year time span, time variables are only 10 (starting from 2009 and ending with 2018). The year 2008 has not been included because of the two-years deltas construction of dependent and independent variables. These variables have the same construction as the industry dummies: the variable 2018 assumes value 1 if the data are related to the year 2018, 0 otherwise.

Table 5.7 shows a summary of all the dependent, independent, and control variables listed and described above.

Role	Variable	Type	Calculation
Dependent	International experience diversity	Continuous	Blau (1977)'s index**
	Industry experience diversity	Continuous	Blau (1977)'s index**
	Total TMT diversity	Continuous	Sum of international experience diversity and industry experience diversity **
Explanatory	International intensity	Continuous	Proportion of foreign sales to total sales*
	Geographic extension by country	Discrete	Count of countries in which a firm has direct investments*
	Geographic extension by continent	Discrete	Count of continents in which a firm has direct investments*
	Geographic dispersion by cultural cluster	Continuous	Blau (1977)'s index*
Control	Firm profitability change	Continuous	ROA* (net income to total assets ratio)
	Sales	Continuous	Logarithm *** of total sales
	Number of employees	Discrete	Logarithm*** of number employees
	Current ratio change	Continuous	Current assets to current liabilities ratio*
	TMT Size	Discrete	Count of executives of the TMT***
	TMT tenure diversity	Continuous	Standard deviation *** of number of years that executive members have held their position in the TMT
	TMT age diversity	Continuous	Standard deviation*** of age of executives
	Board gender diversity	Continuous	Blau (1977)'s index* **
	Board nationality diversity	Continuous	Blau (1977)'s index***
	Board independence	Continuous	Number of non-executive members to board size ratio***
	CEO duality	Dummy	1 if the CEO is the chairman, 0 otherwise
	CEO career variety	Continuous	Sum of normalized functional, industry and international experience diversity, computed using the Blau (1977)'s index***

Table 5.7 Summary of dependent, explanatory and control variables

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Role	Variable	Type	Calculation
	CEO founder	Dummy	1 if the CEO is the founder, 0 otherwise
	CEO newness	Dummy	1 if the CEO's company tenure is equal to 1, 0 otherwise
	Industry munificence	Continuous	Rate of growth*** (regression coefficient of time on the annual average sales for each industry in a period of 4 years) divided by the average sales in those years
	Industry dynamism	Continuous	Standard error*** of the regression slope over the average value of sales in the 4-year period
	Industry dummies	4 Dummies	Control for the firm industry
	Time dummies	10 Dummies	Control for the examined year

Table 5.7 Summary of dependent, explanatory and control variables (continue)

5.2 EQUATION MODELS AND METHODOLOGY

In this section, the empirical models and methodologies we have selected to test our hypotheses will be presented and discussed.

5.2.1 Panel data

It is important to note from the beginning that our Final database has the typical traits of a panel data. Panel data refers to repeated observations of a subject (in our case the 144 firms) over time (in our case from 2008 to 2018).

The typical regression model with a panel data is

$$y_{it} = \beta x'_{it} + a_i + u_{it}$$

where:

- y_{it} and x'_{it} (x'_{it} is a vector for the explanatory variables) are observed for each individual i in each period t,

- a_i is the unobserved individual effect

---

* delta

** delta and normalization

*** average

- u_{it} is an error term that varies over time for individuals

- u_{it} and a_i together compose the regression error term v_{it}

Before undertaking our panel data analysis, we had to control three main conditions in order to avoid errors: heteroskedasticity, autocorrelation, and contemporaneous correlation. If at least one of them has been detected, OLS models (Ordinary Least Squared) cannot be used, since they become inefficient due to underestimation the errors. In this case GLS (Generalized Least Squared) model, should be applied.

Heteroskedasticity (or heteroscedasticity) happens when the standard errors of a variable, monitored over a specific amount of time, are non-constant across units. This is very likely to be observed in case of panel data, where the unobserved individual effect is present. In order to test if heteroskedasticity effect takes place in our panel data, we have run a Breusch-Pagan Lagrange Multiplier test (the command for LM test in Stata is *estat hettest*), where the null hypotheses states that the variances across errors equals zero. The p-value of the test was lower than 0.000, thus we rejected the null hypothesis: the variance of the error terms is not constant and a GLS estimator is required because of inefficiency of OLS models. The graph (Figure 5.1) showing heteroskedasticity of our data model is presented below:
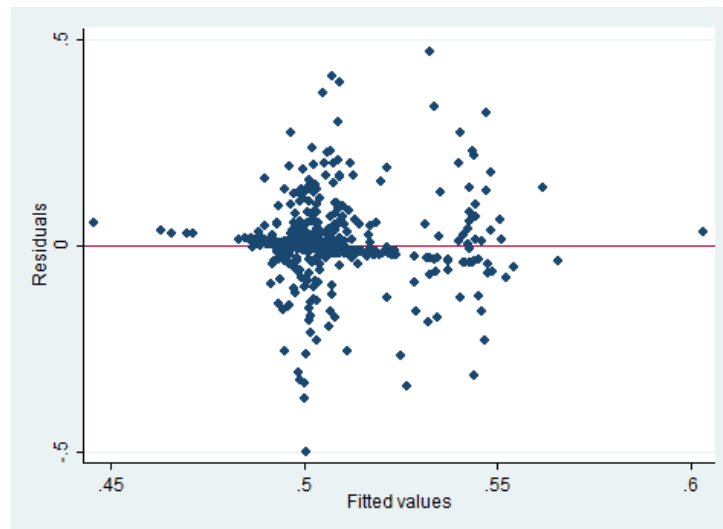
Figure 5.1 Heteroskedasticity of the data model

When dealing with firms and economic data, contemporaneous correlation is very likely to arise. This is the situation when the errors of unit i at time t are correlated with errors of unit j at time t (Beck & Katz, 1995). For example, in case of crisis in a specific year, it is likely that the majority of the firms will face some problems in performing their activities. Our sample contains data for the

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years from 2008 to 2018. The first years coincide with the occurrence of 2008's economic crisis, thereby firms may be negatively affected. In order to control for contemporaneous correlation, time dummy variables have been used, since they greatly improve the accuracy of the estimator.

Lastly, the autocorrelation effect is very common in panel data because of the presence of the unobserved individual error u_i . Autocorrelation takes place when the errors v_{it} of a particular unit are correlated across time, and it can be controlled for using the GLS estimators.

After having defined that a GLS model should be used in order to test our hypotheses, we had to understand which type of the model better fits our data: a fixed-effects model or a random-effects model. The first one should be used when the error term is correlated with the explanatory variables; otherwise, a random-effects model should be run.

In order to find out which model we should use for our analyses, we have run a Hausman test (the command in Stata is *hausman fe re*). The null hypothesis of this test is that the error term is uncorrelated with the explanatory variables. In our analyses, the Hausman test gave not significant result (i.e. p-values were higher than 0.1). Thus, after having examined LM test and the Hausman test, we have chosen a GLS estimator with random effects.

The correlations among our explanatory variables and some descriptive statistics are presented in the following page (Table 5.8). We followed the guidelines developed by Evans (1996) in order to understand the linear relationship between variables. Thus, we consider the correlation between two variables strong, if the value of the correlation coefficient is comprised between 0.60 and 0.79, moderate if the value is between 0.40 and 0.59, finally low correlation for values minor than 0.39. The Table 5.8 shows that we do not observe particularly high values; the highest correlation value is between geographic extension by continent and geographic extension by country (+0.6064), and between geographic dispersion by cluster and geographic extension by continent (+0.5797). These values are not surprising, since they all measure how subsidiaries are spread geographically, but taking into account different aspects. For instance, since the subsidiaries of firms from our sample are located in 83 countries and spread along all continents, we expect that the higher the geographic extension by country, the higher the likelihood that subsidiaries are spread along different continents. Same could be applied to clusters and continents correlation: the higher the geographic dispersion by cluster, the higher the likelihood that subsidiaries are located in different continents.

Despite the high correlations among the explanatory variables, we argue that examining each distinct variable will allow us to obtain greater insights on how these variables can affect companies'

hiring strategies. However, we decide to run distinct models for each of these variables in order to avoid potential issues stemming from the high correlation among these variables.

In addition, the matrix revealed the correlation between Board independence and TMT size (-0.7685) and between Standard deviation of TMT tenure and TMT size (+0.5158). First relationship was not surprising, since Board independence variable is derived from Board size, which is the sum of executive (TMT size) and non-executive members, as it was explained in previous section. Thus, the higher the independence, the higher the number of non-executives, and, consequently, the lower the number of executive members in the board (i.e. the smaller the TMT size).

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		1	2	3	4	5	6	7	8	9	10
1	International intensity	1									
2	Geo. extension by country	0.064	1								
3	Geo. extension by continent	0.043	0.606	1							
4	Geo. dispersion by cluster	0.034	0.481	0.580	1						
5	Firm profit. change	0.122	0.017	0.009	-0.036	1					
6	Log of Sales	-0.045	0.079	-0.010	0.007	0.086	1				
7	Log of number of employees	-0.026	0.048	-0.012	0.008	0.042	0.795	1			
8	Current ratio change	0.077	-0.051	-0.075	-0.038	0.238	0.047	-0.001	1		
9	TMT Size	0.040	0.003	0.016	-0.036	0.021	0.081	0.079	-0.036	1	
10	TMT tenure diversity	0.024	0.045	0.020	0.027	0.028	0.119	0.108	-0.012	0.516	1
11	TMT age diversity	-0.004	0.047	0.016	0.031	0.027	-0.001	-0.031	-0.019	0.543	0.516
12	BoD gender diversity	0.017	0.050	0.045	0.065	-0.002	0.098	0.125	0.019	0.047	0.195
13	BoD nat. diversity	-0.026	0.070	0.000	-0.010	-0.033	0.013	0.033	-0.005	-0.202	-0.127
14	BoD independence	-0.004	0.040	0.010	0.019	-0.034	0.009	0.033	0.025	-0.769	-0.466
15	CEO duality	-0.047	0.053	-0.013	-0.004	-0.018	0.015	0.038	-0.010	-0.006	0.056
16	CEO career variety	0.040	-0.028	-0.005	-0.034	0.013	-0.155	-0.053	0.005	-0.249	-0.140
17	CEO founder	0.007	0.095	0.018	0.023	0.015	-0.026	-0.158	-0.001	0.027	0.065
18	CEO newness	-0.004	0.000	-0.022	0.025	-0.034	-0.075	-0.010	-0.010	-0.011	-0.080
19	Industry munificence	-0.010	-0.027	-0.014	-0.009	0.008	0.010	0.021	-0.009	-0.052	-0.079
20	Industry dynamism	0.004	-0.015	-0.012	0.022	0.012	0.026	0.040	-0.007	0.162	0.072
	mean	0.008	0.168	0.058	0.011	-0.003	10.420	5.536	-0.107	2.825	3.687
	sd	0.149	0.769	0.347	0.080	0.258	1.694	1.214	3.641	1.150	3.469
	min	-1.053	-5.000	-2.000	-0.720	-3.396	2.418	1.498	-53.300	1.000	0.000
	max	1.000	8.000	3.000	0.800	4.633	14.340	8.350	36.850	8.000	24.130

Table 5.8 Correlations Matrix and descriptive statistics

		11	12	13	14	15	16	17	18	19	20
1	International intensity										
2	Geo. extension by country										
3	Geo. extension by continent										
4	Geo. dispersion by cluster										
5	Firm profit. change										
6	Log of Sales										
7	Log of number of employees										
8	Current ratio										
9	TMT Size										
10	TMT tenure diversity										
11	TMT age diversity	1									
12	BoD gender diversity	-0.037	1								
13	BoD nat. diversity	-0.182	0.139	1							
14	BoD independence	-0.536	0.022	0.273	1						
15	CEO duality	0.206	-0.082	-0.065	-0.074	1					
16	CEO career variety	-0.224	-0.004	0.090	0.259	-0.164	1				
17	CEO founder	0.185	-0.108	0.027	-0.013	0.090	-0.125	1			
18	CEO newness	-0.011	-0.015	0.087	0.033	-0.055	0.036	-0.061	1		
19	Industry munificence	-0.082	-0.032	0.088	0.076	-0.065	-0.013	0.028	0.002	1	
20	Industry dynamism	0.075	-0.124	-0.039	-0.118	-0.021	-0.102	-0.047	0.041	0.143	1
	mean	4.683	0.088	0.149	0.520	0.156	1.141	0.070	0.053	0.039	0.070
	sd	3.220	0.152	0.204	0.153	0.363	0.526	0.255	0.224	0.074	0.058
	min	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.338	0.008
	max	16.490	0.609	0.776	0.894	1.000	2.340	1.000	1.000	0.678	0.730

Table 5.8 Correlations Matrix and descriptive statistics (continue)

5.2.2 The model

Our aim, as previously explained, is to understand and discuss the relationship between the changes in the degree of internationalization of the firm and change in TMT diversity. To understand the effects of the different aspects of internationalization on different aspects of TMT diversity, we have identified three variables for measuring TMT diversity: **international experience diversity, industry experience diversity,** and **total TMT diversity**. To test our hypotheses a fractional logit model on STATA statistical software has been chosen (Stata command: *xtgee, family (binomial) link (logit) vce (robust)*).

Since the main objective of this thesis was to test the same hypotheses with different aspects of TMT diversity, we have obtained 12 models, i.e. each of the three dependent variables has been tested with one of the four explanatory variables. The equations of our models are the following:

$$\Delta\,TMT\,diversity = \beta_0 + \beta_1\,\Delta International\,intensity + \beta_2 Controls + \varepsilon_i$$

$$\Delta\,TMT\,diversity = \beta_0 + \beta_1\,\Delta Geographic\,extension\,by\,country + \beta_2 Controls + \varepsilon_i$$

$$\Delta\,TMT\,diversity = \beta_0 + \beta_1\,\Delta Geographic\,extension\,by\,continent + \beta_2 Controls + \varepsilon_i$$

$$\Delta\,TMT\,diversity = \beta_0 + \beta_1\,\Delta Geographic\,dispersion\,by\,cultural\,cluster + \beta_2 Controls + \varepsilon_i$$

where $\Delta\,TMT\,diversity$ is either *International experience diversity, Industry experience diversity,* or *Total TMT diversity* analyzed separately.

A full list of all 12 models is presented in the Appendix 2.

In the next section, the results of the analyses we have run will be presented and discussed.

5.3 RESULTS

Coefficients, significance, standard errors and descriptive statistics are reported in tables 5.9 - 5.11. Results are divided in three sections according to the dependent variable (i.e. industry experience diversity, international experience diversity and total diversity); thereafter, in each section we can find the results of the four models adopted. Specifically, each model takes into account a particular explanatory variable: model 1 and 2 are associated respectively to international intensity and geographic extension by country, while model 3 considers geographic extension by continent and model 4 examines geographic dispersion by cultural clusters. Econometric estimates indicate that our hypotheses are partially validated attesting that a variation in the degree of internationalization implies adjustments in TMT diversity.

Hypothesis 1 is not confirmed suggesting that changes in the firm's involvement in international operations, measured in terms of proportion of foreign sales, are not associated to changes in TMT diversity. On one hand, firm international intensity shows a positive but non-significant relationship with TMT industry experience diversity. On the other hand, the relationship with TMT international experience diversity and TMT total diversity is negative and for the former it is also significant (p-value lower than 0.1).

Hypotheses 2 and 3 are partially confirmed and have similar results. Changes in geographic extension by country and continent are positively correlated with TMT diversity in line with our hypotheses. Nevertheless, not all the relationships are statistically supported. When testing model 2 and 3, empirical support was found at a 10% level of significance only in case of TMT international experience diversity and TMT total diversity. Coefficients for TMT industry experience diversity, in turn, are not significant. Thus, we cannot argue that an increase or decrease in the geographic extension of a firm leads to change the level of industry experience diversity in the TMT.

Positive and robust results were found for model 4, confirming hypothesis 4 entirely. This indicates that changes in TMT diversity are considerably influenced by variations in the dispersion of firm's foreign operations among different cultural clusters. In this case, coefficients are not only the highest ones, but they are also characterized by a strong level of significance (below 5%) if we consider TMT industry experience diversity and TMT total diversity. A weaker, but still significant, positive relationship characterizes TMT international experience diversity (p-value lower than 0.1).

Relationship between changes in the firms' degree of internationalization and TMT's diversity

Dependent var.	Industry experience diversity			
Model	1	2	3	4
Independent var.	Int. int.	Geo. ext. by country	Geo. ext. by continent	Geo. disp. by cluster
	0.0393	0.0074	0.0133	0.2086**
	(0.1035)	(0.0058)	(0.0154)	(0.1064)
Firm profit. change	-0.0614**	-0.0538	-0.0340	-0.0491
	(0.0302)	(0.0333)	(0.0484)	(0.0331)
Sales	0.0090	0.0131*	0.0133*	0.0129*
	(0.0091)	(0.0074)	(0.0078)	(0.0074)
# employees	-0.0142	-0.0209*	-0.0165	-0.0206*
	(0.0133)	(0.0107)	(0.0122)	(0.0106)
Current ratio change	-0.0093*	-0.0033	-0.0047	-0.0034
	(0.0051)	(0.0038)	(0.0051)	(0.0038)
TMT Size	-0.0020	-0.0083	-0.0077	-0.0075
	(0.0094)	(0.0090)	(0.0109)	(0.0089)
TMT tenure div.	0.0061***	0.0050**	0.0065**	0.0048**
	(0.0019)	(0.0020)	(0.0026)	(0.0020)
TMT age div.	-0.0005***	-0.0007***	-0.0007***	-0.0007***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
BoD gender div.	0.0502	0.0399	0.0207	0.0358
	(0.0499)	(0.0464)	(0.0525)	(0.0468)
BoD nationality div.	-0.0098	-0.0047	-0.0102	-0.0014
	(0.0307)	(0.0286)	(0.0326)	(0.0287)
BoD indep.	0.0182	-0.0500	-0.0336	-0.0504
	(0.0669)	(0.0663)	(0.0787)	(0.0662)
CEO duality	-0.0126	-0.0202	-0.0197	-0.0176
	(0.0188)	(0.0177)	(0.0205)	(0.0178)
CEO career variety	-0.0332**	-0.0273**	-0.0288**	-0.0262**
	(0.0148)	(0.0126)	(0.0137)	(0.0126)
CEO founder	-0.0278	-0.0301*	-0.0231	-0.0300*
	(0.0171)	(0.0157)	(0.0169)	(0.0158)
CEO newness	0.1473***	0.0900	0.1181	0.0900
	(0.0554)	(0.0619)	(0.0841)	(0.0625)
Ind. munificence	-0.1556	-0.0896	0.0176	-0.0851
	(0.1049)	(0.1182)	(0.0998)	(0.1159)
Ind. dynamism	0.1301	0.0832	0.1365	0.0766
	(0.1169)	(0.1158)	(0.1267)	(0.1149)
Industry dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Constant	-0.0990	-0.0268	-0.1426*	-0.0309
	(0.0774)	(0.0828)	(0.0835)	(0.0827)
Observations	1 051	1 271	954	1 269
Wald chi2	76.34	44.25	48.02	45.02
Prob > chi2	0.0000	0.0347	0.0146	0.0293

Table 5.9 Industry experience diversity results

Dependent var.	International experience diversity			
Model	1	2	3	4
Independent var.	Int. int.	Geo. ext. by country	Geo. ext. by continent	Geo. disp. by cluster
	-0.1271*	0.0150*	0.0433*	0.1184*
	(0.0694)	(0.0085)	(0.0248)	(0.0681)
Firm profit. change	0.0388	0.0566	0.0478	0.0590
	(0.0366)	(0.0377)	(0.0653)	(0.0379)
Sales	-0.0060	-0.0066	-0.0065	-0.0063
	(0.0065)	(0.0064)	(0.0081)	(0.0065)
# employees	0.0071	0.0030	0.0052	0.0029
	(0.0107)	(0.0106)	(0.0137)	(0.0109)
Current ratio change	0.0037	0.0022	-0.0021	0.0020
	(0.0060)	(0.0038)	(0.0070)	(0.0038)
TMT Size	0.0054	0.0003	-0.0089	0.0011
	(0.0098)	(0.0080)	(0.0094)	(0.0080)
TMT tenure div.	0.0038	0.0031	0.0046*	0.0030
	(0.0023)	(0.0020)	(0.0026)	(0.0020)
TMT age div.	0.0000	0.0000	0.0000	0.0001
	(0.0001)	(0.0001)	(0.0002)	(0.0001)
BoD gender div.	0.0372	0.0239	0.0069	0.0214
	(0.0505)	(0.0386)	(0.0509)	(0.0394)
BoD nationality div.	0.0088	-0.0050	0.0134	0.0000
	(0.0336)	(0.0287)	(0.0390)	(0.0297)
BoD indep.	0.00789	-0.0124	-0.0527	-0.0065
	(0.0731)	(0.0556)	(0.0812)	(0.0553)
CEO duality	0.0039	-0.0071	0.0041	-0.0048
	(0.0184)	(0.0136)	(0.0190)	(0.0138)
CEO career variety	0.0264**	0.0214**	0.0113	0.0217**
	(0.0109)	(0.0100)	(0.0133)	(0.0103)
CEO founder	-0.0171*	-0.0218*	-0.0295*	-0.0189*
	(0.0102)	(0.0118)	(0.0152)	(0.0112)
CEO newness	0.2175***	0.1564***	0.1536*	0.1570***
	(0.0710)	(0.0594)	(0.0830)	(0.0595)
Ind. munificence	-0.1776	0.0317	0.0081	0.0255
	(0.1526)	(0.1311)	(0.1679)	(0.1312)
Ind. dynamism	0.1101	0.1092	0.1121	0.1006
	(0.1508)	(0.1295)	(0.1526)	(0.1307)
Industry dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Constant	-0.0126	0.0341	0.0639	0.0260
	(0.0802)	(0.0637)	(0.0824)	(0.0622)
Observations	1 057	1 278	961	1 276
Wald chi2	89.78	74.05	44.87	86.03
Prob > chi2	0.0000	0.0000	0.0303	0.0000

Table 5.10 International experience diversity results

Relationship between changes in the firms' degree of internationalization and TMT's diversity

Dependent var.	Total TMT diversity			
Model	1	2	3	4
Independent var.	Int. int.	Geo. ext. by country	Geo. ext. by continent	Geo. disp. by cluster
	-0.0519	0.0125*	0.0267*	0.1993**
	(0.0686)	(0.0073)	(0.0158)	(0.0802)
Firm profit. change	-0.0096	0.0015	0.0025	0.0059
	(0.0271)	(0.0290)	(0.0440)	(0.0294)
Sales	-0.0002	0.0037	0.0038	0.0036
	(0.0060)	(0.0067)	(0.0073)	(0.0066)
# employees	-0.0006	-0.0092	-0.0042	-0.0089
	(0.0101)	(0.0100)	(0.0118)	(0.0100)
Current ratio change	-0.0025	-0.0005	-0.0043	-0.0007
	(0.0037)	(0.0021)	(0.0043)	(0.0021)
TMT Size	0.0034	-0.0032	-0.0078	-0.0022
	(0.0080)	(0.0070)	(0.0087)	(0.0069)
TMT tenure div.	0.0062***	0.0049***	0.0068***	0.0048***
	(0.0018)	(0.0017)	(0.0023)	(0.0017)
TMT age div.	-0.0002***	-0.0003***	-0.0003***	-0.0003***
	(0.0000)	(0.0001)	(0.0001)	(0.0001)
BoD gender div.	0.0423	0.0255	0.0027	0.0216
	(0.0408)	(0.0343)	(0.0405)	(0.0348)
BoD nationality div.	-0.0108	-0.0150	-0.0040	-0.0105
	(0.0285)	(0.0256)	(0.0313)	(0.0260)
BoD indep.	0.0264	-0.0288	-0.0432	-0.0267
	(0.0595)	(0.0510)	(0.0702)	(0.0502)
CEO duality	-0.0005	-0.0130	-0.0067	-0.0102
	(0.0183)	(0.0142)	(0.0178)	(0.0144)
CEO career variety	0.0005	0.0011	-0.0038	0.0022
	(0.0106)	(0.0095)	(0.0112)	(0.0095)
CEO founder	-0.0210*	-0.0277**	-0.0272**	-0.0261**
	(0.0116)	(0.0110)	(0.0131)	(0.0109)
CEO newness	0.1939***	0.1167**	0.1158*	0.1169**
	(0.0482)	(0.0546)	(0.0692)	(0.0548)
Ind. munificence	-0.2041*	-0.0609	-0.0190	-0.0609
	(0.1092)	(0.1102)	(0.1228)	(0.1093)
Ind. dynamism	0.1277	0.1071	0.1435	0.0994
	(0.1130)	(0.1078)	(0.1244)	(0.1077)
Industry dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Constant	-0.3079***	-0.2394***	-0.2966***	-0.2464***
	(0.0669)	(0.0621)	(0.0718)	(0.0609)
Observations	1 051	1 271	954	1 269
Wald chi2	95.04	68.48	52.86	70.62
Prob > chi2	0.0000	0.0000	0.0044	0.0000

Table 5.11 Total TMT diversity results

Moving to control variables, only a few have a significant influence on changes in TMT diversity. TMT Tenure diversity has a positive relationship in all the models as we expected. Indeed, higher tenure diversity in the TMT could signal that the team not only consists of executives with long experience in the board but is also inclined to accept different viewpoints by including new members. However, this relationship is significant only for industry experience diversity and total diversity (p-values below 5% and 1% respectively), while for international experience diversity only in case of geographic extension by continent (p-value lower than 0.1). Likewise, TMT age diversity strongly affects TMT industry experience diversity and TMT total diversity (p-values lower than 0.01), but in this case coefficients are negative. This is in line with our assumptions since the presence of different generations in the team, each one characterized by specific values and beliefs, can already provide a range of perspective in the decision-making process, reducing the need of additional experience diversity. With regard to CEO career variety, we have contrasting results: a significant and negative impact on industry experience diversity for all its models and a significant and positive impact on TMT international experience diversity in models 1, 2 and 4 (p-values always lower than 0.05). Therefore, it seems that only an increase in the diversity of international background is able to satisfy the preference for novelty and change of high-variety CEOs. Results related to the influence of CEO newness are all positive and significant for international experience diversity and total diversity (three p-values below 1% for former, in other cases lower levels of significance), while for industry experience the only significant positive result is in Model 1. In general, this is in line with the arguments asserting that new CEOs tend to be more open and to accept external sources of knowledge, thus promoting heterogeneous TMT. Finally, the presence of CEO founders negatively affect diversity in the TMTs and this relationship is always significant in case of international experience diversity and total diversity, only partially in case of industry experience diversity (p-values lower than 0.05 and 0.1). CEO founders have a greater influence over the configuration of the company management team, which may lead to choose candidates that hold similar views and have similar experience of her/him. Moreover, founding CEOs may interfere with the governance mechanisms which lead to the identification of suitable candidates in respect to the organizational specific requirements.

6 DISCUSSIONS AND CONCLUSIONS

The purpose of our study is to investigate the impact of changes in the degree of internationalization on TMT's level of diversity. Nowadays, international firms represent probably the most complex form of organization. Indeed, they face issues and situations that are much more different even than leading domestic firms, when operating across products, markets, countries and cultures (Egelhoff, 1991). Despite the opportunities arising from internationalization, firms are challenged by liabilities of foreignness (e.g. diverse consumer preferences, competitors and regulations) and transaction costs due to lack of information and coordination (Shenkar, 2001; Buckley & Casson, 1979; Vachani, 1991). These obstacles may prevent them to obtain the expected benefits or even negatively affect organizational performance.

Drawing on the resource-based view, the set of knowledge, competences and expertise embedded in the TMTs are a valuable and strategic resource that help firms to create a sustainable competitive advantage (Barroso, et al., 2011). Moreover, TMTs lie at the strategic apex of organizations and thus, they personally cope with the uncertainty companies face in their competitive environments (Mintzberg, 1973). According to Hambrick and Mason (1984), the effect of TMT characteristics is even more evident at high levels of complexity, since behavioural theory becomes more applicable. Hence, the increasing complexity that derives from firm's international expansion will require a corresponding degree of information-processing capacity among executives to effectively overcome coordination issues and liabilities of foreignness (Ghoshal, 1987; Sanders & Carpenter, 1998). In this challenging environment, background heterogeneity can be a signal of TMT's socio-cognitive diversity and the breadth of its social and professional ties. Similarly, it can help to avoid problems related to domestic myopia, which typically hamper globalization efforts (Carpenter & Fredrickson, 2001), and improve the quality of decision-making process due to the presence of different perspectives.

A quite large body of research has examined how top management team composition influences the firm internationalisation process (Barkema & Shvyrkov, 2007; Herrmann & Datta, 2005; Sambharya, 1996; Tihanyi, et al., 2000). Indeed, while most of the studies have focused on this specific direction, only a few have investigated the antecedents of top management team composition (Athanassiou & Nigh, 1999; Greve, et al., 2009; Sanders & Carpenter, 1998). Building up on this research stream, we decided to study the single effects of different facets of firm internationalization

on TMT diversity. Therefore, we have developed twelve hypotheses to investigate the relationship between changes in international intensity, geographic extension by country, geographic extension by continent and geographic dispersion by cultural cluster and changes in different type of diversity (i.e. industry experience diversity, international experience diversity and total diversity). In order to test our hypotheses we have selected a sample of 144 UK-based firms (see Chapter 4 for the criteria used), and we have collected data about their subsidiaries and their top teams (executives and partially non-executive) for the period 2008-2018.

International intensity hypotheses refer to the commitment of a company to serve foreign customers regardless of their physical presence abroad. We expected that TMTs would have become more heterogeneous in case of an increase in the proportion of foreign sales. In this context, firms face multiple challenges such as the risk of losing the focus on the home market or information processing costs due to the ambiguity of the information itself (Egelhoff, 1991; Daft & Macintosh, 1981). Nevertheless, our hypotheses were not confirmed. The model shows that international intensity does not influence TMT's industry experience diversity and total diversity, while it has a negative effect on TMT international experience diversity. These results may be explained by examining international intensity variable and its measurement with greater attention. Indeed, Sullivan (1994, p. 337) notes that foreign sales "may be artificially inflated or deflated by some conceptually irrelevant factor having nothing to do with the "true" internationalization of a firm (e.g. a random shock in currency rates). Moreover, a company can simply decide to increase its investment and thus strengthen its presence in existing countries. This should not imply a great amount of information-processing demand since managers already possess knowledge about that market and they can exploit already known routines and mechanisms (Greve, et al., 2009). We believe that in case of further expansion in known countries the level of complexity is not enough to produce an increase in TMT diversity. Similarly, physical presence abroad might imply more risk and higher costs than simply exporting.

The second and the third model refer to the effect of changes in geographic extension by country and geographic extension by continent on TMT's diversity, respectively. Considering the breadth of internationalization, we can investigate how firms handle their presence in new and possibly very different contexts. Indeed, transaction costs are likely to increase due to difficulties in coordination, monitoring managers' behaviour and gathering accurate information on subsidiaries performance (Shenkar, 2001). Managing subsidiaries in new geographic areas is a strategic and complex decision that involves the entire TMT (Hambrick, et al., 1996) and to effectively cope with this expansion TMTs should have a corresponding degree of information-processing capacity

Relationship between changes in the firms' degree of internationalization and TMT's diversity (Sanders & Carpenter, 1998). The analysis partially confirmed our hypotheses. Indeed, the entry in new countries or in new continents implies a corresponding increase in international experience diversity and in total diversity, while it does not affect companies' requirements of managerial industry experience. Since executives must process higher volumes and broader variety of information, TMT's diversity can provide a wider range of perspectives and a more complete view of the environment, thereby fostering team decisions and making the decision-making process more effective (Talke, et al., 2010). International experience diversity can be a valuable source of knowledge and expertise about foreign markets, customers' preferences and foreign business practices (Carpenter & Fredrickson, 2001; Johanson & Vahlne, 1977; Sambharya, 1996). Moreover, it facilitates the interaction with local stakeholders, the development of legitimacy and the access to international networks (Athanassiou & Nigh, 1999).

The hypotheses related to geographic dispersion by cultural clusters aim at investigating the complexity that arise when dealing with diverse cultural environments. British Commonwealth is an example in which geographic and cultural distance diverge (Dow & Karunaratna, 2006). British colonizers tried to replicate their domestic institutions in the colonies, and these survived after independence facilitating the entry of UK companies in ex-colonial countries (Ronen & Shenkar, 2013). Expanding to new cultural clusters, instead, implies a dramatic increase in the level of complexity and in the transaction costs. Indeed, the investment becomes particularly innovative when firms invest in specific setting that differs considerably from the ones already experienced (Barkema & Shvyrkov, 2007). Results confirm all our hypotheses suggesting that entry in new cultural blocks does increase companies' demand for managerial work experience diversity, namely industry experience, international experience and overall TMT diversity. This means that dealing with new cultures requires additional knowledge, expertise and networks to cope with complexity and coordination issues. Differences in religious beliefs, race, social norms, and language hamper the effectiveness of managers' interaction with locals (Carlson, 1974). This implies higher transaction costs arising from misunderstandings and inefficient communication (Boyacigiller, 1990) that can turn into conflicts and even inability to carry out business in a new cultural environment (Piaskowska & Trojanowski, 2014). In this scenario, TMT's diversity allows to fulfil the greater demand of information, speed up learning, and cope effectively with the greater cultural distance between headquarters and foreign subsidiaries. First, international experience helps to better understand the complexity and dynamics of managing international operations of the company (Kobrin, 1984). Second, industry-related experience is fundamental to understand how an industry operates, to

recognize market opportunities and threats as early as possible (Kor, 2003; Eisenhardt & Schoonhoven, 1990).

Finally, it is noteworthy to mention that results seem to suggest an increasing level of complexity associated with different facets of firm internationalization. International intensity, which potentially overlooks firms' physical presence abroad, is the lowest level of complexity and thus, it requires a low information-processing demand that can be fulfilled without changes in TMT composition. Then, opening subsidiaries in new countries or geographical areas implies a medium level of complexity due to the different business practices, regulations, and competition. An increase in international experience diversity allows to obtain the required knowledge about the foreign markets and access to other resources. Nevertheless, it is only when dealing with different cultural and socio-political environments that firms face the highest level of complexity and succeeding is more challenging. In order to fully exploit benefits and opportunities arising from internationalization, TMTs need a corresponding level of diversity both in international and industry-related background.

As previously discussed, the empirical analysis confirmed most of our hypotheses yielding to positive and interesting insights about the influence of the distinct aspects of internationalization on TMT heterogeneity. However, the findings should be taken with caution due to the presence of some limitations. This study is based on a limited sample of companies due to the adoption of some sample criteria (e.g. public and manufacturing firms with headquarters in UK). Studies considering firms based in multiple countries/continents could provide greater generalisation extent, but also better illuminate the impact of internationalization on TMT. Another issue that we encountered in our analysis is related to the collection of complete and reliable data about executives. Indeed, when firms' annual reports did not provide full information, we relied on secondary sources as LinkedIn. We believe that having the chance to directly interview managers will allow to overcome some of the issues related to secondary data and gather more information that can be used to further expand research in this field. Moreover, we decided to take into consideration observable managerial characteristics as indicator of managers' cognitive bases and schemes brought to administer specific situations (Hambrick & Mason, 1984). As discussed in Chapter 1, the merge of behavioural theory and strategic management has found favour in several areas of research, specifically in the Upper Echelon stream where background characteristics were used to predict both givens and behaviours. Nevertheless, people are more complex and should be examined in a more clinical manner (Zaleznik & Kets de Vries, 1975). Therefore, future studies could adopt a multidisciplinary approach also including psychological insights. Finally, given the evidence of the impact of internationalization on

TMT composition, we suggest to further expand this study by extending our attention to overall board of directors, also including non-executive directors. On one hand, it might be interesting to extend this study, investigating the effects of the same facets of internationalization on Board of directors' background diversity (i.e. industry experience and international experience). Board members may need the right set of knowledge and skills to adequately monitor the complexity and riskiness related to international expansion and meet the other requirements associated with their roles (Barroso, et al., 2011). On the other hand, future research could also examine how the internationalisation process through the firm preferred entry mode (equity vs non-equity entry mode strategies or the establishment mode choice) will drive TMT composition diversity. Indeed, they might imply different levels of complexity according to the risk and the involvement of the company in foreign markets.

The majority of studies investigated TMT characteristics as antecedents of internationalization choices, ignoring the reverse causality. This is line with Hambrick and Mason (1984)'s Upper Echelons Theory, based on "matching strategies to managers" (Greve, et al., 2009). Nevertheless, our research suggests that the opposite is also true and thus confirms Hambrick (2007, p. 338)'s assumption that "executives are drawn to, and advance within, settings that suit their profiles". TMTs tend to adapt to internationalization strategies in order to fulfil the higher information-processing demand and to increase company management teams' human and social capital, which is required to further exploit foreign markets and speed up the process. Therefore, more research is needed to identify the key determinants of TMT composition. This will allow to advance our understanding and gain new insights about how and why certain TMTs' characteristics become manifested in organizational outcomes (Greve, et al., 2009; Hambrick, 2007). Moreover, it may help firms create the most appropriate TMT according to their strategy. Indeed, results show that executives' diversity in terms of industry and international experience is essential to fully exploit the benefits and opportunities that foreign markets might offer. Finally, a second and important contribution is related to the choice of the independent variables since we decide to analyse distinct aspects of internationalization separately. This allows to better investigate each effect and to understand the type of knowledge required to deal with a specific facet of internationalization. According to our findings, different degrees of internationalization imply a different level of complexity. Specifically, the highest information-processing demand occurs when companies have subsidiaries spread in many and culturally diverse countries. In this context, TMTs should be equipped with the right level of industry and international diversity.

APPENDIX

1. Distribution of the target countries by cultural clusters

Cluster	Country Code	Country Name	Frequency	Percentage
African			**21**	3.6%
	BFA	Burkina Faso	2	0.3%
	ETH	Ethiopia	3	0.5%
	GNQ	Equatorial Guinea	2	0.3%
	KEN	Kenya	2	0.3%
	MLI	Mali	1	0.2%
	MOZ	Mozambique	2	0.3%
	MUS	Mauritius	2	0.3%
	UGA	Uganda	1	0.2%
	ZAF	South Africa	6	1.0%
Anglo			**188**	32.3%
	AUS	Australia	27	4.6%
	CAN	Canada	18	3.1%
	GGY	Guernsey	1	0.2%
	IMN	Isle of Man	1	0.2%
	IRL	Ireland	8	1.4%
	JEY	Jersey	1	0.2%
	NZL	New Zealand	5	0.9%
	USA	United States of America	127	21.8%
Arabic			**8**	1.4%
	ARE	United Arab Emirates	7	1.2%
	MAR	Morocco	1	0.2%
Confucian			**94**	16.2%
	CHN	China	45	7.7%
	HKG	Hong Kong	14	2.4%
	JPN	Japan	6	1.0%
	KOR	Korea, Republic of	6	1.0%
	MAC	Macao	1	0.2%
	SGP	Singapore	14	2.4%
	TWN	Taiwan, Province of China	8	1.4%
East Europe			**25**	4.3%
	BIH	Bosnia and Herzegovina	1	0.2%
	BLR	Belarus	1	0.2%
	CYP	Cyprus	1	0.2%
	CZE	Czechia	3	0.5%
	HRV	Croatia	1	0.2%
	POL	Poland	9	1.5%
	RUS	Russian Federation	6	1.0%

	SRB	Serbia	1	0.2%
	SVN	Slovenia	1	0.2%
	UKR	Ukraine	1	0.2%
Far East			**44**	**7.6%**
	IDN	Indonesia	5	0.9%
	IND	India	23	4.0%
	MYS	Malaysia	7	1.2%
	PHL	Philippines	1	0.2%
	SGP	Singapore	1	0.2%
	THA	Thailand	6	1.0%
	VNM	Viet Nam	1	0.2%
Germanic			**55**	**9.5%**
	AUT	Austria	2	0.3%
	CHE	Switzerland	7	1.2%
	DEU	Germany	46	7.9%
Latin America			**35**	**6.0%**
	ARG	Argentina	4	0.7%
	BRA	Brazil	13	2.2%
	BRB	Barbados	1	0.2%
	CHL	Chile	1	0.2%
	CYM	Cayman Islands	2	0.3%
	ECU	Ecuador	2	0.3%
	GTM	Guatemala	1	0.2%
	MEX	Mexico	7	1.2%
	NIC	Nicaragua	2	0.3%
	URY	Uruguay	2	0.3%
Latin Europe			**53**	**9.1%**
	BEL	Belgium	5	0.9%
	ESP	Spain	15	2.6%
	FRA	France	18	3.1%
	ISR	Israel	1	0.2%
	ITA	Italy	12	2.1%
	PRT	Portugal	2	0.3%
Near East			**4**	**0.7%**
	GRC	Greece	1	0.2%
	TUR	Turkey	3	0.5%
Nordic			**55**	**9.5%**
	DNK	Denmark	6	1.0%
	FIN	Finland	3	0.5%
	ISL	Iceland	1	0.2%
	NLD	Netherlands	25	4.3%
	NOR	Norway	5	0.9%
	SWE	Sweden	15	2.6%
Total			**582**	**100.0%**

Table A.1 Distribution of the target countries by cultural clusters

2. A full list of models used

1. Δ Int. exp. diversity $= \beta_0 + \beta_1 \Delta International\ intensity + \beta_2 Controls + \varepsilon_i$

2. Δ Int. exp. diversity $= \beta_0 + \beta_1 \Delta Geo.\ extension\ by\ country + \beta_2 Controls + \varepsilon_i$

3. Δ Int. exp. diversity $= \beta_0 + \beta_1 \Delta Geo.\ extension\ by\ continent + \beta_2 Controls + \varepsilon_i$

4. Δ Int. exp. diversity $= \beta_0 + \beta_1 \Delta Geo.\ dispersion\ by\ cultural\ cluster + \beta_2 Controls + \varepsilon_i$

5. Δ Ind. exp. diversity $= \beta_0 + \beta_1 \Delta International\ intensity + \beta_2 Controls + \varepsilon_i$

6. Δ Ind. exp. diversity $= \beta_0 + \beta_1 \Delta Geo.\ extension\ by\ country + \beta_2 Controls + \varepsilon_i$

7. Δ Ind. exp. diversity $= \beta_0 + \beta_1 \Delta Geo.\ extension\ by\ continent + \beta_2 Controls + \varepsilon_i$

8. Δ Ind. exp. diversity $= \beta_0 + \beta_1 \Delta Geo.\ dispersion\ by\ cultural\ cluster + \beta_2 Controls + \varepsilon_i$

9. Δ Tot. TMT diversity $= \beta_0 + \beta_1 \Delta International\ intensity + \beta_2 Controls + \varepsilon_i$

10. Δ Tot. TMT diversity $= \beta_0 + \beta_1 \Delta Geo.\ extension\ by\ country + \beta_2 Controls + \varepsilon_i$

11. Δ Tot. TMT diversity $= \beta_0 + \beta_1 \Delta Geo.\ extension\ by\ continent + \beta_2 Controls + \varepsilon_i$

12. Δ Tot. TMT diversity $= \beta_0 + \beta_1 \Delta Geo.\ dispersion\ by\ cultural\ cluster + \beta_2 Controls + \varepsilon_i$

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